Pricing difficulties in Mergers & Acquisitions

Private versus Public target

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ABSTRACT

Title: Pricing Difficulties in Mergers & Acquisitions – Public versus Private target

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Purpose: With the intention to provide new evidence valid for the Scandinavian market the thesis aims to; (I) examine the announcement effect for acquiring companies, where the emphasis lies on the difference between acquiring Public targets compared to Private targets, and (II) investigate the relation between abnormal returns and variables found significant in previous research.

Theoretical Framework: The concept of mergers and acquisitions is briefly introduced followed by relevant theories offering explanations to the occurrence of the announcement effect. The role of the management is discussed before presenting previous research within the field of announcement effect. The chapter ends with a discussion regarding market efficiency, impact of information and the private firm discount.

Methodology: A quantitative approach is used where an Event study is conducted to determine the announcement effect. T-tests are performed to ensure statistical significance. Multiple linear regression models examine the effect of Relative size, Deal size, Form, Serial acquirer, Implied premium and target public status on abnormal returns.

Empirical foundation: The data sample consists of Scandinavian public firms (listed on stock exchanges in Sweden, Norway, Finland and Denmark) bidding for either public or private targets between 2004-01-01 and 2014-01-01.

Conclusion: Statistical significant evidence of positive abnormal returns is found for the total sample. Furthermore the results indicate that acquisitions of privately held companies outperform deals for publicly traded firms, supporting the private firm discount. The relative size is found to have a generally positive impact on acquisitions, while deal size and premium is found to have a negative relation in acquisitions of public targets.

LIST OF ABBREVIATIONS

AAR – Average abnormal return

AR – Abnormal return

CAAR – Cumulative average abnormal return

CAR – Cumulative abnormal return

DCF – Discounted Cash-Flow

EBITDA – Earnings before interest, taxes, depreciation and amortization

EMH – Efficient Market Hypothesis

M&A – Mergers and Acquisitions

P/E – Price-to-earnings

WACC – Weighted average cost of capital

DEFINITIONS

The first time a, for the thesis relevant, concept is introduced (without a notation or definition in the text) it is written in *italic,* and the definition presented in Appendix 1.

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1 INTRODUCTION

In the first chapter the reader is introduced to the subject of mergers and acquisitions and what has inspired the authors to conduct the research. The problem discussion is followed by the research questions and the purpose before ending the chapter with a short disposition.

1.1 Background

The intrinsic value of a firm, and in consequence the value of its shares, depends on its ability to generate *free cash-flow (FCF)* exceeding the *cost of capital (WACC)* (Koller et al, 2010 p. 17). The actual value of the firm, or the price that the shares trade at, will depend on the market's perception of future value creation (Fama, 1970). The share price thus reflects expectations in regards to the firm's future performance. In an efficient market these expectations incorporates all historic as well as current information available (Fama, 1970). Once new information is released to the market the price will immediately mirror the anticipated impact on the firm's future value creation (Fama, 1970). One example of an event, potentially affecting the markets expectations, is when a firm announces its intention to acquire another firm. The reason for *mergers and acquisitions (M&A)* is that the combination of two firms will generate a higher value together than if they were apart (Gaughan, 2011). This value enhancement is referred to as *synergy effects*, and in an economy with rational actors, e.g. managers and investors, the expected value impact of an acquisition announcement equals the expected value of the synergies, adjusted for the probability that the acquisition will actually take place (Malatesta & Thompson, 1985). This implies that, following an announcement, the maximum market adjustment of the acquirer and the target's share prices respectively should, when added up, never exceed the expected synergies. The distribution of value between the bidder and the target will thus depend on the *premium* offered to the target, where the maximum premium a bidder would be willing to pay equals the expected value of the synergies (Misra & Gupta, 2007).

However, the above stated argument assumes that the managers (of both the bidder and the target) and the market (1) got access to the same information, both in terms of quantity and quality, and (2) are rational, i.e. they can correctly reassess the value based on the available information (Berkovitch & Narayanan, 1993). If these assumptions are met the managers and the market should have homogenous expectations regarding future value creation. As a result, the announcement of a deal will create value for the acquirers' shareholders equal to [E]S-P, that is the expected value of the synergies less the premium paid to the target. The target

firm's shareholders will on their part gain value equal to P, the premium. On the other hand if these assumptions are not met, and there would be information asymmetry and/or irrationality on the market, a discrepancy between the actors, i.e. managers' and investors', expectations could occur when assessing the synergies. This creates a possibility for M&A mispricing in two directions: (I) In terms of dividing the value between bidder and target there is a risk for the premium to exceed the actual synergies due to agency problems or behavioural factors influencing the management and (II) the divergence of expectations between the management and the shareholders could potentially cause over reactions or under action on the market.
For these reasons, among others, the field of mergers and acquisitions has got much attention from researchers trying to explain the occurrence of abnormal price movements while also aiming to explain what drives the positive (negative) value creation (destruction) following announcements.

1.2 Problem discussion

In a research paper Martynova and Renneboog (2008) provide a broad and extensive review of the empirical findings in the field of mergers and acquisitions over the past decades. Their study focuses on the determinants of M&A activity by analysing the five previous merger waves, and in respect to the development over the years they discuss the existing academic literature regarding short-term wealth effects for both the target and the acquirer in M&A deals. Even though the empirical research considering announcement effects are comprehensive, views do not converge of whom receives the value. The main part of the academic literature argues that the gain from a deal is captured by the target's shareholders, whereas from a bidders' perspective the evidence varies with a value impact either negative, slightly positive or insignificantly different from zero following an announcement. Researchers such as Eckbo and Thorburn (2000) and Acquit, Bruner and Mullins (1982) both show a positive abnormal return for the bidding company of 0.1% and 0.2% respectively. These findings are supported by Goergen and Ronneborg (2004) claiming that the bidder receives a positively significant market return of 0.7%. In contrast, empirical studies such as Jensen and Ruback (1983), Moeller, Shilingemann and Stultz (2006) and Bieshaar, Knight and Wassenaer (2001), among others all state that the acquirer receives an abnormal return of zero or slightly negative on average. (Martynova & Renneboog, 2008)

However, it is important to notice that all studies mentioned above are based on acquisitions of publicly listed companies. In fact, most of the previous research within the field of mergers

and acquisition solely focuses on public bidders acquiring *public targets*. The analysis of acquisitions of non-public firms has for a long time been ignored even though the occurrence of such deals represents the majority of the transactions (Draper & Paudyan, 2006). For the U.S. market 60-75% of the acquisitions were *private target* firms (Capron & Shen, 2007), whereas, acquisitions of privately held firms represent 80% of the total number of takeovers in the U.K. (Draper & Paudyal, 2006).

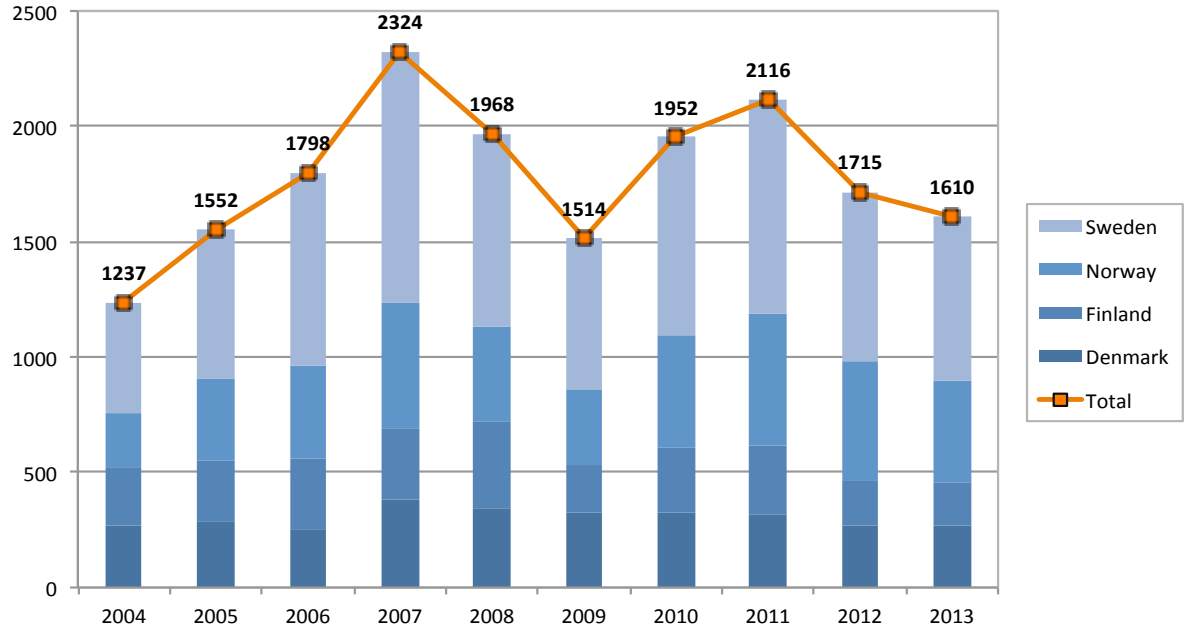
Draper and Paydyal (2006) further argue that previous conclusions derived from acquisitions of publicly traded targets may not be appropriate in explaining the wealth effects resulting from an acquisition of a private target, as the two are different in several ways, e.g. in terms of liquidity, information availability and average deal size (Capron & Shen, 2007). Empirical evidence provided by Chang (1998), Officier, Poulsen and Stegemoller (2008), Fuller, Netter and Stegemoller (2002) and Capron and Shen (2007) support this by showing significant differences in abnormal returns for bidders in private firm acquisitions compared to bidders for public targets. Kopelin, Atulya and Alan (2000) among others refer to these differences in market returns as *the private firm discount.* The causes for the discount are not yet fully determined although several academics have presented their views. Kopelin, Atulya and Alan (2000) suggest that illiquidity is the main reason for the discount whereas Capron and Shen (2007) claim that information availability is the most prominent variable explaining why acquirers receive a positive market return in private firm acquisitions. In general, the lack of information regarding private companies increases the risk for biases in the evaluation process for the acquiring firm. The ability to exploit and accurately forecast the target is limited and investors therefore demand a discount of the target's value.
Moreover, other variables are shown to influence the value of bidders in general. For acquirers of public or private targets, the announcement effect can depend on; the relative size of the target to the acquirer (Jarrell & Poulsen, 1989a; Misra & Gupta, 2007), whether an acquirer is making multiple acquisitions through a so called acquisition program or not (Fuller et al, 2002), or if the payment mode is cash or stock (Draper & Paudyal, 2006) among others.

Yet, most of the research within the field of mergers and acquisitions is concentrated to either the U.S. or the U.K. market (Goergen & Renneboog, 2004), two countries associated with common law, strong management culture and a dispersed ownership structure (La Porta et al, 2008). Differences in the legal framework as well as management culture and ownership structures between markets have an economic impact (La Porta et al, 2008); where in effect

the levels of agency conflicts and information asymmetries may vary among countries. It is thus reasonable to believe that dissimilarities in market settings could question the validity of previous empirical findings.

For this thesis the authors chose to examine the Scandinavian market as it consists of small and open economies with firms having a concentrated ownership structure (Oxelheim et al, 2011), features that together with a different legal system[1] could contribute to disparities in the market settings compared to the U.S. and the U.K. The Scandinavian market can also be considered as a rather stable and homogenous market making the measurement of the announcement effect less problematic. The total numbers of acquisitions over the past decade can be seen in Figure 1.1, where the M&A trend follow the development of the world in general (see Appendix 5).

Figure 1.1: *M&A activity in Scandinavia over the past decade*



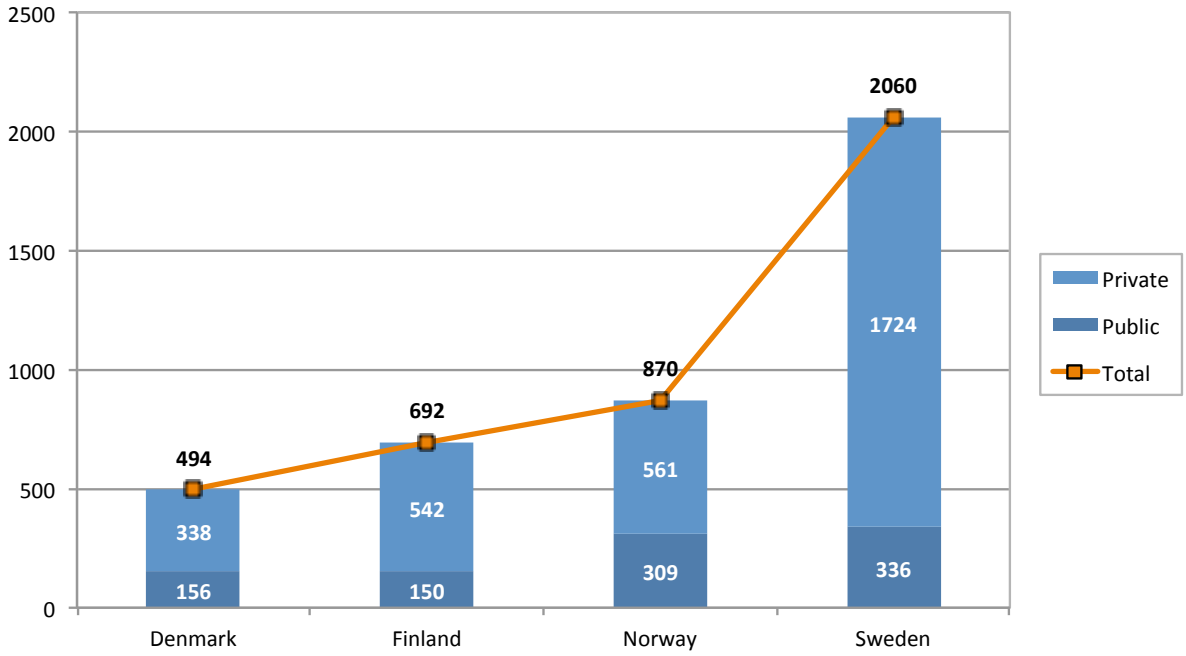
The data represent the number acquisitions made by Scandinavian publicly traded companies between 2004 and 2013. The total number of acquisitions made by public Scandinavian companies was 17 786 deals where Sweden accounted for 7 764 deals, Norway 4 316 deals, Denmark 3 017 deals and Finland 2 689 deals (see Appendix 2).

Source: created by the Authors, based on data from Thompson Reuters Eikon

[1] Scandinavian law (La Porta et al, 2008)

Also the distribution of deals seems rather homogenous for the countries over the time period. The acquisitions of private firms represent the majority of transactions across the period just as in the U.S. and the U.K. markets (see Figure 1.2).

Figure 1.2: *Acquisitions of Public and Private targets*



The data represents the total number of acquisitions reported in Thompson Reuters Eikon, for each Scandinavian country between 2004 and 2014, where publicly listed firms bid for either public or private targets (see Appendix 3).

Source: created by the Author, based on data from Thompson Reuters Eikon

Altogether most research on the announcement effect of mergers and acquisitions focus solely on publicly listed firms acquiring public targets where there are varying results in regards to value creation. Even so, acquisitions of private targets are more common in practice and empirical findings suggest a private firm discount where bidders receive positive returns on average when acquiring private targets. Despite extensive research, the causes for this private firm discount are not yet fully determined. Furthermore the main research body is conducted on the U.S. or the U.K. market which have different market settings than for example the Scandinavian market. This raises the question whether evidence of the private firm discount can be found on the Scandinavian market.

1.3 Research question(s)

- Is there a difference in the announcement effect for an acquiring company if a bid is made for a public target compared to a private target?
- Which of the determinants, previously found to explain abnormal returns, are relevant for acquirers of public and private targets respectively?

1.4 Purpose

With the intention to provide new evidence valid for the Scandinavian market the thesis aims to; (I) examine the announcement effect for acquiring companies, where the emphasis lies on the difference between acquiring Public targets compared to Private targets, and (II) investigate the relation between abnormal returns and variables found significant in previous research.

1.5 Disposition

Chapter 2 – Theoretical Framework

In this chapter the concept of mergers and acquisitions will briefly be introduced followed by relevant theories offering explanations to the occurrence of the announcement effect. The role of the management will primarily be discussed before presenting previous research within the field. The chapter ends with a discussion regarding market efficiency, impact of information and the private firm discount.

Chapter 3 – Methodology

The chapter is introduced with a thorough walk-through of the Event study methodology. This is followed by a section on the statistical test procedures before constructing the regression models. Lastly the validity and reliability of the thesis is addressed.

Chapter 4 – Results & Analysis

In this chapter the empirical findings will be presented, followed by analysis of the results in regards to previous presented research and theory.

Chapter 5 – Conclusions

In this final chapter the authors ties the purpose of the thesis to the results and answers the research questions followed by a further discussion of the most relevant findings. Finally proposals for future research are presented.

2 THEORETICAL FRAMEWORK

In this chapter the concept of mergers and acquisitions will briefly be introduced followed by relevant theories offering explanations to the occurrence of the announcement effect. The role of the management will primarily be discussed before presenting previous research within the field. The chapter ends with a discussion regarding market efficiency, impact of information and the private firm discount.

2.1 Mergers and Acquisitions (M&A)

The terminology Mergers and Acquisition (M&A) has become generally used when referring to all kinds of corporate takeovers. In particular, there are three ways of how a firm can acquire another firm; merger or consolidation, acquire a target company's stock or acquire a company's assets. In short, the differences lie in whether two companies merge into an entirely new company, or if a company purchases another company (friendly or hostile). The former usually takes place when two companies, of the same size, decide to become one instead of operating separately in which both companies' stocks are given up and new stocks are issued in its place. In an acquisition, in contrast, an acquirer purchases the stocks, or the assets, of a target company which cease to exist. The target becomes as a part of the acquirer, meaning no requirements of exchanging reserves to alliance as a new company. (Brealey et al, 2011 p. 571)

2.1.1 Managerial motives for mergers and acquisitions

For many companies, a fundamental reason to acquire another company is to expand the business. Companies seeking growth opportunities can achieve this through internal growth or by acquiring another company. Indeed, both strategies involve opportunities and risks. Whether it is organic growth or acquired growth careful planning and execution needs to be ensured to create future value. (Gaughan, 2011 p. 117)

Internal growth represents organic and natural growth of the core company. Organic growth requires time, as the process of expanding the business must be done in a prudential way where each process of the firm needs to be absorbed before expanding further. Companies growing organically face less internal challenges. Nevertheless, risks and uncertainties lie in the slow expansion process and an external competition. Corporations growing organically

may face an underinvestment problem[2] abandoning important investment opportunities. In the long run, this may have a negative effect on their competitive position relative industrial peers. On the contrary, pursuing M&A allow companies to expand their business within the industry, or into new markets and geographic regions. Using M&A as a way to enter a new market or to obtain a new resource may be less risky and, in the long term, a cheaper alternative (Gaughan, 2011 pp. 117).

The traditional model in corporate finance assumes that managers behave rationally to maximize shareholder value. The general assumption is that M&A activities solely are motivated by economic reasons, leading to an increased value. Nonetheless, the market reactions following M&A announcements suggest that the simplified assumptions of rational managers may not be true. When examining the causes for these market reactions one can look at the managers' motives for M&A activities where it has been argued that M&As to some extent are driven by agency conflicts or irrational managerial behaviour such as hubris and over-confidence. Generally the academic literature refers to three main reasons, in addition to growth, for managers to get involved in mergers and acquisitions; the synergy motive, the hubris motive and the agency motive. (Berkovitch & Narayanan, 1993)

2.1.2 The Synergy Hypothesis

In M&As, the term synergy interprets an ability for corporations to create more value as one entity rather than operating apart, e.g. company A merges with company B which creates value equal to (A+B)+S, where S is the synergy effect. The expected existence of synergies allows firms to follow through acquisitions while creating shareholder value in the process (Gaughan, 2011 p. 133; Berkovitch & Narayannan, 1993). In a world with rational managers and investors with homogenous expectations, the absence of synergies would most likely prevent any M&A activities. The reason for this is that the target company would trade at its true value and the bidder would ultimately pay the maximum of that true value. The target's shareholders on the other hand would not be willing to sell their shares if there were nothing to be gained, i.e. if there were no premium offered. Even if the target's shareholders would consent to a deal, there would be no value creation for neither of the companies' shareholders, given an offer matching the true value. (Koller et al, 2010 p.318) The existence of synergies could however, as a rational managerial motive, explain value creation following an announcement.

2 An agency problem where the management avoid low-risk investments in order to maximize their own wealth at the cost of the company's shareholders and debt holders (Culp, 2010).

There are several different ways to gain synergy effects which can be categorised into operational synergies and financial synergies, where the former are generated through revenue enhancement and cost reduction while financial synergies refer to a reduced WACC (Gaughan, 2011 p. 133).

2.1.2.1 Operating synergies

2.1.2.1.1 Revenue enhancement

A common motive for mergers and acquisitions is increased revenues for the combined entity. Revenue enhancement can be achieved through increased market power as fewer competitors allow an individual firm to achieve higher earnings. However it is argued that revenue synergies are harder to estimate as well as realize in practice. It may be easy to generate sales by simply adding another company to the balance sheet but nevertheless harder to improve the overall profitability of the firm. (Gaughan, 2011 p. 119; Morck et al, 1990).

2.1.2.1.2 Operating efficiency and Cost reduction

A fundamental argument for M&A is improved operating efficiency which leads to cost reduction. Cost reductions can be obtained through e.g. economies of scale and/or access to certain resources. A company obtains economies of scale when the average production cost decreases while the level of production increases. This allows a company to rationalise its operations and to spread its overhead costs[3]. For example, a larger corporation could yield a scale in production as the two operations are integrated (Pike & Neale, 2009 p. 559). Another advantage of M&A is that it allows a firm to acquire critical resources instead of internally develop and produce them. It is, in fact, rather common that larger corporations acquire smaller firms or start-ups. This is because many smaller firms hold products but lack capacity and resources to produce, or sell it. Larger firms, in contrast, find it too expensive to develop these specific products in terms of engineering and know-how. The two firms hence have complementary resources and will both benefit of M&A. (Brealey et al, 2011 p. 576; Ross et al, 2003 p. 825)

2.1.2.2 Financial synergies

Financial synergies refer to improvements in the WACC of the acquiring firm or the combined entity. Synergies can be reached through corporate diversification which is a common motive to engage in M&A as a way to reduce dependency on the exciting business

3 Overhead costs are costs not directly related to production of good sold, such as heat, electricity and rent (Brealey et al, 2001).

model and therefore the risk. The argument for risk reduction is based on the debt co-insurance hypothesis where economic gains are likely to be captured as the acquirer and target have less then perfectly positively correlated cash flow streams. Lower risk and volatility[4] may lead to a lower probability of default of the combined entity and thus a reduced WACC. (Gaughan, 2011 p. 144) In addition, as the cost of issuing securities is related to size, the total costs of issuing debt or equity are lower for larger corporations (Ross et al, 2003 p. 829).

However, it has been argued that shareholders do not benefit from corporate diversification. In a perfect capital market shareholders have already diversified away its unsystematic risk[5] through portfolio management and will therefore not exclusively benefit from corporate diversification (Pike & Neale 2009, p. 561; Amihud & Lev, 2001).

2.1.2.3 Strategic types of acquisitions

Motivating synergies is one thing, but realizing them in practice by incorporating M&A strategies is another. Mergers and acquisitions can be categorised into three strategic types: horizontal, vertical and conglomerate acquisitions. A horizontal acquisition is when a company acquires a competitor within the same industry in order to enhance its competitive position relative industrial peers. Feasible synergies may be economies of scale and improved market power. (Gaughan, 2007 p. 164) In a vertical acquisition a company acquires a target within the same industry but at a different stage in the supply chain. This can be done through a forward or a backward integration i.e. either an acquisition of a supplier, distributor, or a customer. Potential synergetic motives can be explained in terms of lower transaction costs for the acquiring firm, improved market power, and quality maintenance among others. Finally, an acquisition in which the acquirer and the target company are not related can be referred as a conglomerate acquisition, also known as a diversifying acquisition where financial synergies could be achieved (Gaughan, 2007 p. 155).

2.1.2.4 Estimating and Valuing Synergies

The fundamental principle in the field of corporate finance is creating shareholder value. Companies create value by investing in capital as a way to generate future cash flow at a rate of return that exceeds the company's cost of capital, simple as that. What drives the value is growth in relation to an improved rate of return, or put differently, to create value a company

[4] Systematic risk

5 Firm specific risk, a risk that specifically affects a firm or an asset. Also referred as, diversifiable risk or unique risk (Ross et al, 2002).

must either increase future free cash flows (FCFF) or lower the WACC.[6] (Koller et al, 2010 p. 17)

As stated above, the value creation for acquiring firms in M&A deals depend on the synergies, i.e. the improved cash-flow, and the premium offered to the target. Both the management and the investor's of an acquiring firm will assess the expected synergies in a deal. The management will base their bid on their estimation of the synergies while the investor's will revise the share price according to the difference between their estimated value of the synergies and the management's bid (Koller et al, 2010 pp. 445). The importance of a correct valuation can thus not be neglected as potential biases in the assessment may destroy value. The risk for over estimating the synergies and consequently paying an excessive amount for the target is arguably the worst outcome even though discrepancies between manager's and investor's calculations may cause temporary misalignments in the share price (Koller et al, 2010 pp. 445).

It is argued by Schweiger and Very (2003) that the acquirer's ability to estimate a correct value based on future forecast is critical in the future value creation of a deal and thus its ability to ensure that cash-flow is realized prior closing. One needs to have access to certain information in order to accurately estimate the value impact of the synergy effects as the more hypothetical assumptions included, the more unreliable the outcome become. Furthermore, circumstances which occur prior to closing the deal might change the presumptions substantially. (Schweiger & Very 2003)

Two of the most commonly used valuation methods, which could be applied when assessing the potential value creation in M&A deals, are the DCF model and the Multiples valuation method (Koller et al, 2010). The DCF approach uses accounting information to estimate future cash-flow while the multiples valuation is less complex as it requires rather simple calculations, without too much detailed information, but still determines a fairly good approximation of the value of the firm. It thus provides the investors with enough information whether the asset is worth buying or not. However, a disadvantage is that the multiples valuation does not take into consideration whether a company is currently over or under valued and could therefore fail to estimate an adequate value. (Koller et al, 2010) Both these methods works fairly well when valuing publicly listed firms where enough information is available to the market. For private firms however, which is neither required to publicly disclose its accounts nor have current market values of its share prices, both valuation

6 The value creation is the change in value due to improved performance (Koller et al, 2010).

methods become cumbersome to utilize. Furthermore, as there are different expectations of future performance, the models may present different estimations of value. In turn, valuation has become a challenge for individuals seeking the intrinsic value of a target company. Agarwal and Zeephongsekul (2013) state that behavioural factors have a substantial impact on the pricing of target companies. Due to biased beliefs and psychological factors disrupting, traditional financial valuation models may provide inaccurate estimations of the target company. (Agarwal & Zeephongsekul, 2013)

2.1.3 The Hubris Hypothesis

Hubris as a possible explanation for value destroying acquisitions and takeovers was proposed by Richard Roll in 1986. Roll's (1986) theory suggests that managers engage in acquisitions with an optimistic belief of their own ability to create future value. Henceforth overbidding for the target company, i.e. pay a premium exceeding the expected synergies, which affects their shareholders negatively. If an investment has no potential gains, hubris is the only explanation of why managers do not abandon a specific investment. (Roll, 1986)

The Hubris theory suggests an efficient financial market, where investors are rational whereas managers are irrational. Roll (1986) empirically provides evidence of stock market reactions following to a takeover driven by hubris. He poses that the stock price of the acquiring company will fall as shareholders oppose the deal. In contrast, the stock price of the target company will increase since price paid exceeds the true value of the target firm. All together, the net value will end up slightly negative for the combined entity. If this value would, for some reason, turn out positive it is because of an overestimation by an overconfident manger. (Gaughan, 2011 p. 157; Roll, 1986) However, it is important to acknowledge that the target company's value only increases if the takeover is successful (Roll, 1986).
Maletesta (1983) support this argument stating that, in acquisitions driven by agency related problems, the value of the target firm will increase and, in reverse, decrease for the acquiring firm. Roll (1986) further explains that the worst acquisitions are, most often, made by well performing mangers, as they tend to overstate their personal ability.

Berkovitch and Narayanan (1993) state that, when an acquisition is motived by hubris the synergies are zero. Taking this into consideration, a potential overpayment represents a transfer to the target company. Therefore, the higher gain for the target, the lower gain for the acquiring company. (Berkovitch & Narayanan, 1993)

The winner's curse hypothesis is another theory based on behavioural fallacies. It states that the acquirer, i.e. the winner of a bid, is the actor who overestimated the true value of the target the most (Varaiya, 1988). Or put somewhat differently, the most overly optimistic actor regarding the value of the target, its synergies, future performance etc. The degree of the winner's curse, i.e. the size of the winner's premium paid, is due to two factors: (1) how opinions regarding the value of the target differ among the bidders and (2) the competition, i.e. the number of potential bidders in the auction. Varaiya (1988)[7] show empirical evidence that in an average acquisition the winning bid overstates the capital markets estimation of the value by 67%, i.e. overpay substantially for the target company. This supports Roll's (1986) argument that bidding firms with hubris overpay for targets and a manger acting on hubris increases the likelihood that a company end up with a winners curse (Varaiya, 1988).

2.1.3.1 Behavioural Finance

The hubris theory focuses on the management's biased decision-making and is derived from behavioural theory. According to behavioural finance the investors on the market can also have their rational judgements affected by psychological factors. There are three predominant themes within the literature of behavioural finance: heuristic driven biases, frame dependence, and market inefficiencies (Shefrin, 1999).

2.1.3.1.1 Biases

A bias can be explained as a predisposition toward error. There are four different biases influencing individuals, namely; excessive optimism, overconfidence, confirmation and illusion of control. Excessive optimism is an error in the estimated probability of an outcome where the frequency of favourable (unfavourable) results are overestimated (underestimated). Overconfidence in ones ability or knowledge, i.e. when believing and/or viewing oneself as better than average, provides a higher likelihood of making mistakes. Confirmation bias is when too much importance is attached to information supporting, relative information opposing, the existing point of view. Finally, individuals tend to overestimate the extent to which they can control the outcome of events. (Shefrin, 2007)

2.1.3.1.2 Heuristics

When in a decision making process, individuals tend to make biased assessments based on four heuristics, i.e. rules of thumb. Representativeness is when judgments are based on

7 Examining 800 mergers and acquisitions, between 1974 and 1983 (Varaiya, 1988).

stereotypical categorizations. Failure to recognize important exogenous factors when drawing conclusions based on simple similarities may cause incorrect decisions. Another heuristic is the tendency of drawing conclusions based on information that is easily accessible rather than less noticeable and more abstract. The availability of information does not indicate its relevance to the matter in question. When evaluating future performance based on historical figures people tend to make insufficient adjustments in their calculations, causing an anchoring bias in their expectations. The fourth heuristic is the propensity of basing decisions on an irrational state of mind, intuition or instinct. (Shefrin, 2007)

2.1.3.1.3 Framing effects

The Prospect Theory emphasizes how rational individuals make risky decisions, often with a monetary motive, based on the expected outcome rather than the final wealth. In particular, outcomes are evaluated with respect to the reference point; whether it is a gain or a loss. This is further seen as a critical part of the decision making since individuals tend to treat risks related to perceived losses differently than risks related to perceived gains. Thus, people are more risk averse in decisions involving gains while risk seeking in decisions involving losses. Khaneman and Tversky (1970) further explain that value function is concave for gains and convex for losses (referred to as the reflection effect) (Khaneman & Tversky, 1970; Levy, 199). Levy (1992) explains that a loss aviation tendency predisposes individuals to overvaluing things they own. Hence, when acquiring an object the value of that object increases. Levy (1992) calls this the "over-valuation endowment effect", suggesting that selling prices should be higher than buying prices. (Levy, 1992)

2.1.4 The Agency theory

The third managerial motive for pursuing mergers and acquisitions is based on the principal agency theory. Academics claim that managers may aim at growth for personal reasons at the cost of the company's market value, rather than to act in favour of the shareholders.

The agency theory is well known in the academic literature explaining the relationship between managers and shareholders. Theoretically, the primary goal for a manager is to maximise the shareholder value. It is, however, suggested that M&A to some extent can be motivated by agency problems where managers aim to increase their own welfare. Two fundamental motives are used in explaining why managers tend to favour M&A: (1) as

growth increases, power and control increases as well (Jensen, 1986) and (2) it allows managers to diversify, reducing their own managerial risk (Amihud & Lev, 2001).

The academic literature uses diversification as a motive for mergers and acquisition as a way to reduce risk. However, as stressed earlier, such risk reduction is less beneficial for shareholders as they can achieve this effect though portfolio management. It is therefore argued that managers use diversification to reduce their own managerial risk (Amihud & Lev, 2001). By making "manager-specific investments" managers build a dependency of the firm to their skills (Berkovitch & Narayanan, 1993 p. 348) making it more costly for shareholders to lose them, thus lowering the probability of being replaced (Shleifer & Visny, 1988). Morck et al (1990) claims that an acquirer with managerial motives tends to overpay for the target company and hence substantially reduce the value for its shareholders. In particular, if an investment provides a manager with personal benefits, this individual will, most likely choose this investment even though it is overvalued. The NPV of this investment, compared to an investment without personal motives, will be substantially higher. It will however result in a primarily negative announcement return for the company while the target firm receives the premium (Morck et al, 1990). Consequently the more severe agency problem, the higher premium paid and the higher gain for the target company (Berkovitch & Narayanan, 1993). All together, the agency problem creates a conflict of interest as managers, theoretically, should act as agents to maximise shareholder value. Instead they use value-destroying acquisitions for their own welfare (Jensen, 1986).

Using acquisitions as a way to deploy capital is yet another potential reason for M&A activity, driven by agency conflicts. Firms with excess cash may find themselves as targets for hostile takeovers. One option for such a firm would be to distribute the surplus to its shareholders either as dividend payments or to repurchase its own shares. However managers may rather want to reinvest the capital for personal reasons and instead of paying shareholders, companies uses M&A as strategic way to redeploy surplus capital. The problem is that, as maturing firms may hold substantial amount of cash, but lacking investment opportunities, there may not be any positive NPV projects to invest in (Brealey et al, 2011 p. 588). Jensen (1986) argues that companies with high free cash flows tend to invest in negative NPV projects rather than to pay dividends which is in contrast with the standard corporate finance theory; that managers want to maximise shareholder value and pay its shareholders though dividends. (Jensen, 1986)

2.2 Previous research on the Announcement effect

The academic research within the field of M&A announcement effects are extensive with empirical evidence suggesting that targets shareholders earn a significant *average abnormal return* (AAR) following an announcement whereas from a bidders' perspective the evidence varies with abnormal return either negative, slightly positive or insignificantly different from zero (Andrare et al, 2001). How the market responds to an announcement is presumably dependent upon the markets expectations about the acquirer, the target and the deal characteristics. When analysing previous studies, where various explanations are presented, one can assume that the market seems to prefer certain characteristics more than others.

Using *event studies* to analyse shareholder wealth has been the dominant approach for decades. The event study methodology is based upon the assumption that new information, associated with an M&A announcement, are introduced to the market such that investor's expectations are updated and reflected in the stock price of the acquiring firm causing *abnormal returns* (AR). A further elaboration is introduced in section 3.2.

Jarrell and Poulsen's (1989a) empirical work suggests a positive abnormal return for the acquiring company's shareholders. With significant findings they claim that the relative size of a public target to the bidder is an important determinant in explaining the return to the bidding firm. Fuller, Netter and Stegemoller (2002) further analyse the relative size by looking at the differences in *cumulative abnormal return* (CAR) for large public firms acquiring either a public target or a private target. They found that, in deals of public targets, the larger public target relative the bidder, the more negative CAR for the acquirer. In contrast, in deals of private targets, the larger private target relative the bidder the more positive CAR for the acquirer. They further describe the negative CAR, in deals with public targets, via a stronger negotiation position for larger targets and greater difficulties in integration. In contrast, the positive market return in acquisitions of private firms could once again be explained in terms of a private firm discount, i.e. lower uncertainty in regards to a larger private target company. In addition, the market returns for the acquirer, in an acquisition of private targets, is greater if the mode of payment is stock rather than cash. (Fuller et al, 2002; Draper & Paudyal, 2006)

As the relative size increases the synergy effect and economic gains will increase as well, leading to a positive abnormal return. Draper and Paudyal (2006) argue that acquisitions of

smaller targets generate less synergies and, in consequence, the acquirer may not notice a reaction in their share price. In contrast, if the target firm is large the monetary value of the assumed synergies may noticeably influence the value of the acquirer. (Draper & Paudyal, 2006)

Moeller, Schlingemann and Stulz (2003) also examine whether the size of the acquirer has an effect on the announcement return of the acquiring firm's shareholders. They find a 2% higher market return for smaller acquirers[8] compared to larger acquirers, on average. Furthermore the average premium paid in acquisitions by large firms is 68% as against 62% for small firms. This suggests that the higher premium paid for a target company, the lesser value for the acquiring company's shareholders. Moeller et al (2004) further emphasise that larger companies tend to be more overconfident regarding their acquisition strategy resulting in overpayment and this, as previously pointed out, will have a negative effect on the announcement return for the acquirer. Another explanation is that larger companies have a higher equity capitalization and are hence more likely to be overvalued, and as argued by Culp (2010), overvalued companies tend to use stock as payment method. If an overvalued acquirer decides to buy a public target with stock the likelihood of negative abnormal returns for the acquirer's shareholder increases (Dong et al, 2002). In contrast, if an overvalued firm acquires a private target using stock this would, theoretically, influence the market return positively. However the acquirer's large size may still impact the deal negatively.

Goergen and Renneboog (2004) analyse the market reaction of large deals in terms of the size of the price offer and show empirical evidence of a significant positive abnormal return for the target company, however, the return for the acquiring company's shareholders cannot be generalized.

It is further argued by Fuller, Alexandridis and Travlos (2011) that larger acquisitions destroy more value for the acquiring company's shareholders compared to smaller, simply because of investor's uncertainty in regards to larger and more complex deals. Loderer and Martin (1990), on the other hand, claim that acquirers lose more in large deals because of overpayment due to managerial over-confidence. Gordon, Kahl and Rosen (2009) on the contrary suggest that a less competitive market for larger targets reduces the number of potential acquirers and thus mitigates the winner's curse problem. This would lead to a lower acquisition premium and hence positive return for larger deals.

[8] The result is excluding payment method and deal characteristics (Moeller, Schlingemann & Stulz, 2003).

Given the contradicting predictions regarding the relationship between size and premiums Fuller, Alexandridis and Travlos (2011) provide evidence[9] that acquirers pay a significantly lower premium in larger deals. However they find that large acquisitions are more likely to destroy value as well as negatively influence the operating performance, despite a lower premium offer. They suggest that the complexity in regards to integration prevent larger deals from capturing assumed synergies following the acquisition, leading to value destruction.

Capron and Shen (2007) argue that the level of acquisition experience may influence market returns. Bidders with less experience face a higher risk of adverse selection[10] when acquiring a private firm relative a public traded firm. It has been argued that acquirers with experience have an advantage in screening for potential targets and in evaluating them more properly. Such bidders are thus more likely to choose to acquire a private target whereas a bidder with less experience may prefer a publicly traded firm as the market price allows the acquirer to easier assess a price of the target. (Capron & Shen, 2007) This may explain why some acquirers choose public targets although the theory argues that these deals tend to fail on average.

Fuller, Netter and Stegemoller (2002) claim that pre-announcement signals may reduce the market surprise component of an M&A announcement. If a firm is known for being involved in M&A activity or an acquisition program, the stock price reaction following an M&A announcement will, according to their results, only represent the difference in market perceptions of that specific acquisition relative the perceptions of previous acquisitions because the impact of the acquisition is already incorporated in the stock price. (Fuller et al, 2002)

It is argued by Misra and Gupta (2007) that value-enhancing managers offer a premium if and only if they expect a deal to create value following an announcement. They found that managers pay a premium of 48% on average for a target and further suggest that, such a high premium could serve as a signal of quality leading to a higher shareholder return. (Misra & Gupta, 2007)

[9] By examining a sample of 3 691 U.S. public acquisitions, announced between 1990-2000 (Fuller, Alexandridis & Travlos, 2011).
[10] Arise when buyers and sellers has asymmetric information. Due to lack of information availability "bad" investments are more likely to be chosen. (Culp, 2010)

Bieshaar, Knight and van Wassenaer (2001) analyse the stock market, following an M&A announcement, of companies involved in corporate transactions. By using multivariate regression they examine certain variables, such as deal type, to explain the stock market returns. According to their results the market reacts more positively to acquisitions of stocks, i.e. a share of the total firm's assets and thus its business, in comparison to acquisitions of certain assets where the market showed no particular reaction. The difference in abnormal return can be explained in terms of a higher degree of information asymmetry in asset acquisitions where it is harder to separate cash-flows generated by certain assets, rather than accounting for the whole business. Thus a discount is applied for acquisitions of assets. Considering these results it is more likely that assumed synergies are captured in an acquisition of stocks rather than in an acquisition of certain assets. (Bieshaar et al, 2001)

Fuller, Netter and Stegemoller (2002), and Draper and Paudyal (2006) both examine the impact of shareholder wealth in acquisitions of private and public targets. They agree that shareholders earn positive abnormal returns, but conclude that economic gains are highly dependent upon the target status, whether it is private or public. The bidding firm in acquisitions of private targets outperform those of public targets which either break-even or lose. The positive abnormal returns in private target deals are explained in terms of a discount investor's demand for less liquid assets and information asymmetry, generally referred to as the private firm discount.

Doukas, Holmén and Travlos (2002) study short-term shareholder wealth effects of Swedish takeovers, and claims that diversifying acquisitions lead to negative stock market reactions for acquiring companies. Focused acquisitions, on the other hand, results in greater synergies and operating efficiencies.

It is argued by Rosen (2006) that the market return for the acquirer, at the announcement, can be explained in terms of new information released (whether synergies are likely to be captured or not), current market conditions as well as investor's expectations. He thus provides empirical evidence showing that in times with an overall well-performing stock market an acquirer's abnormal market return tends to be positive as well.

Schwert (1996) examine the relation between premiums paid in acquisitions of publicly traded firms and pre-announced stock price run-ups and mark-ups[11]. As stressed earlier, several academic studies have shown that acquirers pay a premium for public target firms. In addition, it is argued that the premium paid by the acquirer to the target can be divided into two parts, a pre-announcement stock price run-up and a post-announcement mark-up. The price run-up represents any price movements before the announcement day of the deal, i.e. the abnormal return obtained before the announcement day. Whereas, the mark-up represents the increase in the stock price at the announcement day caused by investors bidding up the price. (Schwert, 1996)

The stock price run up can be explained in terms of e.g. illegal insider trading, rumours and media speculation. Meulbrock (1992) show that 40-50% of the stock price run-ups observed one month before the announcement occurs on days when insiders are trading. The abnormal return on an insider trading day is on average 3% which indicates that illegal insiders contribute to price run-ups. (Meulbrock, 1992) In contrast, Jarrell and Poulsen (1989b) discuss speculation in media as a potential source of stock price run-ups. It is argued by Schwert (1996) that bidder's stock price run-ups are 0.1%, on average. The mark-ups, on the other hand are 0.1% on average.

[11] By studying 1 814 takeovers of publicly traded American targets, listed on the New York Stock Exchange (NYSE) and the American Stock Exchange (AMEX), between 1975 and 1991 (Schwert, 1996).

Table 2.1: *Research summary of Announcement effects*

Researcher	Sample Period	Country	Sample Size	Event Window	CAAR Bidder	CAAR Target	Results/comments
Jarrell and Poulsen (1989)	1963-1986	The U.S.	770	(-5 and +5) (-2 and +1) (-20 and +10)	(+0.92%) (+0.70) (+1.29%)	(+28.99%) in (-20 and +10)	Relative size of the target, bidding competition of the target, thus information availability at the time of the bid, will affect the acquirer's shareholder return.
Andrade, Mitchell and Stafford (2001)	1973-1998	The U.S.	4 000	(-1 and +1)	(-0.7%)	(+16%)	Targets shareholders gain in M&As.
Bieshaar, Knight and Van Wassenaer (2001)	1994-1998	Europe	231	---	Acquisition of stock: (+2.7%)	---	The stock market reacts more positively to acquisitions of stocks, i.e. a share of the total assets, in comparison to acquisitions of certain assets.
Fuller, Netter, and Stegemoller (2002)	1990-2000	The U.S.	2 516 Public targets: 456 Private targets: 2 060	(-2 and +2)	Public Targets: (-1.00%) Private Targets: (+2.08%)	---	Shareholder wealth for acquirers in bids of public and private targets. Relative size and mode of payment will affect the acquirer's shareholder return. Differences in market return can be explained in terms of illiquidity in private firms.
					1st bid: Public (-0.88%) Private (+3.22%) 5th bid: Public (-1.73%) Private (+0.72%)	---	Shareholder return of acquisitions in an acquisition program. CAR of the 1st and the 5th and the highest bid in an acquisition program respectively. Acquirer's return on the 5th bid will contain less information as the market learned more about the acquirer and the synergies.
Doukas, Holmén and Travlos (2002)	1980-1995	Sweden	101	(-5 and +5)	Focused: (+0.54 %)	Focused: (+0.22)	Diversifying acquisitions lead to negative market reactions for the bidder. Focused acquisitions lead to synergies and operation efficiencies. Target gain a significant abnormal return.
Moeller, Schlingemann and Stulz (2004)	1980-2001	The U.S.	12 023	(-1 and +1)	All: (+1.102%) Larger: (+0.076%) Smaller: (+2.318%)	---	Weighted abnormal announcement return is 1.1%. CAR depends on size of the acquirer. Smaller acquirers receive significant positive CAR at the announcement. Larger acquirers insignificant positive CAR at the announcement
Goergen and Renneboog (2004)	1993-2000	Europe	187	(-2 and +2)	(+0.7%)	(+9%)	Large acquisitions (over $100 USD). The status of a takeover bid and mode of payment has an impact on the shareholder return for the bidder and target. Furthermore, a high market-to-book ratio of the target leads to a higher bid premium but affects the bidding firm negatively.
Rosen (2006)	1982-2001	The U.S.	6 259	(-5 and +5)	(+0.49%)	---	Evidence of merger momentum, In times with an overall well-performing stock market an acquirer's abnormal market return tends to be positive as well.
Draper and Paudyal (2006)	1981-2001	The U.K.	8 597 Public targets: 1 098 Private targets: 7 499	(-1 and +1)	Public Targets: (-0.41%) Private Targets: (+2.19%)	---	Acquirers of private companies earn significant positive returns explained in terms of a private firm discount caused by illiquidity and information asymmetry.
Misra and Gupta (2007)	1981-2004	The U.S.	503	(-1 and +1)	---	---	Acquirers pay, on average, a 48% premium.
Capron and Shen (2007)	1988-1992	Multi-national	92 Public targets: 52 Private targets: 40	---	---	---	Shareholder wealth for acquirers in bids of public and private targets. Found that (1) acquirers choose target firm based in information based deal attributes and (2) that bidders acquiring private targets perform better in comparison to bidders acquiring public targets.

The table provides an overview of previous academic papers, which investigate the Announcement effect for public acquirers.
Source: created by the Authors

2.3 Efficient market theory

Fama (1970) claims that, in an efficient market the actual price of an individual security is an approximation of its intrinsic value. In an efficient market, new information is immediately reflected in actual share prices (Fama, 1979). Hence, an investor cannot make profit by trading on current available information (Jensen & Smith, 1984).

The efficient market hypothesis (EMH) suggests that prices of individual securities are behaving as a random walk. The term random walk is used to characterise a set of prices where all are represented randomly from previous prices, i.e. information is immediately

reflected in market prices and is independent of historical prices and future prices. (Malkiel. 2003) This means that investors cannot make above-average return on trading based on historical prices as an attempt to predict future prices (Fama, 1970).

Three market conditions for efficiency

Fama (1970) presents three market conditions for an efficient market. The first condition suggests no transaction costs in trading of securities. The second condition refers to a market where all information is available to all actors, at no costs. Lastly, all actors in the market agree that current information reflects the current price for each individual security. Altogether, an efficient market is where all currently traded prices reflect all available information (Fama, 1970). Such a market may not exist in the real world due to transactions costs and information asymmetry. Even so, that does not mean the market is inefficient. It is argued that these conditions are preferred, however not necessarily required. (Fama, 1970)

Fama (1970) further provides three classifications of efficiency. The first classification is weak form of market efficiency, where all historical prices are reflected in the current market price of an individual stock. No future activities or trends are reflected in the price. The use of technical analysis will therefore not add any value. (Fama, 1970)

The semi-strong form of market efficiency suggests that in addition to historic prices, all available public information is reflected in the stock price. The only actor that can actually beat the market is the insider whom has access to monopolistic information. (Fama, 1970)

The strong form of market efficiency implies that all information is reflected in the security price, including the insider information. Hence, all actors on the market have access to the same information. This implies that an efficient market does not allow investors to make above-average returns without taking risks. (Fama, 1970)

Malkiel (2003) presents a more current view the EMH claiming that stock prices are efficient but less predictable. The argument relies on the assumption that psychological and behavioural fundamentals are reflected in the market price. However, the market can be efficient even if investors are irrational and despite volatility in stock prices.

Grossman and Stinlitz (1980) claim that when a market is efficient there is no competiveness on the market, and therefore no beneficial investments. In such a market, paying to get additional information does not add any value, as the paying trader will get same information as the non-paying trader. Grossman and Stinlitz (1980) further explain that the only way trades can earn a positive return is if they can use their information taking a position which a uniformed trader would not. Supporters of the EMH agree that information should reflect current prices and that all investors have access to same information at no costs (Fama, 1987), if this argument holds no trader can earn extra return.

2.3.1 The theory's relevance to the thesis

If a public M&A announcement is made, which changes the markets perception of the firm's value, the stock price in a market with semi-strong or strong efficiency should immediately reflect the new value. According to the EMH, given at least semi-strong market efficiency, any stock price changes directly following an announcement should only contain the exogenous information regarding the event, because all other information is assumed to already be incorporated in the stock price. Furthermore, it is only the unpredicted part of the deal that should be reflected in the stock price hence any abnormal return could be explained through changes in the markets expectations.

All together, the implications of EMH serve as an important foundation for this thesis in regards to the interpretation of the results. If management overestimate the synergy effects or for some other reason pays an excessive premium for the target, the acquisition will destroy value for the acquiring firm. If there are discrepancies between the management's and the shareholder's expectations of future performance, temporary misalignments in the share price may occur. The first issue is the most severe one as the value destruction will cause long term effects on performance whereas the misalignments between management and investors' expectations will most likely be temporary.

2.4 Information Hypothesis

The signalling theory suggests that the market is not fully efficient (Ross et al, 2003). As stressed earlier, the efficient market hypothesis suggests that in a semi-strong efficient market the stock price do reflect all publically available information (historical and current). However, in M&A deals the specific value enhancing factors are, in fact, unknown to the market. The implication is that managers and other insiders have access to certain information concerning the deal e.g. growth opportunities, operational and financial improvements etc.,

giving them an informational advantage over the market (Klein et al, 2002). This asymmetric information will force the market to assess other types or classes of information, and use these as proxies, in order to gain an as accurate view as possible of the true information content. Thus the market evaluates the statements and actions of the management, interpreting these as signals of confidence regarding future performance. (Culp, 2010)

For example, if a company is undervalued, it can alter the capital structure by issuing debt. The announcement of increased leverage will send a positive signal to the market, since the market interprets the action as the management's confidence about the future. (Van Horne & Wachowicz, 2008) Another example is whether a firm choose to increase its dividend levels. This signals a positive outlook for expected cash-flow. (Culp, 2010) However, poor quality in information may lead the market to misprice the events of corporate decision making (Klein et al, 2002, p.318). This creates an incentive for managers to communicate information to the market, as the success of the firm, thus that of the manager, is dependent upon the market value of the firm (Culp, 2010).

A different approach to information asymmetry and its impact on a firm's value is presented by Cheng, Li and Tong (2008)[12]. They examine (1) how information asymmetry affects the premium paid to public target firms and (2) how information asymmetry affects the announcement returns to the acquirer. Their findings suggest a higher premium paid for public targets with higher opacity (Cheng et al, 2008). The result thus shows a positive relationship between information asymmetry and abnormal returns for the acquirer. Apparently, the market reacts positively on acquisitions containing lesser information (Cheng et al, 2008). This suggests that the market is more likely to overprice than under-price when the information quality and quantity is poor.

2.4.1 The theory's relevance to the thesis

The information hypothesis has two important implications for this thesis. First, through the announcement of M&A's the management reveals important information regarding their confidence of future performance. Given the credibility of the management and the quality of the information content the market can evaluate the signal. If the signal is interpreted as positive the market reaction should correspond accordingly. A negative signal should cause a reverse effect. However, the evidence of a positive relationship between information

12 Examining 1 612 publicly listed targets between 1985-2006 (Cheng et al, 2008).

asymmetry and positive abnormal returns indicates that less transparent targets would yield the acquiring firm a higher abnormal return.

The second implication is that the management can signal information to the market even before an announcement. This can either be done through statements e.g. explicit M&A strategies or acquisition programs, or through actions such as recent M&A activity. These pre-announcement signals should reduce the probability of a surprise effect in the market, reducing abnormal returns.

2.5 Differences between public and private targets

As previously discussed, several academic papers have studied acquisitions of public targets versus private targets. The main part of the literature suggests that the bidder, on average, receive zero or negative abnormal return when acquiring a public target, while a positive abnormal return when acquiring a private target firm. Why the market reacts differently has been explained in a number of academic studies (Koeplin, 2000; Chang, 1998; Moeller et al, 2004; Kooli et al, 2003; Cheng et al, 2008 among others), where a range of factors are offered as possible explanations for the occurrence of positive market returns when acquiring a private firm. Recent research argues for a *private firm discount* (Koeplin et al, 2000) driven by factors such as lack of liquidity, lower bidding competition, information asymmetry among others, characteristics associated with private firms in general. Kooli, Kortas and L´Her (2003) show that private target firms are acquired at a median discount of 17% using sales-ratio relative comparable publicly traded targets. Similarly, Koeplin, Sarin and Shapiro (2000) finds a discount of 20-30% using earnings multiple and Officier, Poulsen and Stegemoller (2008) show supporting evidence of 15-30% discount relative an acquisition multiple. It is further argued that the greater discount the more positive announcement return for the acquiring company, all else being equal. However, it is important to notice that the effect of the discount is driven by several factors. Despite previous research, the causes of the market reaction are not yet fully determined (Officier, 2008).

2.5.1 Illiquidity

Capron and Shen (2007) state that illiquidity is the most prominent factor influencing the discount of private firms stocks. Damodaran (2003) explains that in controversial pricing models, the required rate return of an asset is a function of its risk exposure to the market. Such models however does not to take into account whether an asset is liquid or illiquid and consequently the rate will be the same for two companies bearing the same market risk. In

attempt to resolve the issue, more recent models include a liquidity premium which allows the rate of return to vary between firms with different amount of liquidity. Damodaran (2003) further state that since liquidity is correlated with current market conditions, illiquid stocks have more market risk and a premium should therefore be included to reflect the higher risk. This is supported by Acharya and Pedersen (2005) who state that an illiquid stock has a higher annualized risk premium of 1.1%, compared to liquid stocks on average, and 80% of this premium is due to the co-variance between the liquidity of the stock and the liquidity of the market. (Damodaran, 2003) Liquidity can be defined as the ability of an asset to be converted into cash quickly at a low, and a relatively predicable cost (Brealey et al, 2001 p. 637). In a liquid stock market, public stocks are traded, with many buyers and sellers, at their intrinsic value (Koller et al, 2010 p. 252). In contrast, private stocks are not traded on open markets and are therefore referred to as illiquid. Such stocks are more difficult to buy and sell and the current value may not reflect the true value of stock. It is argued by Kooli, Kortas and L´Her (2003) that lack of liquidity is costly for investors as it reduces investor's free cash-flow and prevents them from efficiently allocate capital to other tradable assets (Kooli et al, 2003). Furthermore, Pratt et al (2000) explain that an ownership in a company is worth more for an individual investor if it is marketable, i.e. easily can be converted into cash, in contrast to, less marketable ownerships (Pratt et al 2000, p. 416).

Altogether this indicates that investors apply a discount to the overall value of a private firm. Taking this into consideration, public firms could create an implicit synergy based on liquidity when acquiring a private target. Put differently, the target firm's value for a public acquirer is larger than it is for the private firm's shareholders and thus there may be room for a larger value creation for the acquirer given that the premium is not increased by the same amount.

2.5.2 Information asymmetry

It has been argued that a large difference between public and private firms is the information availability, both in terms of quantity and quality (Koeplin et al, 2000). Publicly traded firms, as actors on a stock exchange, has regulatory disclosure requirements to the public and also releases information through analysts and media. In contrast, private firms as non-traded firms are less transparent and can to some extent control its information disclosure. As discussed in section 2.4, the market tends to be over confident when assessing poor information, leading to an upward bias of the announcement effect (Cheng et al, 2008). This can explain the higher abnormal return for private targets compared to public targets (Cheng et al, 2008).

2.5.3 Payment

Whether a transaction is paid with cash or stock plays an important role in explaining the acquiring firms' stock market return. As stressed earlier, the Signalling theory suggests that firms use its capital structure to signal future performance to the market due to information asymmetry. In line with the theory, if an acquirer uses stock as the payment when acquiring a public firm this indicates that the firm is overvalued. The market will therefore react negatively to the announcement. In contrast, if an acquirer uses cash to acquire a public target, the market may revaluate the target more positively, believing the acquirer to have more information than the market. (Culp, 2010)

Chang (1998) examine the relationship between the payment method and market returns of public companies acquiring private targets. He suggests that the bidder receives no abnormal return in cash offers while a positive significant abnormal return in stock-swap offers. This is because, as the acquirer pay with stock and the target is owned by one or a few individuals, the target's shareholders will form new block holders in the new entity resulting in increased control. (Chang, 1998; Cheng, 2008)

2.5.4 Lower bidder competition

The market for corporate control of private and public companies differ in terms of competition, which has an effect of the announcement return. It is argued that the market for private firms is less competitive due to lack of transparency and information availability regarding the performance of potential targets. This will decrease the number of bidders and therefore the bidding competition. Lower competition will initially increase the bargaining power for the acquiring company relative the target. Increased power for the acquirer will then decrease the premium paid to the target and thus bidder will receive a larger part of the synergies. This will, all together, result in a positive abnormal return for the acquirer following the announcement. (Capron & Shen, 2007) In contrast, sales of publicly traded target firms are more auctions-like, often associated with bidding competitions. Potential buyers make bids, over the market value, with an intention to obtain the right of the target company (Varayia, 1988). This puts the target company in a bad bargaining position relative the bidder. And, as stressed earlier, a higher premium paid will result in a negative announcement return. (Capron & Shen, 2007)

3 METHODOLOGY

The chapter is introduced with a thorough walk-through of the Event study methodology. This is followed by a section on the statistical test procedures before constructing the regression models. Lastly the validity and reliability of the thesis is addressed.

3.1 Research approach

Based on the purpose of this paper a deductive approach is used where existing theory guides the authors when formulating hypotheses, which then are tested empirically through quantitative data analysis.

3.2 Event Study

The event study method is the standard approach when measuring the effect of an event, such as an acquisition, and it aims to separate company specific events from market or industry specific events (Benninga, 2008).

Daily stock returns surrounding the event are compared to an estimated normal or expected return and the difference is the effect of the event, also referred to as the abnormal return. The statistical method assumes rational investors and an efficient market, why the effect of an event is expected to appear immediately in the stock price (MacKinlay, 1997). Given an efficient market it is thus possible to detect value creation or destruction from M&A activity. Ahern (2009) states that one of the most important features of the Event Study methodology is that the time specific prediction error over time is reduced to zero as the sample size is increased.

MacKinlay (1997) divides the event study methodology into the following seven steps:

3.2.1 Definition of event and timeframe

The event is in this paper defined as the announcement of a merger or acquisition and the announcement day, also called event day, is set to T_0. To capture possible insider trading or information leakages the event window is often set to start a few days before the event day (Benninga, 2008). Delayed effects, due to weaker market efficiency, can also be measured by extending the event window to a few days after the event day (Arnold, 2008). Extending the event window is however problematic for two reasons, where the first is an increased risk of capturing other company specific events which could bias the measurement of abnormal returns (Tuch & O'Sullivan, 2007). The other potential problem is that, as the event window is extended, the risk for clustering increases. That is; the returns used to calculate abnormal

returns may be correlated cross-sectionally, causing biased estimations of the standard errors, which can lead to incorrect inference (Bernard, 1987). When the event windows of several different observations overlap in time the problem is considerable, especially in studies where events occur at the same point in time (e.g. reactions to releases of accounting data or regulatory changes affecting several firms), but it can also be present in other types of event studies (Bernard, 1987). These problems are mitigated by the usage of a small event window while also controlling the sample of cross-sectional events for clustering around specific time periods. The event window is thus set to start two days before the event day (T_{-2}) and to finish three days after the event day (T_{+3}). There is no clustering of events in the sample.

3.2.2 Data set

3.2.2.1 Data Collection

The data is gathered from secondary data sources; the data is originally collected and/or measured by other institutions for other purposes than this paper. This increases the risk for measurement errors why only reliable sources has been used. Databases used are:

- Thomson Reuters Eikon, where cross-sectional M&A data as well as characteristic regarding the announcement have been collected for Scandinavian listed firms. (The sample selection process and delimitations are presented in section 3.2.2.2)
- Thomson Reuters DataStream Advanced, where time series data consisting of daily share prices, market cap for each cross-sectional unit as well as indices has been collected. Daily data observations are used because it increases the power of the statistical tests. (MacKinlay, 1997)

3.2.2.2 Data sample

Table 3.1: *Delimitations and loss of data*

Criteria for delimitation set in Eikon	Criteria	Number of observations		
		Public target	Private target	Total
All Announcements	*Reported in Eikon*			**905338**
Announcement Date	*1-jan-2004 to 1-jan-2014*			**44804**
Acquirer Nation	*Sweden, Norway, Finland and Denmark*			**17788**
Acquirer Public Status	*Public*			**6022**
Target Public Status	*Public or Private*	947	3167	**4114**
Percentage Acquired	*>50%*			**2148**
Deal Size	*≥$10M*			**501**
Acquirer- and Target industry	*All except Banks, Financials and Insurance*	99	356	**455**
Criteria for data quality set by the authors	**Criteria**	**Public target**	**Private target**	**Total**
Data availability	*Reported in Datastream*	80	97	**177**
Control for clustering	*Event Window does not overlap*	78	97	**175**
Control for extreme values	*Values within 5 - 95 percentile*	64	87	**157**

Source: created by the Authors

Table 3.1 illustrates the sampling process which is divided into two stages, delimitations and data quality, where the first selection of data is made through criteria set in Eikon. The criteria is set for practical reasons but also motivated by theory. The total population of M&A announcements reported by Eikon is 905 338. The sample is reduced to 44 804 observations by setting the time period between 1-jan-2004 to 1-jan-2014 which also allows for an inclusion of a complete economic cycle. M&A activity by firms listed on stock exchanges in Sweden, Norway, Finland and Denmark is included which totals to 17 788 announcements. In order to measure the impact on a firm's value only publicly listed acquirers are included which reduces the sample to 6 022. Acquisition announcements of both listed (public) and non-listed (private) targets are included which further limits the observations to 4 114. The deal must be for more than 50% of the targets share or assets and furthermore the deal size must be equal to, or more than, $10M. The size of the deal is important since small acquisitions (both in nominal amount and in relative measures) tend to have less impact on the acquiring firm (Jarrell & Poulsen, 1989a). The sample thus includes 501 observations. Bidders and targets from the industries financial, bank, insurance, credit institutions, alternative financial investments, diversified financials and brokerage were excluded from the sample since these firms belong to a different sector of the economy while also having different regulations and accounting principles, essentially making them harder to correctly value (Koller et al, 2010 p. 765). The total sample gathered from Eikon consists of 455 announcements where 99 are for public targets and 356 are for private targets.

The second stage of the sample selection is determined by the availability and quality of data. The first criterion is that only announced deals where all data is available in Datastream is included. Many companies were listed within a year to the announcement limiting the estimation of normal returns, which is further explained in section 3.2.3. As a consequence these observations are excluded from the sample. Additionally, when controlling for clustering, two observations were removed due to two announced acquisitions by the same company on the same day. Furthermore the data sample is trimmed for extreme values for every series of data variables that has problem with normality caused by outliers (this is explained in detail in section 3.3).

3.2.3 Model for estimation of normal returns

In order to measure the exogenous effect of an announcement on a firm's performance, an expected return must be calculated and compared to the actual return.

There are several different models to calculate the normal, or expected, returns. The models can be categorized as statistical and economic models, where the former are derived from statistical assumptions regarding the behaviour of asset returns while the latter, in addition to statistical assumptions, also includes economic restrictions based on economic arguments concerning investor behaviour (MacKinlay, 1997). Among the economic models the most common ones used for estimating normal returns are the Capital Asset Pricing Model (CAPM) and the Arbitrage Pricing Theory (APT). The economic models should theoretically have a greater potential of calculating more precise estimates of normal returns (MacKinlay, 1997). However, deviations from the models have been discovered (Fama & French, 1996) implying that the validity of the restrictions imposed by CAPM on the market model is questionable, since the results may be sensitive to the specific restrictions (MacKinlay, 1997). The statistical models are in contrast viewed as more flexible and includes the Constant mean return model, the Market model as well as Multi-factor models (MacKinlay, 1997). The underlying assumptions of the models are that the asset returns are jointly multivariate normal and independently and identically distributed through time. These criteria must be fulfilled in order for the models to be correctly specified. Corrections for this potential problem with autocorrelation and heteroskedasticity can be made by using generalized method-of-moments approach. (MacKinlay, 1997)

Among the statistical models the most common ones are the market model and the constant mean return-model. The market model is an ordinary least square (OLS) regression of the individual stock return in relation to a market index with the daily returns as an independent

variable and the stocks beta value as explanatory variable. Common criteria for choosing market indexes are that the index should either be a broad-based value-weighted index or a float-weighted index (Benninga, 2008).

An early argument against the market model is that it assumes a constant Beta value for every company over the given estimation window, which may not be a reasonable argument (Dimson, 1979). However, while being a simple model it stands strong against more sophisticated models when tested empirically (MacKinlay, 1997; Ahern, 2009). The multi-factor models adds additional explanatory variables to the market model regression and potentially increases the explanatory power (R^2), thus further reducing the variance of the abnormal returns. However empirical results (Ahern, 2009) indicates that the gains of using multi-factor models are generally limited because the marginal effect of introducing additional variables is small. Multi-factor models works best when the sample got common features, e.g. all firms are from the same industry. (MacKinlay, 1997) Since the sample used in this paper does not share the common features mentioned by MacKinlay (1997) the market model is assumed to provide good enough estimates why it is chosen as the model for estimation of normal returns. The calculations are performed in EViews with control for normality and autocorrelation, which is not a problem in the sample. Corrections are made for possible heteroskadicity by using the approach of White (1980). The equation is (MacKinlay, 1997):

$$ER_{it} = \alpha_i + \beta_i \times R_{Mt} + \varepsilon_{it}$$

Equation 1. The Market Model

Where:

ER_{it} = Expected return for stock i on day τ

α_i = Alfavalue (constant) for stock i

β_i = Systematic risk, betavalue for stock i[13]

R_{Mt} = The market return on day τ

$\varepsilon_{i\tau}$ = Zero mean disturbance term in the model on day τ

To apply the market model the returns of the stock and the market index needs to be calculated, for each cross-sectional unit and for each day of the estimation window.

[13] Beta is the stocks sensitivity to changes in the market portfolios return and specifies the slope in a linear regression (Benninga, 2008).

Daily stock returns are calculated according to the following formula:

$$R_{i\tau} = \frac{P_{i\tau} - P_{i\tau-1}}{P_{i\tau-1}}$$

Equation 2. Daily return for an individual stock

Where:

$R_{i\tau}$ = Return of stock i on day τ

$P_{i\tau}$ = Closing price of stock i on day τ

$P_{i\tau-1}$ = Closing price of stock i on day $\tau - 1$

Daily returns on the index are calculated with the formula below:

$$R_{Index_{it}} = \frac{P_{Index_{it}} - P_{Index_{it}-1}}{P_{Index_{it}-1}}$$

Equation 3. Daily return on the market index

Where:

$R_{Index_{it}}$ = Return of index i on day τ

$P_{Index_{it}}$ = Closing price for index i on day τ

$P_{Index_{it}-1}$ = Closing price for index i on day $\tau - 1$

The beta coefficient is calculated with the formula below:

$$\beta_i = \frac{Cov\left(R_{i\tau}, R_{Index_{it}}\right)}{{\sigma^2}_{Index_{it}}}$$

Equation 4. Beta value for an individual stock

Where:

$Cov\left(R_{i\tau}, R_{Index_{it}}\right)$ = Covvariance between the return on the stock i and the Index i on day τ

${\sigma^2}_{Index_{it}}$ = Variance for the Index i on day τ

The alfa value is calculated according to the formula below:

$$\alpha_i = R_{i\tau} - \beta_i * R_{Index_{it}}$$

Equation 5. Alfa value for an individual stock

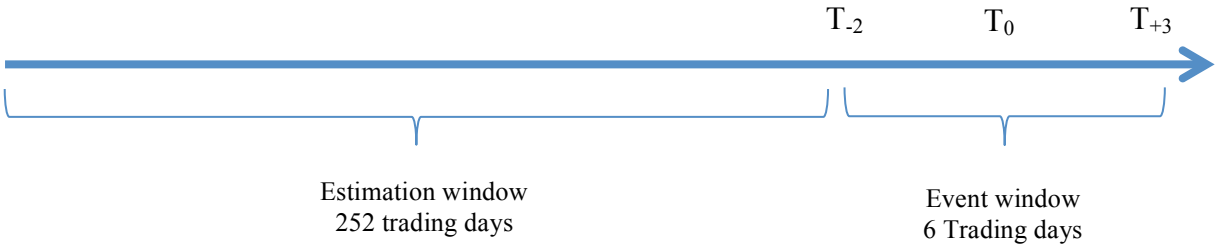
The indices chosen for the calculations above are based on the best fit for each individual stock. Since the stocks in the sample are listed on different exchanges and in different caps, the value-weighted price index consisting of all listed shares for each market is used. The stocks are matched with the index of the market they are or were listed on. The following indices are used:

- Index for Sweden: OMX Stockholm (OMXS) PI, Nasdaq OMX
- Index for Norway: FTSE W NORWAY, PI, FTSE
- Index for Finland: OMX Helsinki (OMXH) PI, Nasdaq OMX
- Index for Denmark: OMX Copenhagen (OMXC) PI, Nasdaq OMX

3.2.4 Determining the estimation window

The estimation window is used to calculate the normal or expected returns of a stock. There should not be any overlap of the estimation window and the event window since it could bias the estimation of normal returns. The length of the estimation window is normally 252 trading days, a year, and should not be less than 126 trading days for inference to be valid. The benefit of using a year is that seasonal variation is less likely to bias the results. (Benninga, 2008) The choice of estimation window and event window can be seen in figure 3.1.

Figure 3.1: *The range of the Event Study*



Source: created by the Authors

3.2.5 Calculating abnormal returns

When calculating the abnormal return the expected return is subtracted from the actual return. The abnormal return is the estimated effect of the event that cannot be explained by the markets general development (MacKinlay, 1997).

$$AR_{i\tau} = R_{i\tau} - ER_{i\tau}$$

Equation 6. Abnormal return for an individual stock

Where:

$AR_{i\tau}$ = The abnormal return of stock i on day τ

$R_{i\tau}$ = Actual return of stock i on day τ

$ER_{i\tau}$ = The expected return of stock i on day τ

3.2.6 Aggregating abnormal returns

The average abnormal return is calculated for every day where N is the number of cross-sectional units (MacKinlay, 1997).

$$AAR_{\tau} = \frac{1}{N}\sum_{\tau=1}^{N} AR_{i\tau}$$

Equation 7. Average abnormal return

The cumulative abnormal return, CAR, for every cross-sectional unit over the event window is then calculated (MacKinlay, 1997):

$$CAR_{i(\tau 1,\tau 2)} = \sum_{\tau=\tau 1}^{\tau 2} AR_{i\tau}$$

Equation 8. Cumulative abnormal return for the individual stock

To make general conclusions of the events effect on stocks performance on average, the cumulative average abnormal return, CAAR, is calculated:

$$CAAR_{(\tau 1,\tau 2)} = \frac{1}{N}\sum_{i=1}^{N} AR_{\tau}$$

Equation 9. Cumulative average abnormal return

3.2.7 Interpretations and Conclusions

When AAR, CAR and CAAR are calculated, hypotheses can be formulated and tested to statistically verify the significance of the results (MacKinlay, 1997).

3.3 Statistical tests

Statistical tests needs to be conducted in order to draw general conclusions about the population based on the results of the sample. There are several different methods of testing whether the abnormal returns (AR) surrounding the M&A announcement is statistically significant, where two broad categories are parametric and non-parametric tests. The parametric tests have stricter underlying assumptions but are also considered as stronger tests given that the assumptions are met (Westerlund, 2005). The most important assumption is that the sample follows a normal distribution, which is why a normality test is conducted for the cross- sectional average abnormal returns (AAR) for each day over the event window as well as for the cumulative average abnormal returns (CAAR), (see Appendix 9). Before the normality test is performed the series are controlled for extreme values, which if they occur are very likely to distort any normality (Brooks, 2010).

To check for extreme values AR_t and CAR for every cross-sectional unit is examined using boxplot diagrams (one for each day over the event window) where values outside 1.5 times the interquartile range above(below) the upper(lower) quartile is defined as outliers (Körner & Wahlgren, 2010). To deal with the non-normality caused by outliers one can either exclude observations (trimming) or transform the extreme data points (winsorising). However, every point of data represents a useful piece of information why the removal or transformation of data should be motivated by rational theoretical arguments. In the sample, the observed outliers are firms which had a very high abnormal return. When examining the observations closer it turns out that these firms all represent pharmaceutical and oil or ore prospecting

companies, which could be argued to represent another population of firms since their business model differ a lot from most regular companies. Thus removing the outliers from the sample should be the better way to go about the problem. The exclusion of outliers is done in EViews where observations below the fifth percentile and above the ninety-fifth percentile are removed for AR_t and CAR.

The chosen significance test is the Students t-test (Westerlund, 2005) with which the abnormal returns (AR) for the entire sample as well as for the divided samples of Public and Private targets is tested for each day over the event window. The CAR over the event window is also tested. The hypotheses which are tested are stated as follows:

(I) Testing the Total sample

H_0: On day *t* surrounding an M&A announcement there are no abnormal returns. ($AAR_t = 0$)
H_1: On day *t* surrounding an M&A announcement there are abnormal returns. ($AAR_t \neq 0$)

H_0: Over the event window (t-2 … t+3) surrounding an M&A announcement there is abnormal no return. ($CAAR_{(\mathrm{t-2 \dots t+3})} = 0$)
H_1: Over the event window (t-2 … t+3) surrounding an M&A announcement there is abnormal return. ($CAAR_{(\mathrm{t-2 \dots t+3})} \neq 0$)

(II) Testing the Acquirers of Public target sample

H_0: On day *t* surrounding an M&A announcement there are no abnormal returns for firms acquiring Public targets. ($AAR_{Acqurirng\ Public\ target,t} = 0$)
H_1: On day *t* surrounding an M&A announcement there are abnormal returns for firms acquiring Public targets. ($AAR_{Acquiring\ Public\ target,t} \neq 0$)

H_0: Over the event window (t-2 … t+3) surrounding an M&A announcement there is no abnormal return for firms acquiring Public targets.
($CAAR_{Acquiring\ Public\ target,(\mathrm{t-2 \dots t+3})} = 0$)
H_1: Over the event window (t-2 … t+3) surrounding an M&A announcement there is abnormal return for firms acquiring Public targets.
($CAAR_{Acquiring\ Public\ target,(\mathrm{t-2 \dots t+3})} \neq 0$)

(III) Testing the Acquirers of Private target sample

H_0: On day *t* surrounding an M&A announcement there are no abnormal returns for firms acquiring Private targets. ($AAR_{Acquiring\ Private\ target,t} = 0$)
H_1: On day *t* surrounding an M&A announcement there are abnormal returns for firms acquiring Private targets. ($AAR_{Acquiring\ Private\ target,t} \neq 0$)

H_0: Over the event window (t-2 … t+3) surrounding an M&A announcement there is no abnormal return for firms acquiring Private targets.

$(CAAR_{Acquiring\ Private\ target,(t-2\ \ldots\ t+3)} = 0)$
H_1: Over the event window (t-2 … t+3) surrounding an M&A announcement there is abnormal return for firms acquiring Private targets.
$(CAAR_{Acquiring\ Private\ target,(t-2\ \ldots\ t+3)} \neq 0)$

(IV) Testing the Acquirers of Public versus Private target sample

H_0: On day *t* surrounding an M&A announcement there is no difference in abnormal returns between firms acquiring Public targets compared to firms acquiring Private targets. $(AAR_{Acquiring\ Public\ target,t} = AAR_{Acquiring\ Private\ target,t})$
H_1: On day *t* surrounding an M&A announcement there is a difference in abnormal returns between firms acquiring Public targets compared to firms acquiring Private targets. $(AAR_{Acquiring\ Public\ target,t} \neq AAR_{Acquiring\ Private\ target,t})$

H_0: Over the event window (t-2 … t+3) surrounding an M&A announcement there is no difference in abnormal returns between firms acquiring Public targets compared to firms acquiring Private targets.
$(CAAR_{Acquiring\ Public\ target,(t-2\ \ldots\ t+3)} = CAAR_{Acquiring\ Private\ target,(t-2\ \ldots\ t+3)})$
H_1: Over the event window (t-2 … t+3) surrounding an M&A announcement there is a difference in abnormal returns between firms acquiring Public targets compared to firms acquiring Private targets.
$(CAAR_{Acquiring\ Public\ target,(t-2\ \ldots\ t+3)} \neq CAAR_{Acquiring\ Private\ target,(t-2\ \ldots\ t+3)})$

Table 3.2: *Summary of Hypotheses*

Total Sample	H_0 H_1	$AAR_t = 0$ $AAR_t \neq 0$	$CAAR_{(t-2\ \ldots\ t+3)} = 0$ $CAAR_{(t-2\ \ldots\ t+3)} \neq 0$
Acquiring Public Targets	H_0 H_1	$AAR_{Acqurirng\ Public\ target,t} = 0$ $AAR_{Acquiring\ Public\ target,t} \neq 0$	$CAAR_{Acquiring\ Public\ target,(t-2\ \ldots\ t+3)} = 0$ $CAAR_{Acquiring\ Public\ target,(t-2\ \ldots\ t+3)} \neq 0$
Acquiring Private Targets	H_0 H_1	$AAR_{Acquiring\ Private\ target,t} = 0$ $AAR_{Acquiring\ Private\ target,t} \neq 0$	$CAAR_{Acquiring\ Private\ target,(t-2\ \ldots\ t+3)} = 0$ $CAAR_{Acquiring\ Private\ target,(t-2\ \ldots\ t+3)} \neq 0$
Acquiring Public Targets Vs. Private Targets	H_0 H_1	$AAR_{Acquiring\ Public\ target,t}$ $= AAR_{Acquiring\ Private\ target,t}$ $AAR_{Acquiring\ Public\ target,t}$ $\neq AAR_{Acquiring\ Private\ target,t}$	$CAAR_{Acquiring\ Public\ target,(t-2\ \ldots\ t+3)}$ $= CAAR_{Acquiring\ Private\ target,(t-2\ \ldots\ t+3)}$ $CAAR_{Acquiring\ Public\ target,(t-2\ \ldots\ t+3)}$ $\neq CAAR_{Acquiring\ Private\ target,(t-2\ \ldots\ t+3)}$

Source: created by the Authors

3.3.1 Multiple linear regression

In order to answer the second research question multiple linear regression analysis will be conducted. The general regression model used to explain abnormal returns can be seen below (MacKinlay, 1997):

$$AR_i = \beta_0 + \beta_1 x_{1i} + \cdots + \beta_n x_{ni} + \varepsilon_i$$

Equation 10. Multiple linear regression model

Where:

$AR_i =$ The i^{th} abnormal return observation

$x_{ni}, m = 1, \dots, N,$ are N characteristics for the i^{th} observation

$\beta_n, n = 0, \dots, N,$ are regression coefficients

$\varepsilon_i =$ The zero mean disturbance term

3.3.1.1 Explanatory variables

The authors choose to include variables which have been found significant in previous research and that are motivated by theory. The inclusion of variables is however limited to the availability of data. This could create a problem if omitted variables are correlated with the explanatory variables. Then one of the OLS assumptions would be violated causing biased and inconsistent coefficient estimations (see section 3.3.1.2 for further elaboration). Even when omitted variables are not correlated with the explanatory variables, the constant term and error terms could be biased making inference wrong. On the other hand including irrelevant variables leads to inefficiency due to loss of degrees of freedom in the inference. (Brooks, 2008) It is basically a trade-off between the goodness of fit and the strength of the model.

The variables included in the models are presented as follows:

Relative size

It is argued that the relative size of the target is (1) positively correlated with acquirers CAAR and (2) have a substantial influence on acquirers AAR (Jarrell & Poulsen, 1989); Misra & Gupta, 2007; Fuller et al, 2002). Jarrell and Poulsen (1989) measures the variable as the market value of equity for the target firm divided by the market value of equity for the bidding company three month prior to the announcement. Fuller, Netter and Stegemoller (2002) estimates the relative size as the value of the target (undisclosed measurement method)

divided by the market value of the acquiring firm, calculated as the monthly share price times shares outstanding one month prior to the deal announcement.
For this thesis the relative size is measured in accordance with Misra and Gupta (2007):

$$\$Bid_{it_0} / \$\overline{MVA}_{it}$$

Equation 11. Relative Size of the target to acquirer

Where:

$\$Bid_{it_0}$ = The initial bid price (deal size) for the target firm at T_0 (the announcement day)

$\$\overline{MVA}_{it}$ = The acquiring firm's average market value between T_{-18} and T_{-3} (15 trading days, or three weeks).

The reason for using the initial bid price instead of the market value of the targets equity is simply because private targets by definition do not have a market value of equity. One major difference when using the bid price instead of market values prior to the bid is that the relative size measure will include the premium offered to the target's shareholders. In effect, a positive relation between abnormal returns and relative size would imply that the expected synergies exceed the premium offered.

Deal size

It is shown that the deal size has a significant impact on the abnormal returns surrounding an M&A announcement (Goergen & Renneboog, 2004; Fuller et al, 2011; Loderer & Martin, 1990; and Gordon et al, 2009).
The deal size is simply measured as the initial bid price for the target firm at T_0 (the announcement day):

$$\$Bid_{it_0}$$

Serial acquirer

Previous research (Fuller et al, 2002; Capron & Shen, 2007) found that the markets perception of previous M&A activity will serve as a reference for future acquisitions. Based on the assumption of EMH; that the stock price reaction following the announcement only reflects new information released to the market, firms with history of M&A activity will only experience abnormal returns when the actual announcement differs from the anticipated one. Thus firms that has previous experience with M&A is expected to have a smaller market

reaction on average, compared to firms with no previous M&A activity where the market should not anticipate the announcement and therefore be surprised to a larger extent.
There are several approaches in order to capture this effect. Fuller, Netter and Stegemoller (2002) classified a frequent acquirer as a firm that had acquired five or more targets over the past three years. Capron and Shen (2007) on the other hand create a variable by using the total number of transactions five years prior to the bid.
After investigating the sample specifically collected for the aim of the thesis, the authors can confirm that firms do make multiple acquisitions (see Appendix 10) and the Serial Acquirer variable is measured as a proxy for acquiring experience.

For this thesis a Serial acquirer is defined as a company who over a three year period, prior to the bid, has acquired three or more targets. The variable is constructed as a dummy variable with value 1 if the bidder is a serial acquirer and 0 if not.

Important to notice is that the variable only takes large acquisitions into account when in fact some firms may have a lot of experience based on small acquisitions, which here is ignored. Furthermore, since the variable is based on a quantitative measurement with a rough classification. Chances are that explicitly expressed acquisition programmes or qualitative elements of implicit information found in press releases or annual reports could serve as more useful in determining acquirer experience. Altogether the simplified approximation increases the risk for measurement error, where the proxy fails to capture what is intended.

Implied Premium
The Implied Premium is measured according to Misra and Gupta (2007) with an addition of correction for the percentage bid since this thesis includes bids in a range of 50% to 100% of target shares or assets.

$$\$Bid_{it_0} / (\%Bid_{it_0} \times \$\overline{MVT}_{it})$$

Equation 12. Implied Premium

Where:

$\$Bid_{it_0}$ = The initial bid price (deal size) for the target company *i* on the announcement day.

$\%Bid_{it_0}$= The initial bid percentage for the shares or assets of target company *i* on the announcement day.

$\$\overline{MVT}_i$ = The target firm's average market value between T_{-18} and T_{-3} (15 trading days, or three weeks).

Form

Previous research found that differences in abnormal returns could be explained by the form of the transaction, where acquisitions of stocks gave more positive returns compared to acquisitions of certain assets. (Bieshaar et al, 2001)

The Form variable is constructed as a dummy with value 1 for acquisition of shares and 0 for acquisition of assets.

Target Public Status (TPS)

The findings of a private firm discount (Fuller et al, 2002; Capron & Shen, 2007) motivate the authors to further analyse if the effect on abnormal returns can be described by the classification of the target public status.

The TPS variable is constructed as a dummy with values of 1 for publicly listed targets and 0 for privately held targets.

When dividing private and public targets into different groups it can serve as a proxy for illiquidity and information asymmetry as these aspects could be assumed to be captured in the variable. The other theoretical explanatory factors such as payment and bidder-competition are however not captured and these effects must be measured and tested by other methods. This sample of Scandinavian mergers and acquisitions are to the vast majority consisting of cash payments. The observations of stock payments are too few to draw statistical inference from, which is why this component is assumed to not influence any effect of the private firm discount. A possible explanation for the absence of stock bids is that this paper focuses on large deals, which are found to be paid in cash more often than with stocks (Hansen, 1987).
The bidder-competition is a variable that has not been measured in this study, due to limitations in data availability, which is why it cannot be argued whether it has an impact or not.

3.3.1.2 The model specification & assumptions

The announcement effect is assumed to be captured over the event window, but the largest influence is expected on the announcement day which is why both AR(T) and CAR will be tested as the dependent variable. In order to examine whether the variables have different impacts on abnormal returns associated with the target public status, the models will be run

for the total sample, the public target sample and the private target sample respectively. To specify the models correctly numerous assumptions must be met, i.e. the data must fulfil certain criteria and the right model must be chosen for the results to be stable and unbiased.

First correlation matrixes are constructed with the dependent and independent variables to ensure that the explanatory variables are not highly correlated with each other, which would indicate a multicollinearity problem. This problem would make the fit of the model, R^2, artificially high while the individual parameters would be insignificant due to large standard errors. The model would also be more sensitive to the specification, i.e. inclusion and exclusion of explanatory variables. The overall precision of the model would therefore be low (Brooks, 2008). As can be seen in Appendix 7, the overall correlation between the independent variables is low for the different models why all variables can be included so far.

The Deal Size and Relative Size variables are logged to even out the skewed distribution.

The multiple linear regression models are specified as follows:

$$AR_i = \beta_0 + \beta_1 Form(D)_{1i} + \beta_2 lnDealSize_{2i} + \beta_3 lnRelativeSize_{3i} + \beta_4 SerialAcquirer(D)_{4i} + \beta_5 TPS(D)_{5i} + \varepsilon_i$$

Equation 13. OLS model (I), AR(T), total sample

$$CAR_i = \beta_0 + \beta_1 Form(D)_{1i} + \beta_2 lnDealSize_{2i} + \beta_3 lnRelativeSize_{3i} + \beta_4 SerialAcquirer(D)_{4i} + \beta_5 TPS(D)_{5i} + \varepsilon_i$$

Equation 14. OLS model (II), CAR, total sample

$$AR_i = \beta_0 + \beta_1 ImpliedPremium_{1i} + \beta_2 lnDealSize_{2i} + \beta_3 lnRelativeSize_{3i} + \beta_4 Form(D)_{4i} + \varepsilon_i$$

Equation 15. OLS model (III), AR(T) (1), Public target sample

$$AR_i = \beta_0 + \beta_1 lnDealSize_{1i} + \beta_2 lnRelativeSize_{2i} + \beta_3 ImpliedPremium_{3i} + \varepsilon_i$$

Equation 16. OLS model (IV), AR(T) (2), Public target sample

$$CAR_i = \beta_0 + \beta_1 ImpliedPremium_{1i} + \beta_2 lnDealSize_{2i} + \beta_3 lnRelativeSize_{3i} + \beta_4 Form(D)_{4i} + \varepsilon_i$$

Equation 17. OLS model (V), CAR (1), Public target sample

$$CAR_i = \beta_0 + \beta_1 lnDealSize_{1i} + \beta_2 lnRelativeSize_{2i} + \beta_3 ImpliedPremium_{3i} + \varepsilon_i$$

Equation 18. OLS model (VI), CAR (2), Public target sample

$$AR_i = \beta_0 + \beta_1 Form(D)_{1i} + \beta_2 lnDealSize_{2i} + \beta_3 lnRelativeSize_{3i} + \beta_4 SerialAcquirer(D)_{4i} + \varepsilon_i$$

Equation 19. OLS model (VII), AR(T), Private target sample

$$CAR_i = \beta_0 + \beta_1 Form(D)_{1i} + \beta_2 lnDealSize_{2i} + \beta_3 lnRelativeSize_{3i} + \beta_4 SerialAcquirer(D)_{4i} + \varepsilon_i$$

Equation 20. OLS model (VIII), CAR, Private target sample

As mentioned, the underlying assumptions for the OLS must be fulfilled in order to have an appropriate model with stable and unbiased parameters.

OLS assumptions (Brooks, 2008):

(1) $E(u_t) = 0$

(2) $var(u_t) = \sigma^2 < \infty$

(3) $cov(u_i, u_j) = 0$

(4) $cov(u_t, x_t) = 0$

(5) $u_t \sim N(0, \sigma^2)$

The first (1) assumption is that the expected value of the error terms is zero, which will be fulfilled when a constant term is included in the model.

The second (2) assumption is that the error terms are homoscedastic, that is; the variance of the error terms is constant over the entire sample. If the assumption does not hold and the errors are in fact heteroscedastic, the inference could be misleading (Brooks, 2008). Using Whites' approach (White, 1980) potential heteroskedasticity is corrected for.

The third (3) assumption is that the errors are uncorrelated with each other. Since the data is controlled for clustering, which is the most probable cause of correlated errors in cross-sectional data (Bernard, 1987), the assumption is that there is no serial correlation.

Assumption four (4) requires the regressors to not be correlated with the error terms, i.e. ε_i are assumed to be uncorrelated with the x's. If this assumption is violated an endogeneity problem arises and the OLS estimators will be inconsistent. When interpreting the results of the regression models the issue of selection bias must be addressed. Technically a selection bias is introduced when there exists a relation between unobserved firm characteristics and anticipation of an event (MacKinlay, 1997). This problem may however be less serious given weak correlation between explanatory variables and the dependent variable, where inference on the biased estimators could be interpreted as lower bunds of the true estimator values (MacKinlay, 1997). For this thesis, the independent variables do have a weak correlation with the dependent variable which could mitigate the selection bias. However other types of endogeneity, such as omitted variable bias, may be present.

The fifth (5) assumption is that the error terms follow a normal distribution, which is an important underlying assumption for the hypothesis tests of the model parameters (Brooks, 2008). When examining the normality assumption with a Jarque-Berra test performed in EViews, all models pass the test for normality except for model I (see Appendix 8). However the Jarqye-Berra test is quite strong and the models can be assumed to be approximately normally distributed according to the central limit theorem (Westerlund, 2005). MacKinlay

(1997) states that the convergence to the asymptotic distribution happens for quite small samples in event studies.

3.4 Reliability & Validity

The term validity refers to the absence of systematic errors, and can be categorized as internal and external validity (Bryman & Bell, 2005). Internal validity is achieved if the method measures the effect it is intended to measure. When using an event study the internal validity is always problematic since: (1) the assumption of an exogenous event would be violated if any other effect is captured in the event window. The use of a short event window mitigates the risk for unwanted external influence, and as the sample size increases the smaller the impact of sporadic undesired events. (2) the measurement of normal returns will arguably provide less than perfect estimations. The market model will however, as previously discussed, stand strong against more sophisticated approaches. (MacKinlay, 1997)

Overall the loss of data is problematic as it could cause biases in the sample (Westerlund, 2005). Specifically the study fails to include acquisitions made by firms which recently have been listed. The occurrence of such acquisitions seems to be frequently represented in the population and the authors are aware of that the failure to measure those deals may distort the results. However the exclusion of certain data is necessary in order to conduct the research.

The variables used for determining the influence of certain deal characteristics on abnormal returns will also challenge the internal validity of the study. When estimating the relative size, the approach uses the bid price at the announcement day as a proxy for the target's market value. A potential problem arises since the bid price also includes the premium. As an increase in premium is found to have a negative impact whereas the relative size on the contrary has a positive relation with abnormal returns, the proxy may underestimate the real relation of the relative size. The reason for using bid prices as proxies for target value is, as stated above, because the actual market price is not present for privately held companies.

Also the estimation of the variable serial acquirer is problematic, as stated before, since the simplified approximation increases the risk for measurement error, where the proxy fails to capture what is intended. However, a similar approach for variable estimation has been used in previous research.

The external validity for this thesis concern the qualification and eligibility of the method used, i.e. if the chosen models represent an appropriate method regarding the ability to answer the research questions (Bryman & Bell, 2005). The event study is the most commonly used method when addressing the announcement effect and the authors have followed the

suggested steps of MacKinlay (1997). The statistical tests are done in accordance to Westerlund (2005) and Körner Wahlgren (2006) where a large emphasis is put on the model assumptions. The regression models used is based on the suggested steps of Brooks (2008), however the models have not been controlled for endogeneity which is somewhat of a concern.

In terms of reliability, which is defined as the absence of random and systematic measurement errors (Bryman & Bell, 2005), the sampling process as well as the calculations is conducted using programmes, such as Datastream, Eikon, MS excel and EViews. Being a requirement for validity the reliability is further established by exercising standardized approaches for data preparation through usage of templates in accordance with Benninga (2008). The authors have also performed regular spot-checks where the data has been cross checked for errors, why the reliability is assumed to be strong, although the absence of random measurement errors can never be guaranteed.

Literary sources have mainly been collected from LUBsearch, the Lund University Library search engine. All theoretical and empirical sources are either published in reputable academic journals or published course literature. The articles have thus been reviewed before publishing which ensure their credibility. When referring to previous academic work the authors have tried to maintain an objective view, with reservation for possible misinterpretations.

4 RESULTS AND ANALYSIS

In this chapter the empirical findings will be presented, followed by analysis of the results in regards to previous presented research and theory.

4.1 Announcement effects

Table 4.1: *Output from T-tests*

		Total sample	Public targets	Private targets	Public versus Private
	H_0	μ=0	μ=0	μ=0	μ public - μ private=0
	Observations	157	70	87	70; 87
AR (T-2)	Mean	0,014%	0,112%	0,199%	0,112%; 0,199%
	Variance	0,012%	0,013%	0,018%	0,012%; 0,013%
	t-stat	0,156	0,822	1,363	-0,436
	P	0,876	0,414	0,176	0,663
AR (T-1)	Mean	0,158%	-0,058%	0,064%	-0,058%; 0,064%
	Variance	0,016%	0,009%	0,015%	0,009%; 0,015%
	t-stat	1,573	-0,521	0,481	-0,703
	P	0,118	0,604	0,632	0,483
AR (T)	Mean	0,946%	0,490%	1,317%	0,490%; 1,317%
	Variance	0,071%	0,065%	0,075%	0,065%; 0,075%
	t-stat	4,44	1,603	4,473	-1,948
	P	0,000 ***	0,113	0,000 ***	0,053
AR (T+1)	Mean	0,356%	0,346%	0,364%	0,346%; 0,364%
	Variance	0,029%	0,031%	0,028%	0,031%, 0,028%
	t-stat	2,622	1,643	2,045	-0,063
	P	0,010 **	0,105	0,044 *	0,950
AR (T+2)	Mean	-0,010%	-0,018%	-0,015%	-0,018%; -0,015%
	Variance	0,018%	0,018%	0,018%	0,018%; 0,018%
	t-stat	-0,095	-0,114	-0,104	-0,014
	P	0,924	0,909	0,917	0,989
AR (T+3)	Mean	0,037%	-0,238%	0,267%	-0,238%; 0,267%
	Variance	0,020%	0,022%	0,020%	0,022%; 0,020%
	t-stat	0,327	-1,351	1,751	-2,168
	P	0,744	0,181	0,084	0,032 *
CAR	Mean	1,828%	0,931%	2,678%	0,931%; 2,678%
	Variance	0,211%	0,183%	0,252%	0,183%; 0,252%
	t-stat	4,990	1,820	4,973	-2,352
	P	0,000 ***	0,073	0,000 ***	0,020 *

significant at 10 % level

* *significant at 5 % level*

** *significant at 1 % level*

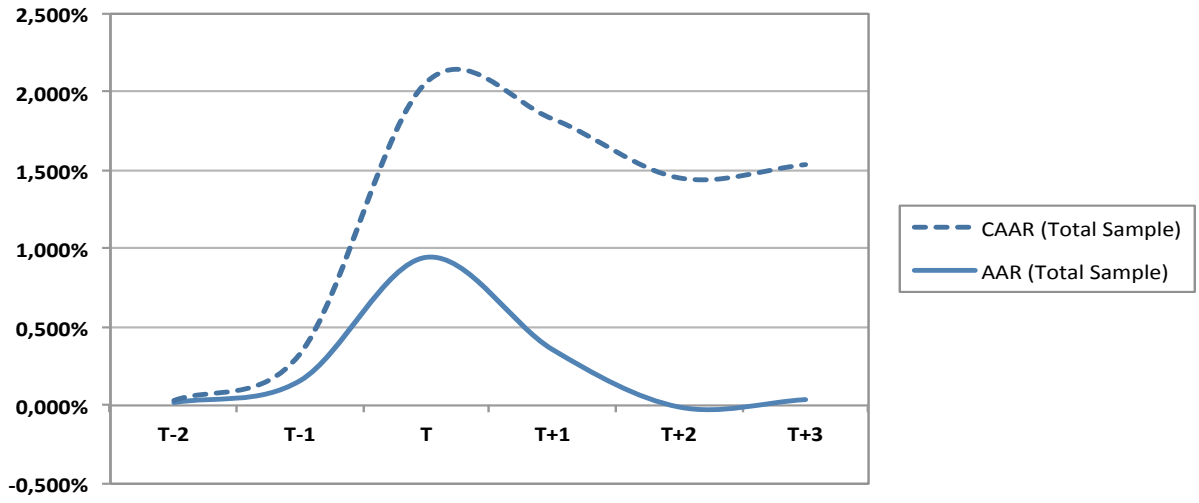
*** *significant at 0,1 % level*

Source: created by the Authors

As can be seen in Table 4.1, the mean values (AAR) for the total sample are positive for all days across the event window except for (T+2), where they are slightly negative but not significantly different from zero. The total sample has an average abnormal return (AAR) significantly different from zero on the event day (T) and the following day (T+1) as well as significant cumulative average abnormal return (CAAR) over the entire event window. The

average abnormal return on the event day (AAR (T)) and on the following day (AAR (T+1)) is close to 1 % and 0.35 % respectively, while the other days have much lower abnormal returns, close to zero on average. The variance is also higher on the announcement day (T) and the following day (T+1) indicating a larger spread of returns in the sample. Figure 4.1 illustrates the AAR and CAAR over the event window for the total sample. The market reaction is limited to the event day and the following day which corresponds to the implications of strong or semi-strong market efficiency. The effect on the following day (T+1) could be due to the problem of estimating the exact time of the announcement. If the announcement is reported on day (T) but the news reaches the market after closing, the actual effect would be seen in (T+1). The implication of market efficiency is that the abnormal returns reflect the specific event as all other information already is assumed to be incorporated in the stock price. Thus only new information that changes the pre-existing market expectations will cause abnormal returns following an announcement. The existence of abnormal returns following the announcements in the sample suggests that the market on average is surprised when an M&A offer is publicly announced, which is supported by both EMH and the information hypothesis.

Figure 4.1: *Abnormal returns – the Total Sample*



The average abnormal return (AAR) and cumulative abnormal return (CAAR) for each day over the event window for the total sample.

Source: created by the Authors

The average positive announcement return for acquirers in this sample is a conflicting result to previous empirical findings such as (Jensen & Ruback 1983; Moeller et al 2006). There are

three possible aspects explaining these results. First, as the study is applied on the Scandinavian market, differences in the population examined may affect the market reactions. Another explanatory factor could be the focus on large deals as the announcement effect may have a positive relation to size. A third reason could be that most of previous empirical studies focus on a sample of public targets whereas this sample includes acquisitions of private targets as well.

When examining the sample of Acquirers of Public targets the results does not have significant AAR over the event window, with mean values both slightly negative and positive. However, the cumulative average abnormal return (CAAR) is significantly different from zero over the entire event window, but then only with a significance level of 10% (weak significance). The result indicates that the market is at least semi-strong efficient due to the increased AAR on the announcement day (T) and the following day (T+1) which are major components of CAAR as can be seen in Figure 4.2. The average abnormal return on the event day is 0.49 % and with a variance of 0.065 % the p-value is just above the 10% significance level of the sample. The failure to significantly distinguish the average abnormal returns (AAR) from zero is in accordance with previous empirical findings, where the main part shows zero or slightly negative AAR. The findings can be explained by the information hypothesis where publicly traded companies, which have information disclosure requirements, are assumed to have less information asymmetry between management and investors. There are two important aspects explaining the absence of abnormal returns surrounding the announcement of M&A when acquiring publicly traded firms. First, the announcement per se signals the management's beliefs regarding future performance. Whether the investors interpret the signal as positive or negative will influence the markets valuation of the deal. In this case the announcement of an acquisition of a publicly traded firm seems to send neither a positive nor a negative signal to the market. Secondly, at the announcement certain new information regarding the specific event will be released to the public. In addition, for publicly traded firms there is readily available information which investors can include in their process of assessing the deal proposal. This information content seems to be enough to align future expectations of the management with the ones of the market, resulting in no abnormal return on average.

The sample of private targets have average abnormal returns significantly different from zero on the event day (T), on the following day (T+1), on the third following day (T+3) and CAAR

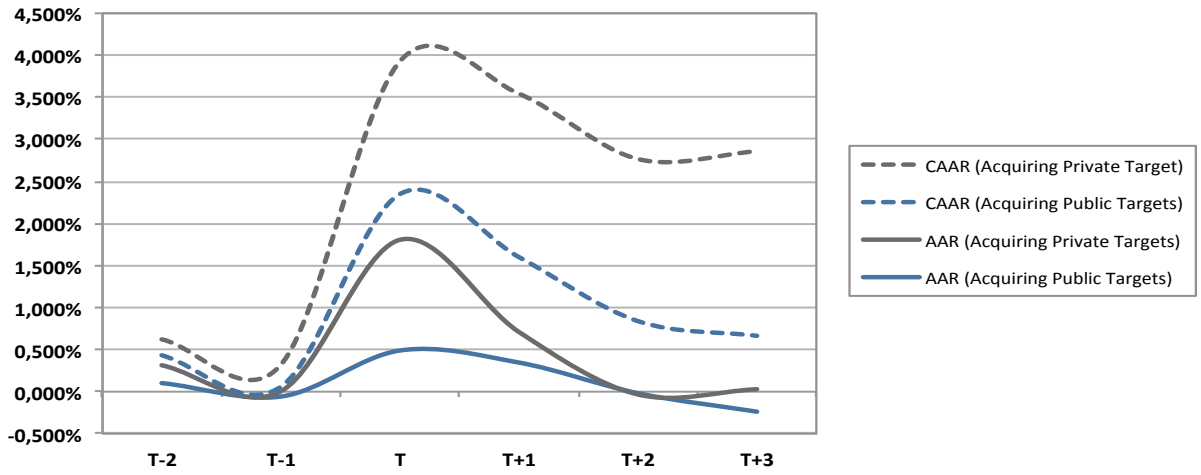
significantly different from zero over the entire event window. The third following day (T+3) is however only significant at the 10% level. The average abnormal return on the event day (T) is 1.32 % with a variance of 0.075 %. Yet again there is evidence of market efficiency, at least semi-strong efficiency, because abnormal returns are seen immediately following an announcement, as illustrated in Figure 4.2. As stressed earlier, this implies that the event is captured in the abnormal returns and reflects the impact of new information. The abnormal return seen on the third day (T+3) following an announcement could either be explained as a delayed effect which would imply a less efficient market or as a measurement error, i.e. an error in the estimation of normal returns. Alternatively the results could be due to pure chance since the significance level is quite high.

The result of positive abnormal returns over the event window for acquirers of private targets is supported by previous research (Fuller et al 2002; Draper & Paudyal 2006; Capron & Shen 2007). The positive market reaction to the announcement of private firms can be explained in terms of a private firm discount, where the observed abnormal return can be explained by the following five factors; illiquidity, information asymmetry, payment method, bidder competition, and size of the acquirer. For the Scandinavian market the payment method is assumed to have no impact on the results since all the deals in the sample, with a few exceptions, are offered in cash. Furthermore the effect of bidding-competition and size cannot be distinguished from the results presented in Table 4.1, even though they may have an impact on the observed abnormal return.

To determine whether the arguments for a private firm discount holds, the two samples need to be compared to each other as the former tests on the Acquiring Public targets and Acquiring Private targets were conducted to see if the effect is significantly different from zero. The Acquiring Public target sample got significantly different average abnormal returns (AAR) compared to the Acquiring Private target sample on the event day (T), however slightly above the 5% significance level indicating weak significance. On the third day following the announcement (T+3) and over the entire event window, AAR and CAAR of the samples are also significantly different. Again the effect seen on the third day following the announcement (T+3) can indicate either a delayed effect according to the EMH with the same implications as argued above, or a problem with measuring the abnormal return, or pure randomness. The average abnormal return on the event day (T) is only 0.49% for the sample Acquiring Public targets compared to 1.32% for Acquiring Private targets. Over the entire event window the CAAR of Acquiring Public targets is 0.93% compared to a CAAR of 2.68% for Acquiring Private targets. The difference between Acquiring Private versus Public

targets is illustrated in Figure 4.2. Even though the significance is weak this can be interpreted as an indication of a private firm discount.

Figure 4.2: *Abnormal returns - Acquirers of Public and Private Targets*



The average abnormal returns (AAR) and the cumulative average abnormal return (CAAR) for each day over the event window for Acquirers of Public and Private targets.

Source: created by the Authors

According to the liquidity argument, as a private firm is more illiquid in comparison to a public traded firm, it should trade at a discount. This implies that the acquirer can purchase a private target at a lower price compared to a public target, all else being equal. The discount will allow for more value creation if the premium paid to the target's shareholders is not increased by the same amount. As a consequence, if the abnormal return in fact is caused by illiquidity, the discount as an implicit synergy effect is not fully included in the premium to the target's shareholders. Taking this into consideration, illiquidity could explain the positive abnormal return seen in Table 4.1.

Another argument for the private firm discount is that, in contrast to public firms, private firms are associated with more information asymmetry and in effect exposed to higher risk of mispricing. Generally the market has three sources of information when assessing a target's value, (1) currently available information, (2) new information released at the announcement, and (3) signals based on managerial decisions. For private firms the absence of market prices as well as limited access to financial accounts contributes to information asymmetry regarding current and new information. Because of the limited information in (1) and (2) the market will pay more attention to (3), using the signals as proxies in order to estimate the

value of the target. Nevertheless, the incomplete information content considering its quantity and quality will further complicate the markets ability to correctly value a private firm. Due to this information gap the risk of mispricing substantially increases, which will then affect the markets' expectations about the deals' impact on future cash flows.

Rationally the relatively higher risk exposure would make investors demand a discount. The management of the bidding firm on the other hand may have an information advantage, due to possible due diligence, and is therefore more likely to make a better estimation of the target firm's value. Based on the above stated argument, the investors are assumed to evaluate the target firm at a lower price relative the management of an acquiring firm. A negative market reaction is thus expected following a bid for a private firm.

The existence of positive abnormal returns in the private target sample is a contradicting result to the above discussion. However as argued by Cheng, Li and Tong (2008) an acquirer with less objective facts and more subjective signals are more likely to overprice the target company rather than to under-price it, which could explain the positive market return for the acquirers shareholders when acquiring private targets. It could also be explained as the investors', in their assessment of the signals, believe that the management already has incorporated the discount in their valuation.

Altogether the hypotheses are rejected for:

(I) The Total sample where AR(T), AR(T+1) and CAR got abnormal returns significantly different from zero.

(II) The Acquiring public target sample where CAR got abnormal returns weakly significantly different from zero.

(III) The Acquiring private target sample where AR(T), AR(T+1) and CAR got abnormal returns significantly different from zero. AR(T+3) is weakly significant.

(IV) The Acquiring public versus private target sample where AR(T), AR(T+3) and CAR is significantly different between the Acquiring public and private target samples.

The market reaction is limited to the announcement day (T) and the following day (T+1) for the entire sample as well as for the sub-samples of acquiring private and public targets. This has two implications where (1) the market is efficient and, (2) there is no insider trading due to the absence of price run-ups.

The overall positive result in the investigation indicates that investors in general have a positive attitude considering M&As. In fact they tend to get positively surprised following an announcement which contradicts the theory suggesting that managerial decisions are based on behavioural and agency issues. Even if these problems in fact exist, the general absence of negative abnormal returns indicate that the market overall believes that acquisitions are driven by synergies rather than hubris and managerial discretion.

The results, which are not in line with many empirical findings, could be explained as differences in either the conditions, associated with the Scandinavian market, or the sample. This thesis focuses on large firms and also includes acquisitions of private targets which both can be assumed to have a large impact on the results.

The private firm discount could indeed be the reason for the outcome of this investigation. Even so the actual reasons driving the discount remains unanswered although illiquidity and information asymmetry seems like the most reasonable factors.

4.2 Tables for Multiple Linear Regressions

4.2.1 Total Sample

Table 4.2: *Total Sample Regression AR(T)*

Total Sample					
Dependent Variable: AR (T)					
Included observations: 157 after adjustments					
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob**	
Form (D)	0.003458	0.004353	0.794439	0.4282	
ln Deal Size	-0.002925	0.001581	-1.850584	0.0662	
ln Relative Size	0.005641	0.001292	4.365151	0.0000	***
Serial Acquirer	-0.002051	0.004245	-0.483033	0.6298	
TPS (D)	-0.002927	0.004581	-0.638968	0.5238	
C	0.038918	0.009544	4.077855	0.0001	
Adjusted R-squared	0.093296				
Prob(Wald F-statistic)	0.000581	***			

significant at 10 % level

*** *significant at 0,1 % level*

Source: created by the Authors using EViews

The model as a whole is significant and has an Adjusted R-square of 9.3%. The coefficient ln Relative Size is significant at a 0.1% level and has a positive relation with abnormal returns.

This results are in line with previous studies (Jarrell & Poulson 1989a; Fuller et al, 2002; Draper & Paudyal, 2006; Misra & Gupta, 2007) which find a positive impact on the abnormal returns following an M&A announcement when the relative size between acquirer and target increases. An explanation for the relation is that the synergy effect is assumed to increase as the relative size increases, leading to a greater cash-flow effect.

ln Deal Size is significant at a 10% level and has a negative relation with abnormal returns. On average the deal size affects the abnormal return negatively. When deal size increases the market reacts less positively than to a smaller deal. This is supported by Alexandridis, Fuller and Travlos (2011) who claim that large deals tend to be too large to succeed. The complexity in the deal prevents the integration process which ultimately hinders the realization of expected synergies, which suggests that it is marginally harder to gain synergy effects as the size of the deal increases. Another explanation is offered by Loderer and Martin (1990) who suggest that hubris may be causing overpayment, despite evidence of smaller premiums paid in large deals. This is not unreasonable as the premium, measured in percentage, does not take the nominal value into account, which in large deals makes the actual dollar value premium much greater than in small deals. If it is marginally harder to accomplish synergies when the deal size increases, then the negative relation of size and abnormal returns could in fact be explained in terms of overpayment.
Also worth noticing is that the largest deals in this sample are for publicly traded targets, which could affect the results and be explained through the findings in section 4.1 as well as in the article by Fuller, Netter and Stegermoller (2002), where on average acquisitions of public firms generate a smaller abnormal return.

The dummy variable Form is not significant, which implies that the market does not react any differently depending on whether it is a purchase of the targets stock or certain assets. The market does not seem to apply a discount for the assumed information asymmetry involved in an acquisition of assets. Possible explanations for this are that: (1) the actual information asymmetry is relatively small, therefore allowing the market to value the entire firm or certain assets within the firm on equal grounds. The large size of the deals in the sample could possible contribute to more coverage from media and analysts which provide the market with relevant information and thus even out the expectations. (2) Investors trust the management's valuation on average. As discussed previously, if information asymmetry exists but investors

do not demand a discount it could be because the market assumes that the management has already included the discount themselves.

The variable for Serial acquirer is not significant which implies that there is no relationship between serial acquirers and abnormal returns. Fuller et al (2002) argues that the markets perception of previous M&A activity will serve as a reference for future acquisitions. Based on the assumption of EMH; that the stock price reaction following the announcement only reflects new information released to the market, firms with an history of M&A activity will only experience abnormal returns when the actual announcement differs from the anticipated one. The absence of a relationship between serial acquirers and abnormal returns can thus be explained with the following argument: the information content in the average announcement has enough specific components to cause a discrepancy between the expected and the actual announcement. The market seems to react just as strongly to new information, despite possible differences in expectations based on previous events. The results suggest that the bidder being a serial acquirer does not, by itself, affect the size of abnormal returns.
However, the possibility of a measurement error cannot be ignored. As discussed in section 3.3.1.1, the serial acquirer effect may not be correctly captured by the quantitative proxy used in the regression. Another methodological issue is that there may be differences between serial acquirers in terms of history of previously "good" acquisitions in contrast to "bad" acquisitions. This heterogeneity is not captured by the simplified measure applied in this paper.

The variable TPS, target public status, is not significant for the total sample. Even though the results from the t-tests above indicate a difference between Public and Private targets, the relation between the target public status is not strong enough to explain the variation in the sample. This implies that the abnormal returns observed to a large extent overlap within the sample and that the target firm being public or private does not explain a lower or higher abnormal return.
The univariate analysis showed evidence of a private firm discount. The reason for the difference between the groups may on the other hand be a result of covariance with other explanatory variables. In the regression analysis, the explanatory power is poor.

Table 4.3: *Total Sample Regression CAR*

Total Sample					
Dependent Variable: CAR					
Included observations: 157 after adjustments					
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob**	
Form (D)	-0.009884	0.007769	-1.272212	0.2053	
ln Deal Size	-0.001236	0.002998	-0.412239	0.6807	
ln Relative Size	0.004878	0.002152	2.267076	0.0248	*
Serial Acquirer	-0.002793	0.007722	-0.361668	0.7181	
TPS (D)	-0.004281	0.008069	-0.530535	0.5965	
C	0.045346	0.016715	2.712932	0.0074	
Adjusted R-squared	0.017562				
Prob(Wald F-statistic)	0.107843				

* *significant at 5 % level*

Source: created by the Authors using EViews

The coefficient of ln Relative Size is significant on the 5% level, however as the model is not significant as a whole the coefficients are assumed to be unstable giving unreliable results. The outcome follows the predictions stated in section 2.3.1; that the announcement effect is captured on (T) due to market efficiency and consequently there are too much noise over the entire event window causing problems with the underlying OLS assumptions.

4.2.2 Acquiring Public Targets

Table 4.4: *Acquiring Public Targets Regression AR (T) (1)*

Acquiring Public Targets				
Dependent Variable: AR (T)				
Included observations: 64 after adjustments				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob**
Implied Premium	-0.010192	0.006201	-1.643648	0.1057
ln Deal Size	-0.002763	0.001796	-1.538574	0.1293
ln Relative Size	0.003711	0.002069	1.794166	0.0780
Serial Acquirer	-0.005900	0.006802	-0.867280	0.3894
Form (D)	-0.001604	0.006643	-0.241442	0.8101
C	0.038962	0.013625	2.859633	0.0059
Adjusted R-squared	0.062678			
Prob(Wald F-statistic)	0.058887			

significant at 10 % level

Source: created by the Authors using EViews

The regression of AR (T) for the Acquirers of Public targets sample is only significant on a 10% level. The sample size is quite small (64 observations after adjustments) which indicates that the models strength is not enough to reject the null hypotheses of the coefficients that are close to significance. Thus the variables Form (D) and Serial Acquirer (D) that are highly non-significant are removed from the model to see if the close to significant variables can be improved when the strength of the test increases.

Table 4.5: *Acquiring Public Target Regression AR(T) (2)*

Acquiring Public Targets				
Dependent Variable: AR (T)				
Included observations: 64 after adjustments				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob**
ln Deal Size	-0.003322	0.001628	-2.040823	0.0457 *
ln Relative Size	0.003835	0.002036	1.883492	0.0645
Implied Premium	-0.011262	0.005774	-1.950632	0.0558
C	0.038478	0.013869	2.774339	0.0074
Adjusted R-squared	0.079619			
Prob(Wald F-statistic)	0.040755 *			

significant at 10 % level

* *significant at 5 % level*

Source: created by the Authors using EViews

The model is significant as a whole when removing the variables Form (D) and Serial Acquirer (D). The fit of the model is improved, as the Adjusted R-square is now close to 8% instead of 6.3% in the previous model. This indicates that the removal of the variables was strengthening the model.

The coefficients are all significant on a 10% level but only the ln Deal Size is significant on a 5% level. The coefficients values are not very different in this model compared to the first which indicates that the re-specification of the model was appropriate.
Again, as in the total sample, the deal size has a negative relation with abnormal returns. The market seems to be more sceptical to larger deals as previously argued.

The relative size can, as stated above, be explained as an assumption of greater cash-flows gained from a larger amount of synergies when the relative size increases. The results are also in line with Fuller, Netter and Stegermoller (2002) and Jarrell and Poulsen (1989) who finds that relative size has a positive relation with abnormal returns for cash offers and a negative relation for stock offers. Since the sample in this study mainly consists of cash offers, it could explain the results.

The implied premium has a negative relation to abnormal returns. As the deal size increases, in relation to the market value of the target, the market reacts more negatively which is in line with the findings of Misra and Gupta (2007). The implication is that, as the premium increases it should be harder for the acquiring firm to realize synergies to the same amount. Thus the risk of overpayment should have a positive relation with the size of the premium.

Table 4.6: *Acquiring Public Targets Regression CAR (1)*

Acquiring Public Targets				
Dependent Variable: CAR				
Included observations: 64 after adjustments				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob**
Implied Premium	-0.011096	0.008542	-1.299006	0.1991
ln Deal Size	0.001225	0.003870	0.316572	0.7527
ln Relative Size	-0.000912	0.002759	-0.330694	0.7421
Serial Acquirer	-0.015847	0.012123	-1.307224	0.1963
Form (D)	-0.013301	0.010815	-1.229825	0.2237
C	0.022316	0.021557	1.035172	0.3049
Adjusted R-squared	0.011571			
Prob(Wald F-statistic)	0.270074			

Source: created by the Authors using EViews

The regression of (CAR) on the Acquirers of Public targets sample is far from significant with no significant coefficients, including the constant term. The explanatory power of deal size and relative size in particular is much different from the regressions on AR (T). The same procedure is done with this sample as with the regression on AR (T) above.

Table 4.7: *Acquiring Public Targets Regression (CAR) (2)*

Acquiring Public Targets				
Dependent Variable: CAR				
Included observations: 64 after adjustments				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
ln Deal Size	-0.000665	0.003142	-0.211541	0.8332
ln Relative Size	-0.000596	0.002908	-0.205089	0.8382
Implied Premium	-0.014736	0.008509	-1.731835	0.0884
C	0.016411	0.021290	0.770825	0.4438
Adjusted R-squared	-0.014014			
Prob(Wald F-statistic)	0.206958			

significant at 10 % level

Source: created by the Authors using EViews

When removing the dummy variables there are still no strong significance in the model. Only the Implied Premium variable is significant at the 10% level. The deal size and relative size has lost all of its explanatory power compared to the regression on AR(T). However, as stated above, the model as a whole is not significant which implies an unstable model.

4.2.3 Acquiring Private Targets

Table 4.8: *Acquiring Private Targets Regression AR (T)*

Acquiring Private Targets					
Dependent Variable: AR (T)					
Included observations: 87 after adjustments					
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob**	
Form (D)	0.006890	0.005878	1.172093	0.2446	
ln Deal Size	0.001173	0.003724	0.314901	0.7536	
ln Relative Size	0.006927	0.002112	3.280694	0.0015	**
Serial Acquirer	0.004173	0.005758	0.724701	0.4707	
C	0.019299	0.019954	0.967161	0.3363	
Adjusted R-squared	0.129592				
Prob(Wald F-statistic)	0.006256	**			

** *significant at 1 % level*

Source: created by the Authors using EViews

The regression of the abnormal returns of the event day (T) for the sample of Acquiring Private targets yields significant results for the coefficient ln Relative Size. The model as a whole is significant with an Adjusted R-square of near 13%. The other variables are not close to significant and thus fail to explain any of the variance in AR (T).

Again the relative size has a positive relation to abnormal returns for private targets which is in line with the results in Fuller et al (2002) where the market seems to value relatively larger bids more favourably.

The form is as in the other models shown to have no explanatory power when it comes to abnormal returns in private target deals. The same arguments as stated above could explain this: (1) The actual information asymmetry is relatively small and, (2) the investors trust the managements' valuation on average.
The deal size is found to have no relation with abnormal returns when acquiring private targets. This finding contradicts the results of Alexandridis, Fuller and Travlos (2011) who finds a negative impact of deal size. Perhaps the spread of actual deal values are too narrow to have a real influence on the level of returns.

The coefficient for serial acquirer is also non-significant and the same discussion as above can be applied here as well. Despite possible differences in expectations based on previous events, the market seems to react just as strongly to new information. This implies that the history of previous acquisitions alone does not affect the size of abnormal returns.

Table 4.9: *Acquiring Private Targets Regression CAR*

Acquiring Private Targets					
Dependent Variable: CAR					
Included observations: 87 after adjustments					
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob**	
Form (D)	0.001617	0.011208	0.144279	0.8856	
ln Deal Size	0.002339	0.005761	0.406011	0.6858	
ln Relative Size	0.009705	0.002994	3.241753	0.0017	**
Serial Acquirer	-0.000395	0.011051	-0.035726	0.9716	
C	0.038961	0.031250	1.246751	0.2160	
Adjusted R-squared	0.047380				
Prob(Wald F-statistic)	0.010769	*			

* *significant at 5 % level*

** *significant at 1 % level*

Source: created by the Authors using EViews

The regression on CAR over the event window for the sample of Acquiring Private targets is also significant but with a much smaller fit (Adjusted R-square of 4.7%). The significant variable is again ln Relative Size while the other variables remain highly non-significant. The results has the same implication as the discussion of AR(T) in the private sample above.

5 CONCLUSION

In this final chapter the authors ties the purpose of the thesis to the results and answers the research questions followed by a further discussion of the most relevant findings. Finally proposals for future research are presented.

The varying results in previous research, regarding the value creation for acquiring firms, motivated an investigation of the announcement effect. Furthermore, most empirical work has been conducted on the U.S. or the U.K. markets and for deals where public firms bid for public targets, ignoring potential differences in market settings and the target's public status. The purpose of this thesis was therefore to examine the announcement effect for acquiring companies in Scandinavia, where the emphasis lied on the difference between acquiring Public targets compared to Private targets. The authors further aimed to investigate the relation between abnormal returns and variables found significant in previous research.

The results show an overall significant positive market return following announcements of acquisitions. When examining the differences between acquisitions of public versus private firms the findings are as expected; the value creation in bids for public targets is significantly smaller than for private targets, where an acquiring firm's shareholders receive 2.7% cumulative abnormal return on average in private target deals. In bids for public targets there is a slight value creation on average which is only weakly significant, making the results hard to generalize. The findings support the notation of a private firm discount and the first question can therefore be answered as follows: There is a difference in the announcement effect for an acquiring company when a bid is made for a public target compared to a private target.

When addressing the reasoning behind the above conclusion it is essential to highlight other important implications of the results. Altogether the findings could be interpreted as an evidence of market efficiency, which is a strong assumption for the validity of further analysis. The existence of abnormal returns can through EMH be explained as changes in the markets expectations since only the unpredicted part of the deal should be reflected in the stock price. It is thus only discrepancies between the markets and the management's expectations of future value creation that should cause abnormal returns following an M&A announcement. The divergence of expectations could in turn be approached based on two

different assumptions; (1) If the management and investors are rational the positive abnormal returns would simply reflect the expected value creation of the deal, i.e. the amount which the expected synergies exceeds the premium offered. (2) If instead irrational elements distort the market, e.g. behavioural factors influencing managers and/or investors, the expectations could be based on biased calculations. The positive results could then be explained as a systematic overestimation (underestimation) by the market (management). Nevertheless it is important to notice that the occurrence of irrational influences causing mispricing does not rule out the existence of partially rational decisions. Thus the observed positive market reactions could be thought of as a rational assessment of the intrinsic synergies with a potential degree of biases.
The implication of the above discussion for the results of a private firm discount follows the two approaches: (1) Assuming rationality, there is an actual superior value enhancement in acquisitions of private firms compared to acquiring public targets. (2) Assuming irrationality, there are greater risks for mispricing in valuing private targets.

The authors believe illiquidity and information asymmetry to be the two main explanatory elements for the observed private firm discount. The illiquidity of private firms make investors demand a discount based on the lower marketability, i.e. higher risk exposure. When an acquirer thus consolidates a private firm the equity becomes more liquid, less risky and consequently worth more to a shareholder. This provides a private target deal with an additional synergy compared to a public target deal, all other things being equal. The amount of this financial synergy, like the value of any other synergy, could however be transferred to the target firm's shareholders through an increased premium. Even so, following the rational argument, the findings in this thesis suggest that the value is captured by the acquiring firm. If on the other hand the degree of irrationality is high in the market, the results indicate that the investors (management) tend to systematically overestimate (underestimate) the size of this illiquidity discount.
The relatively greater information asymmetry in private firms may also contribute to the private firm discount as it becomes harder to correctly value the firm which make managers and investors demand a discount for the increased uncertainty. The rational argument is that the bidding firm reduces the offer price in response to the threat of adverse selection. Positive market return can thus be explained as the investors expect this discount to be implemented. The markets tendency to react positively to more obscure targets may also be explained in terms of irrationality on the market. The investor's judgment could be affected by the availability heuristic; where the investors rely on readily available information instead of

more relevant but less salient contents. Attention is drawn to the expressed confidence of the management in their motivations of their bid and the associated signals. The evaluation is thus comprised with more subjective inputs which may cause investors to misprice the deal. In addition, investors could be excessively optimistic and over confident when it comes to assessing the expected synergies in deals with less available information.
Altogether these arguments could serve to explain the private firm discount observed in this thesis.

When turning to the second research question, regarding the determinants of abnormal returns, the main findings are that; (1) for the total sample the relative size and the deal size is the only variables that have a significant effect for abnormal returns, (2) for the public target sample the deal size, relative size and implied premium serves to explain the abnormal returns, and (3) for the private target sample the relative size is the only significant explanatory variable.
The results from the Scandinavian market are thus in accordance with findings in previous research based on the U.S. and the U.K markets in terms of the relative size but also when it comes to the premium and the deal size in bids for public targets.
The influence of relative size on abnormal returns can be explained with the following line of reasoning: As the deal size increases in relation to the acquirer's market value, the size, and in effect the impact of the anticipated synergies is greater than in an acquisition of a relatively smaller target. The positive relation ultimately suggests that the market on average believes that the acquirer captures a part of the value creation, i.e. the synergies exceed the premium offered for the target.
As the implied premium and deal size increase, in acquisitions of public targets, the abnormal return tends to respond negatively. When the premium is amplified the expected value creation in the acquiring company could reasonably become reduced as the anticipated synergies must be increased with at least the same amount. Also, the complexity in nominally larger deals could make the synergies harder to realize.

The non-significant results across the board for the variables form and serial acquirer indicate that: (1) the Scandinavian market seems to react equally to new information, despite any differences in expectations based on previous events. The results suggest that the bidder being a serial acquirer does not, by itself, affect the size of abnormal returns.

(2) The Scandinavian market is associated with less information asymmetry in regards to the cash-flow effect of certain assets in acquisitions of assets, or the investors trust the management to implement a discount. The findings implies that the type of acquisition; whether the bid is for stock or assets, does not affect the value creation in an average deal.

According to the authors, the most relevant results found in this thesis can be summarised as follows:

(i) Statistically significant evidence of positive abnormal returns is found for the total sample, which indicate that the market generally believe that large deals create value for acquiring firms in Scandinavia.

(ii) Acquisitions of privately held companies tend to create more value than deals for publicly traded firms, supporting the private firm discount.

(iii) The relative size is found to have a generally positive impact on acquisitions, while deal size and premium is found to have a negative relation in acquisitions of public targets.

5.1 Proposed future research

The results from this thesis generate new questions and aspects worth investigating:

- One suggestion to provide further evidence is to widening the scope of this thesis by including more variables in the regression, such as key metrics and motives for synergies.
- The scope could also be widened by including data from other markets and a larger timespan.
- Another possibility is to replicate this thesis on other markets with different settings.
- An interesting aspect would be to see whether, and how, bid competition influences abnormal returns.

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FINANCIAL DATA

DataStream Advance Database, Thomson Financial Ltd.

Thomson Reuters Eikon

Nasdaq OMX Nordic

7 APPENDICES

APPENDIX 1: Definitions

Abnormal return

The difference between the expected return and the actual return.

Acquisition of asset

Assets and liabilities are sold to an acquirer who can specifically choose which assets and liabilities it prefers. The procedure is complex and rather expensive as the ownership and title of the assets has to be transferred to the new entity. (Ross et al, 2002 p. 820)

Acquisition of stock

The acquirer purchases the target company's stocks in exchange for cash, or securities, or both. All assets and liabilities are transferred to the acquiring company. The deal can be completed though a *tender offer*. (Ross et al 2002, p. 820)

Announcement day

The official day when the information about an M&A is confirmed to the public (Ross et al, 2002 p. 842).

Average abnormal return (AAR)

The mean value of the sample of abnormal returns calculated for each cross-sectional entity.

Cumulative abnormal return (CAR)

The sum of the difference between the expected return and actual return over the whole event window (Ross et al, 2002 p. 920).

Cumulative average abnormal return (CAAR)

The mean value of the sample of aggregated abnormal returns over the event window for each cross-sectional unit.

Merger/ consolidation

Two companies create an entirely new company i.e. new stocks are issued. Should be approved by the shareholders of both merger partners, with at least 50% of the each firm's shareholders vote. (Brealey et al 2011, 571; Ross et al 2002, 817)

Premium

An asset is selling above its face value (Ross et al, 2002 p. 928).

Private target

A privately held firm, whose shares are not traded on a stock exchange, acquired by a public bidder/acquirer

Public target

A publicly listed company, whose shares are listed on a stock exchange, acquired by a public bidder/acquirer

Risk premium

The difference between the expected return on risky assets and the risk return on risk free assets (Ross et al, 2002 p. 934).

Synergy

The combination of two entities is more valuable then the sum of the parts (Gaughan 2011, 628). Further explained in section 2.1.2.

Takeover

Refers to a transfer of control from one shareholder group to another. Can be either friendly or hostile. (Ross et al, 2002 p. 817)

Tender offer

Public offer to buy shares of a target company (Ross et al 2002, 820).

The private firm discount

A discount found present in the value of shares for privately held firms (Fuller et al, 2002). Further explained in section 2.5.

APPENDIX 2: M&A activity in Scandinavia between 2004 and 2013

	Denmark	Finland	Norway	Sweden	Total
2004	270	250	235	482	**1237**
2005	286	266	358	642	**1552**
2006	248	307	406	837	**1798**
2007	380	310	545	1089	**2324**
2008	339	376	418	835	**1968**
2009	321	213	329	651	**1514**
2010	321	287	484	860	**1952**
2011	317	294	580	925	**2116**
2012	264	204	513	734	**1715**
2013	271	182	448	709	**1610**
Total	**3017**	**2689**	**4316**	**7764**	**17786**
%	*17%*	*15%*	*24%*	*44%*	

The data represent the number acquisitions made by Scandinavian publicly traded companies between 2004 and 2014. The total number of acquisitions made by public Scandinavian companies was 17 786 deals where Sweden accounted for 7 764 deals, Norway 4 316 deals, Denmark 3 017 deals and Finland 2 689 deals (Tomas Reuter DataStream 2014). Companies representing Sweden are all trading on the Stockholm Exchange, the Danish companies on Copenhagen Exchange, the Finish companies on the Helsinki Exchange and Norwegian companies on the Oslo Exchange.

Source: created by the Authors

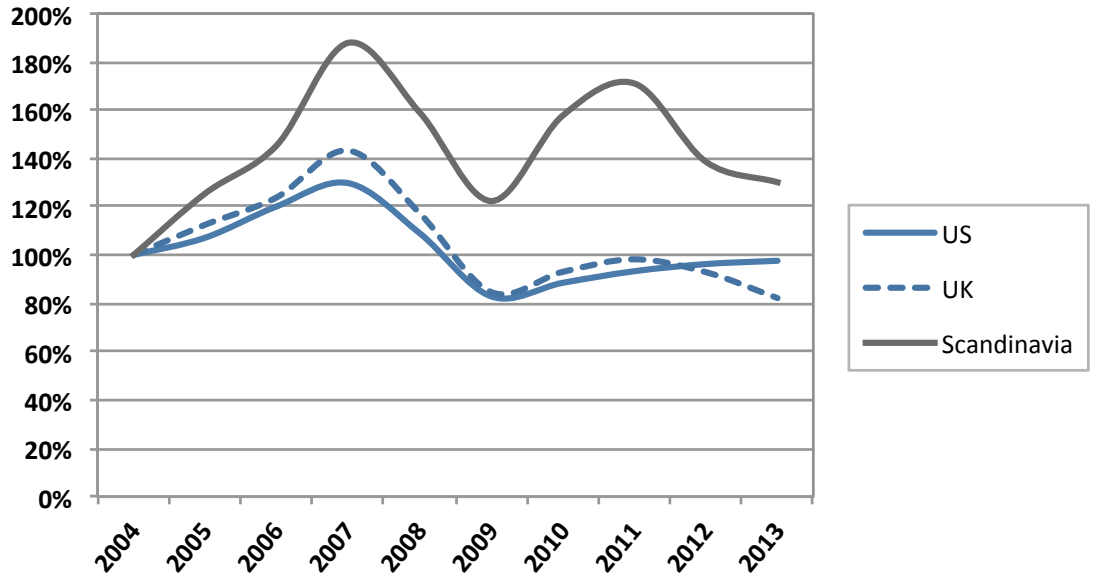
APPENDIX 4: M&A activity in Scandinavia Public and Private target

	Denmark	Finland	Norway	Sweden	Total
Public	156	150	309	336	**951**
Private	338	542	561	1724	**3165**
Total	**494**	**692**	**870**	**2060**	**4116**

The data represent the number of acquisitions of public and private targets made by Scandinavian publicly traded companies between 2004 and 2014.

Source: created by the Authors

APPENDIX 5: Index M&A activity



Index M&A activity in the U.S., the U.K. and Scandinavia between 2004 and 2013.

Source: created by the Authors

APPENDIX 6: Regression Tables

Table 1.1: *Total sample AR (T)*

Total Sample AR (T)				
Dependent Variable: AR (T)				
Method: Least Squares				
Date: 05/11/14 Time: 11:51				
Sample (adjusted): 1 175				
Included observations: 157 after adjustments				
White heteroskedasticity-consistent standard errors & covariance				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
Form (D)	0.003458	0.004353	0.794439	0.4282
ln Deal Size	-0.002925	0.001581	-1.850584	0.0662
ln Relative Size	0.005641	0.001292	4.365151	0.0000
Serial Acquirer	-0.002051	0.004245	-0.483033	0.6298
TPS (D)	-0.002927	0.004581	-0.638968	0.5238
C	0.038918	0.009544	4.077855	0.0001
R-squared	0.122357	**Mean dependent var**		0.009456
Adjusted R-squared	0.093296	**S.D. dependent var**		0.026687
S.E. of regression	0.025411	**Akaike info criterion**		-4.469779
Sum squared resid	0.097506	**Schwarz criterion**		-4.352980
Log likelihood	356.8777	**Hannan-Quinn criter.**		-4.422343
F-statistic	4.210346	**Durbin-Watson stat**		1.994192
Prob(F-statistic)	0.001304	**Wald F-statistic**		4.633007
Prob(Wald F-statistic)	0.000581			

Source: created by the Authors using EViews

Table 1.2: *Total sample sample CAR*

Total Sample CAR				
Dependent Variable: CAR				
Method: Least Squares				
Date: 05/11/14 Time: 11:54				
Sample (adjusted): 1 175				
Included observations: 157 after adjustments				
White heteroskedasticity-consistent standard errors & covariance				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
Form (D)	-0.009884	0.007769	-1.272212	0.2053
ln Deal Size	-0.001236	0.002998	-0.412239	0.6807
ln Relative Size	0.004878	0.002152	2.267076	0.0248
Serial Acquirer	-0.002793	0.007722	-0.361668	0.7181
TPS (D)	-0.004281	0.008069	-0.530535	0.5965
C	0.045346	0.016715	2.712932	0.0074
R-squared	0.049050	**Mean dependent var**		0.018280
Adjusted R-squared	0.017562	**S.D. dependent var**		0.045902
S.E. of regression	0.045497	**Akaike info criterion**		-3.304883
Sum squared resid	0.312564	**Schwarz criterion**		-3.188084
Log likelihood	265.4333	**Hannan-Quinn criter.**		-3.257447
F-statistic	1.557723	**Durbin-Watson stat**		1.894608
Prob(F-statistic)	0.175432	**Wald F-statistic**		1.842566
Prob(Wald F-statistic)	0.107843			

Source: created by the Authors using EViews

Table 1.3: *Acquiring Public targets sample AR (T) (1)*

Acquiring Public Targets AR(T) (1)				
Dependent Variable: AR (T)				
Method: Least Squares				
Date: 05/11/14 Time: 12:02				
Sample (adjusted): 1 78				
Included observations: 64 after adjustments				
White heteroskedasticity-consistent standard errors & covariance				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
Implied Premium	-0.010192	0.006201	-1.643648	0.1057
ln Deal Size	-0.002763	0.001796	-1.538574	0.1293
ln Relative Size	0.003711	0.002069	1.794166	0.0780
Serial Acquirer	-0.005900	0.006802	-0.867280	0.3894
Form (D)	-0.001604	0.006643	-0.241442	0.8101
C	0.038962	0.013625	2.859633	0.0059
R-squared	0.137069	**Mean dependent var**		0.005672
Adjusted R-squared	0.062678	**S.D. dependent var**		0.025198
S.E. of regression	0.024396	**Akaike info criterion**		-4.499767
Sum squared resid	0.034518	**Schwarz criterion**		-4.297372
Log likelihood	149.9926	**Hannan-Quinn criter.**		-4.420033
F-statistic	1.842558	**Durbin-Watson stat**		1.729048
Prob(F-statistic)	0.118742	**Wald F-statistic**		2.274150
Prob(Wald F-statistic)	0.058887			

Source: created by the Authors using EViews

Table 1.4: *Acquiring Public targets sample AR (T) (2)*

Acquiring Public Targets AR(T) (2)				
Dependent Variable: AR (T)				
Method: Least Squares				
Date: 05/10/14 Time: 17:37				
Sample (adjusted): 1 78				
Included observations: 64 after adjustments				
White heteroskedasticity-consistent standard errors & covariance				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
ln Deal Size	-0.003322	0.001628	-2.040823	0.0457
ln Relative Size	0.003835	0.002036	1.883492	0.0645
Implied Premium	-0.011262	0.005774	-1.950632	0.0558
C	0.038478	0.013869	2.774339	0.0074
R-squared	0.123447	**Mean dependent var**		0.005672
Adjusted R-squared	0.079619	**S.D. dependent var**		0.025198
S.E. of regression	0.024174	**Akaike info criterion**		-4.546604
Sum squared resid	0.035063	**Schwarz criterion**		-4.411674
Log likelihood	149.4913	**Hannan-Quinn criter.**		-4.493448
F-statistic	2.816634	**Durbin-Watson stat**		1.716343
Prob(F-statistic)	0.046633	**Wald F-statistic**		2.929891
Prob(Wald F-statistic)	0.040755			

Source: created by the Authors using EViews

Table 1.5: *Acquiring Public targets sample CAR (1)*

Acquiring Public Targets CAR (1)				
Dependent Variable: CAR				
Method: Least Squares				
Date: 05/11/14 Time: 12:05				
Sample (adjusted): 1 78				
Included observations: 64 after adjustments				
White heteroskedasticity-consistent standard errors & covariance				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
Implied Premium	-0.011096	0.008542	-1.299006	0.1991
ln Deal Size	0.001225	0.003870	0.316572	0.7527
ln Relative Size	-0.000912	0.002759	-0.330694	0.7421
Serial Acquirer	-0.015847	0.012123	-1.307224	0.1963
Form (D)	-0.013301	0.010815	-1.229825	0.2237
C	0.022316	0.021557	1.035172	0.3049
R-squared	0.090018	**Mean dependent var**		0.007603
Adjusted R-squared	0.011571	**S.D. dependent var**		0.041402
S.E. of regression	0.041162	**Akaike info criterion**		-3.453555
Sum squared resid	0.098269	**Schwarz criterion**		-3.251160
Log likelihood	116.5138	**Hannan-Quinn criter.**		-3.373822
F-statistic	1.147502	**Durbin-Watson stat**		1.960404
Prob(F-statistic)	0.346019	**Wald F-statistic**		1.315852
Prob(Wald F-statistic)	0.270074			

Source: created by the Authors using EViews

Table 1.6: *Acquiring Public targets sample CAR (2)*

Acquiring Public Targets CAR (2)				
Dependent Variable: CAR				
Method: Least Squares				
Date: 05/10/14 Time: 17:43				
Sample (adjusted): 1 78				
Included observations: 64 after adjustments				
White heteroskedasticity-consistent standard errors & covariance				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
ln Deal Size	-0.000665	0.003142	-0.211541	0.8332
ln Relative Size	-0.000596	0.002908	-0.205089	0.8382
Implied Premium	-0.014736	0.008509	-1.731835	0.0884
C	0.016411	0.021290	0.770825	0.4438
R-squared	0.034272	**Mean dependent var**		0.007603
Adjusted R-squared	-0.014014	**S.D. dependent var**		0.041402
S.E. of regression	0.041691	**Akaike info criterion**		-3.456599
Sum squared resid	0.104289	**Schwarz criterion**		-3.321668
Log likelihood	114.6112	**Hannan-Quinn criter.**		-3.403443
F-statistic	0.709775	**Durbin-Watson stat**		1.909632
Prob(F-statistic)	0.549957	**Wald F-statistic**		1.566051
Prob(Wald F-statistic)	0.206958			

Source: created by the Authors using EViews

Table 1.7: *Acquiring Private targets sample AR (T)*

Acquiring Private Targets AR(T)				
Dependent Variable: AR (T)				
Method: Least Squares				
Date: 05/11/14 Time: 12:07				
Sample (adjusted): 1 97				
Included observations: 87 after adjustments				
White heteroskedasticity-consistent standard errors & covariance				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
Form (D)	0.006890	0.005878	1.172093	0.2446
ln Deal Size	0.001173	0.003724	0.314901	0.7536
ln Relative Size	0.006927	0.002112	3.280694	0.0015
Serial Acquirer	0.004173	0.005758	0.724701	0.4707
C	0.019299	0.019954	0.967161	0.3363
R-squared	0.170076	**Mean dependent var**		0.013167
Adjusted R-squared	0.129592	**S.D. dependent var**		0.027456
S.E. of regression	0.025615	**Akaike info criterion**		-4.435519
Sum squared resid	0.053803	**Schwarz criterion**		-4.293800
Log likelihood	197.9451	**Hannan-Quinn criter.**		-4.378453
F-statistic	4.201059	**Durbin-Watson stat**		1.837499
Prob(F-statistic)	0.003821	**Wald F-statistic**		3.870327
Prob(Wald F-statistic)	0.006256			

Source: created by the Authors using EViews

Table 1.8: *Acquiring private targets sample CAR*

Acquiring Private Targets CAR				
Dependent Variable: CAR				
Method: Least Squares				
Date: 05/11/14 Time: 12:17				
Sample (adjusted): 1 97				
Included observations: 87 after adjustments				
White heteroskedasticity-consistent standard errors & covariance				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
Form (D)	0.001617	0.011208	0.144279	0.8856
ln Deal Size	0.002339	0.005761	0.406011	0.6858
ln Relative Size	0.009705	0.002994	3.241753	0.0017
Serial Acquirer	-0.000395	0.011051	-0.035726	0.9716
C	0.038961	0.031250	1.246751	0.2160
R-squared	0.091688	**Mean dependent var**		0.026785
Adjusted R-squared	0.047380	**S.D. dependent var**		0.050237
S.E. of regression	0.049032	**Akaike info criterion**		-3.136923
Sum squared resid	0.197141	**Schwarz criterion**		-2.995205
Log likelihood	141.4562	**Hannan-Quinn criter.**		-3.079858
F-statistic	2.069329	**Durbin-Watson stat**		1.845907
Prob(F-statistic)	0.092295	**Wald F-statistic**		3.507501
Prob(Wald F-statistic)	0.010769			

Source: created by the Authors using EViews

APPENDIX 7: Correlation Matrix

Table 1.9: *Total sample AR (T)*

Total Sample AR(T)						
Covariance Analysis: Ordinary						
Date: 05/24/14 Time: 18:18						
Sample (adjusted): 1 175						
Included observations: 175 after adjustments						
Balanced sample (listwise missing value deletion)						
Correlation Probability	**AR(T)**	**ln Deal Size**	**ln Relative Size**	**Serial Acquirer (D)**	**TPS (D)**	**Form (D)**
AR(T)	1.000000					
	-----					
ln Deal Size	-0.031101	1.000000				
	0.6828	-----				
ln Relative Size	0.199413	0.293632	1.000000			
	0.0082	0.0001	-----			
Serial Acquirer (D)	0.103122	0.226264	0.042406	1.000000		
	0.1745	0.0026	0.5774	-----		
TPS (D)	-0.134047	0.298705	0.020103	0.002136	1.000000	
	0.0770	0.0001	0.7917	0.9776	-----	
Form (D)	0.027608	0.188581	0.086863	0.067952	0.341528	1.000000
	0.7169	0.0124	0.2530	0.3716	0.0000	-----

Source: created by the Authors using EViews

Table 1.10: *Total sample CAR*

Total Sample CAR

Covariance Analysis: Ordinary
Date: 05/24/14 Time: 18:31
Sample (adjusted): 1 175
Included observations: 157 after adjustments
Balanced sample (listwise missing value deletion)

Correlation Probability	CAR	Form (D)	ln Deal Size	ln Relative Size	Serial Acquirer (D)	TPS (D)
CAR	1.000000					

Form (D)	-0.127260	1.000000				
	0.1122	-----				
ln Deal Size	-0.024157	0.207440	1.000000			
	0.7639	0.0091	-----			
ln Relative Size	0.161633	0.039493	0.308847	1.000000		
	0.0431	0.6234	0.0001	-----		
Serial Acquirer (D)	-0.035547	0.054982	0.220467	0.042730	1.000000	
	0.6585	0.4940	0.0055	0.5952	-----	
TPS (D)	-0.089899	0.371042	0.287410	0.038518	-0.018420	1.000000
	0.2628	0.0000	0.0003	0.6320	0.8189	-----

Source: created by the Authors using EViews

Table 1.11: *Acquiring Public target sample AR (T)*

Acquiring Public Target Sample AR(T)

Covariance Analysis: Ordinary
Date: 05/24/14 Time: 18:36
Sample (adjusted): 1 78
Included observations: 64 after adjustments
Balanced sample (listwise missing value deletion)

Correlation Probability	AR(T)	ln Deal Size	ln Relative Size	Serial Acquirer (D)	Form (D)	Implied Premium
AR(T)	1.000000					
	-----					
ln Deal Size	-0.165306	1.000000				
	0.1918	-----				
ln Relative Size	0.161387	0.316927	1.000000			
	0.2027	0.0107	-----			
Serial Acquirer (D)	-0.194885	0.286370	0.053727	1.000000		
	0.1228	0.0218	0.6733	-----		
Form (D)	-0.086581	0.151343	0.027057	0.128716	1.000000	
	0.4963	0.2326	0.8319	0.3107	-----	
Implied Premium	-0.191785	0.099250	0.174526	0.168813	0.106125	1.000000
	0.1290	0.4352	0.1678	0.1824	0.4039	-----

Source: created by the Authors using EViews

Table 1.12: *Acquiring Public target sample CAR*

Acquiring Public Target Sample CAR

Covariance Analysis: Ordinary
Date: 05/24/14 Time: 18:44
Sample (adjusted): 1 78
Included observations: 64 after adjustments
Balanced sample (listwise missing value deletion)

Correlation Probability	CAR	Implied Premium	ln Deal Size	ln Relative Size	Serial Acquirer (D)	Form (D)
CAR	1.000000					

Implied Premium	-0.179606	1.000000				
	0.1556	-----				
ln Deal Size	-0.050551	0.072948	1.000000			
	0.6916	0.5667	-----			
ln Relative Size	-0.060697	0.140956	0.340917	1.000000		
	0.6338	0.2666	0.0058	-----		
Serial Acquirer (D)	-0.220244	0.170454	0.307586	0.062938	1.000000	
	0.0803	0.1781	0.0134	0.6213	-----	
Form (D)	-0.175525	0.102256	0.154387	0.057408	0.145479	1.000000
	0.1653	0.4214	0.2232	0.6523	0.2514	-----

Source: created by the Authors using EViews

Table 1.13: *Acquiring Private target sample AR (T)*

Acquiring Private Target Sample AR(T)

Covariance Analysis: Ordinary
Date: 05/24/14 Time: 18:50
Sample (adjusted): 1 97
Included observations: 87 after adjustments
Balanced sample (listwise missing value deletion)

Correlation Probability	AR(T)	ln Deal Size	ln Relative Size	Serial Acquirer (D)	Form (D)
AR(T)	1.000000				
	-----				
ln Deal Size	0.161377	1.000000			
	0.1354	-----			
ln Relative Size	0.382046	0.280865	1.000000		
	0.0003	0.0084	-----		
Serial Acquirer (D)	0.061368	0.245692	-0.079475	1.000000	
	0.5723	0.0218	0.4643	-----	
Form (D)	0.160737	0.027915	0.094022	0.046954	1.000000
	0.1369	0.7974	0.3864	0.6658	-----

Source: created by the Authors using EViews

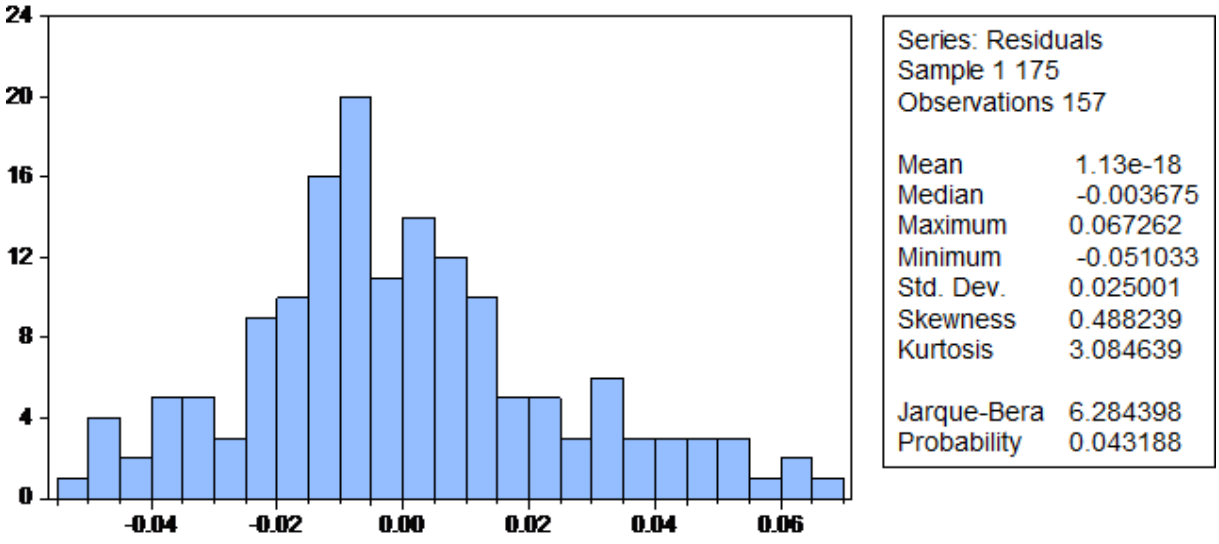
Table 1.14: *Acquiring Private target sample CAR*

Acquiring Private Target Sample CAR					
Covariance Analysis: Ordinary					
Date: 05/24/14 Time: 18:52					
Sample (adjusted): 1 97					
Included observations: 87 after adjustments					
Balanced sample (listwise missing value deletion)					
Correlation Probability	**CAR**	**ln Deal Size**	**ln Relative Size**	**Serial Acquirer (D)**	**Form (D)**
CAR	1.000000				
	-----				
ln Deal Size	0.120737	1.000000			
	0.2653	-----			
ln Relative Size	0.300156	0.285182	1.000000		
	0.0047	0.0074	-----		
Serial Acquirer (D)	-0.013054	0.201480	-0.063024	1.000000	
	0.9045	0.0613	0.5620	-----	
Form (D)	0.042497	0.008870	0.092887	0.061636	1.000000
	0.6959	0.9350	0.3922	0.5706	-----

Source: created by the Authors using EViews

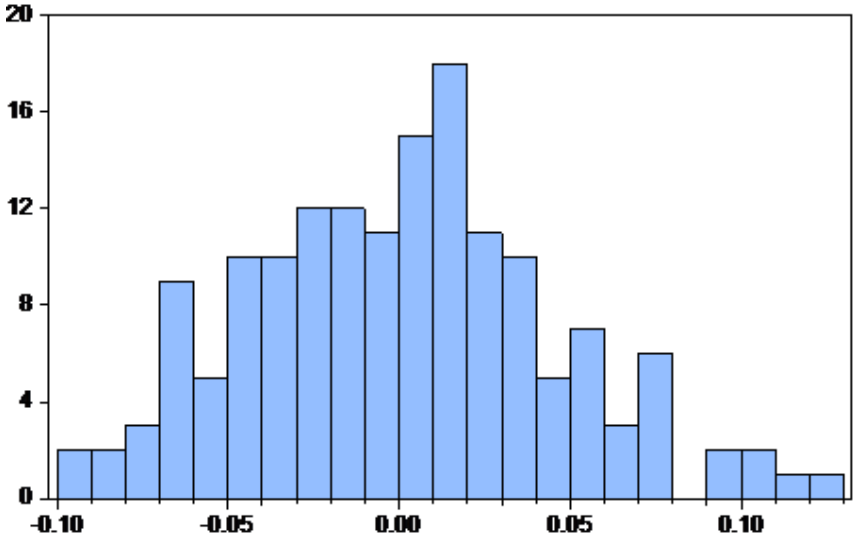
APPENDIX 8: Normality Regression Tables

Table 1.15: *Total sample AR (T)*



Source: created by the Authors using EViews

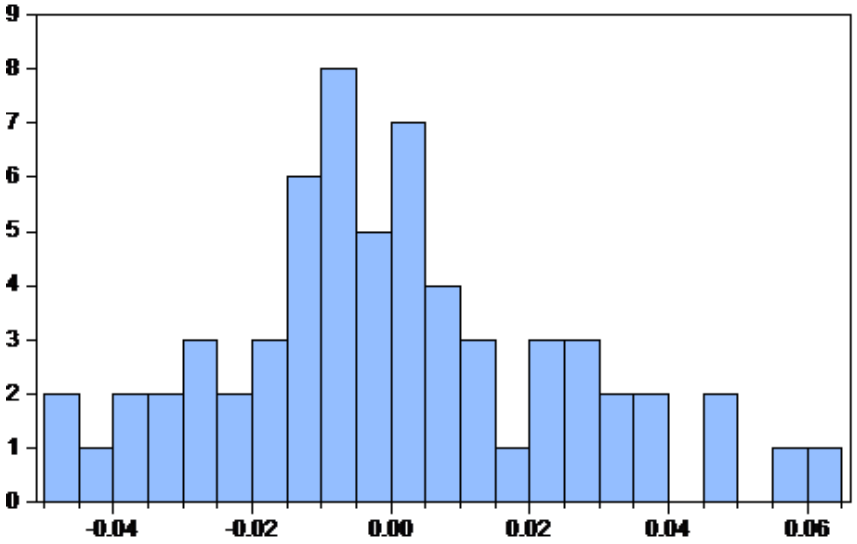
Table 1.16: *Total sample CAR*



Series: Residuals	
Sample 1 175	
Observations 157	
Mean	3.03e-18
Median	0.000782
Maximum	0.123043
Minimum	-0.095952
Std. Dev.	0.044762
Skewness	0.242812
Kurtosis	2.795648
Jarque-Bera	1.815904
Probability	0.403350

Source: created by the Authors using EViews

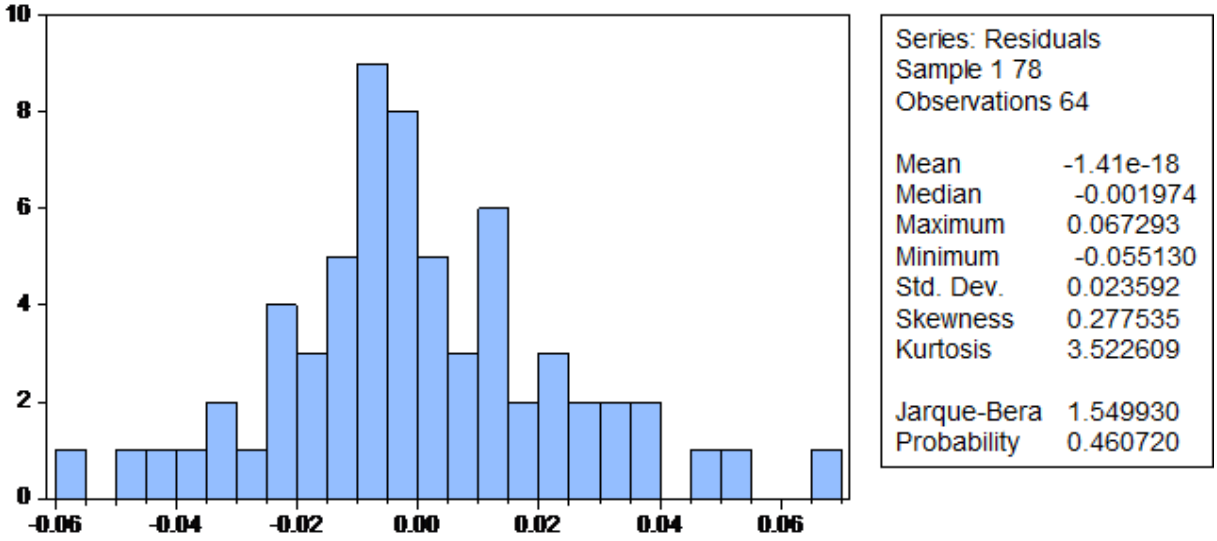
Table 1.17: *Acquiring Public target sample AR (T) (1)*



Series: Residuals	
Sample 1 78	
Observations 63	
Mean	1.21e-18
Median	-0.003592
Maximum	0.064982
Minimum	-0.048379
Std. Dev.	0.024898
Skewness	0.432382
Kurtosis	3.009586
Jarque-Bera	1.963260
Probability	0.374700

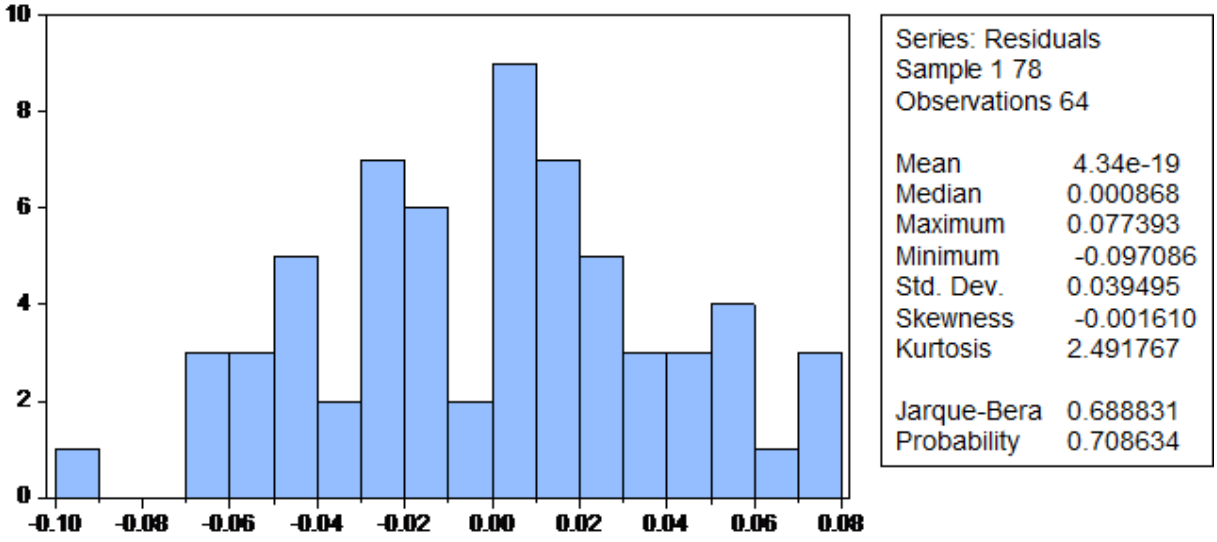
Source: created by the Authors using EViews

Table 1.18: *Acquiring Public target sample AR (T) (2)*



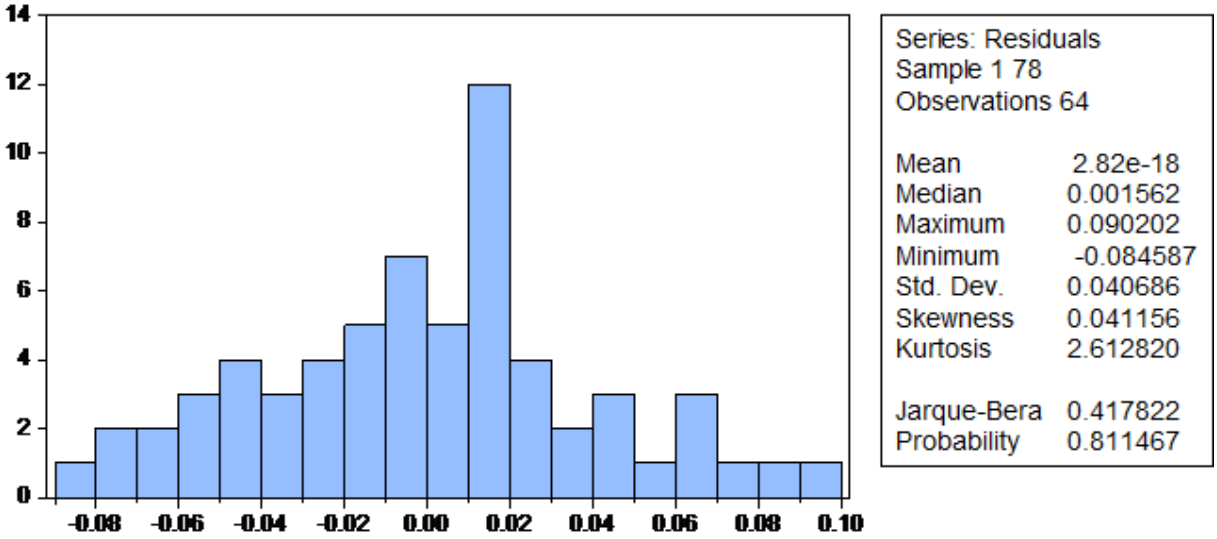
Source: created by the Authors using EViews

Table 1.19: *Acquiring Public target sample CAR (1)*



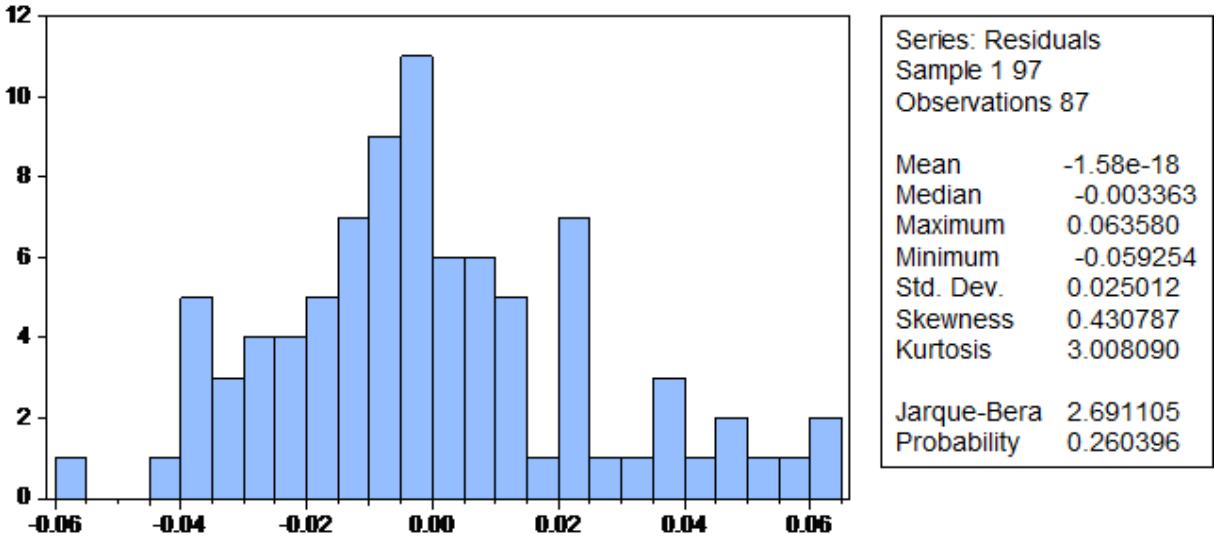
Source: created by the Authors using EViews

Table 1.20: *Acquiring Public target sample CAR (2)*



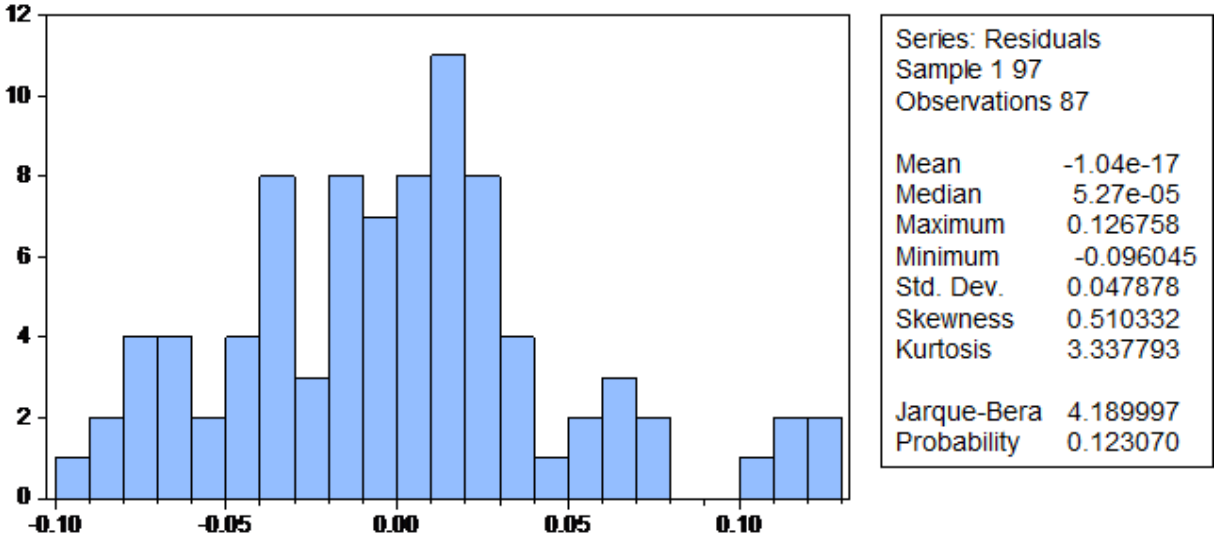
Source: created by the Authors using EViews

Table 1.21: *Acquiring Private target sample AR (T)*



Source: created by the Authors using EViews

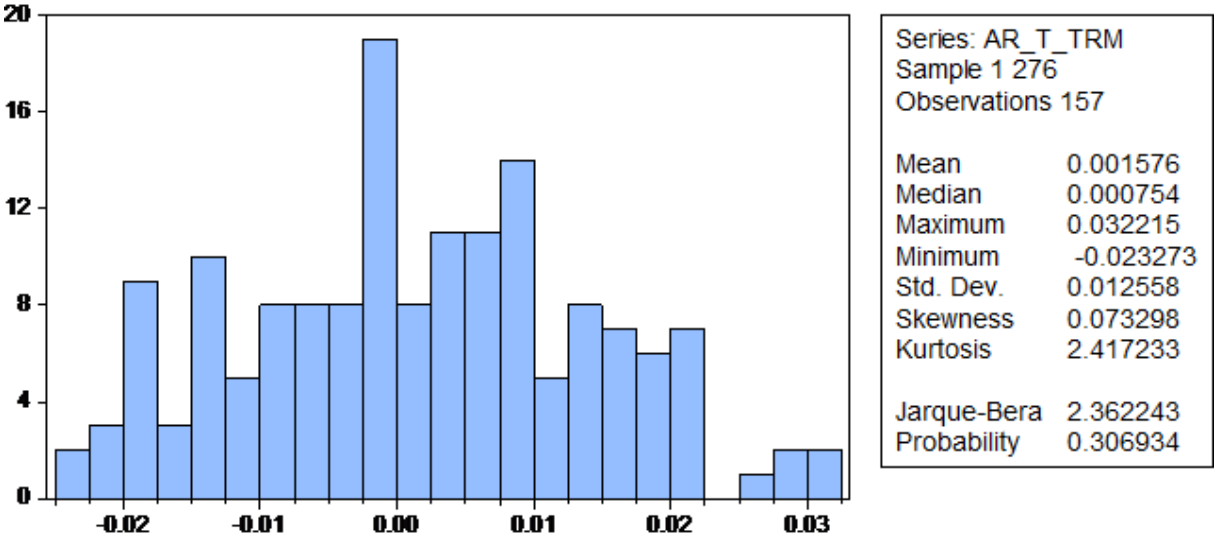
Table 1.22: *Acquiring Private target sample CAR*



Source: created by the Authors using EViews

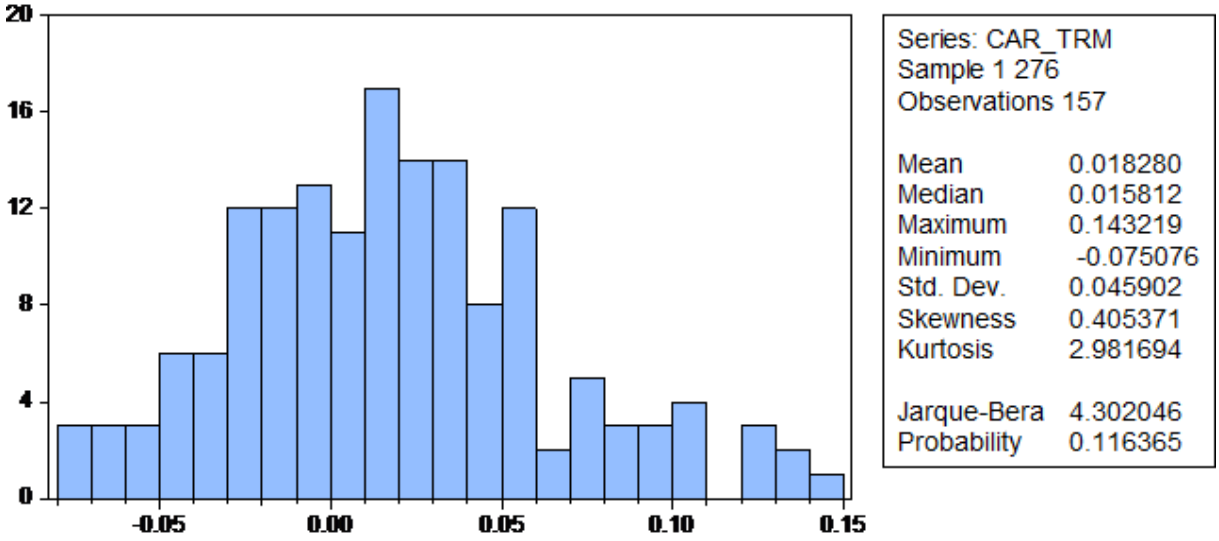
APPENDIX 9: Normality test T-test

Table 1.23: *Total sample AR (T)*



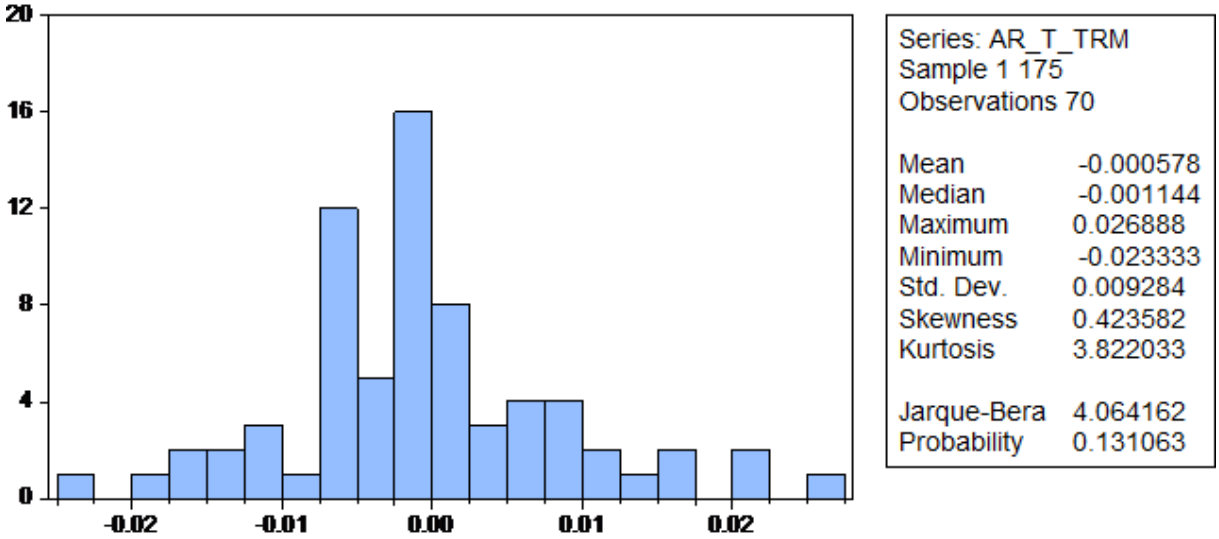
Source: created by the Authors using EViews

Table 1.24: *Total sample CAR*



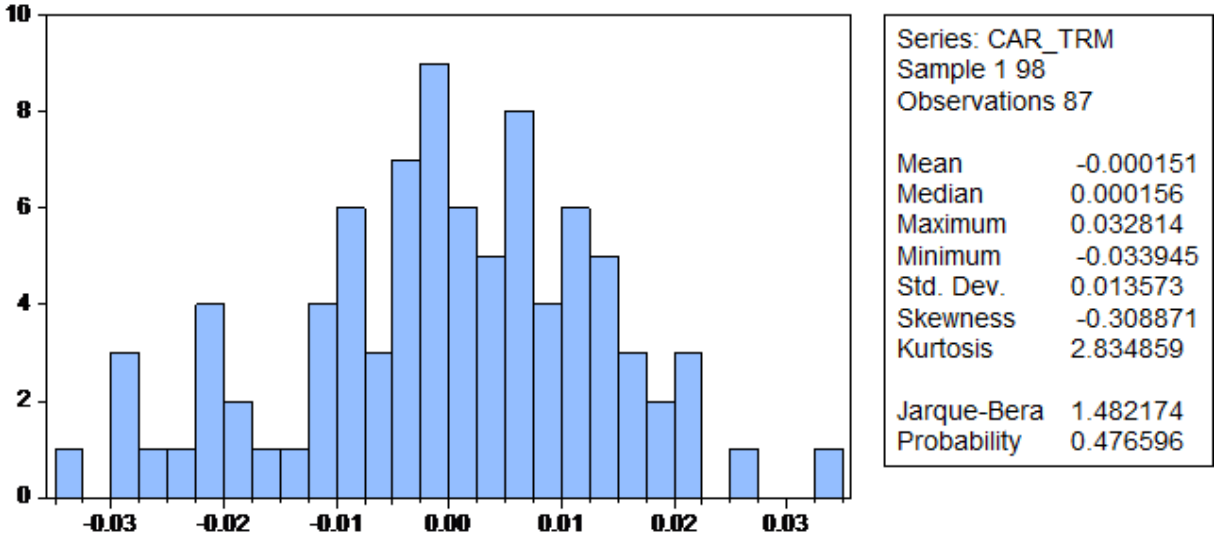
Source: created by the Authors using EViews

Table 1.25: *Acquiring Public target sample AR (T)*



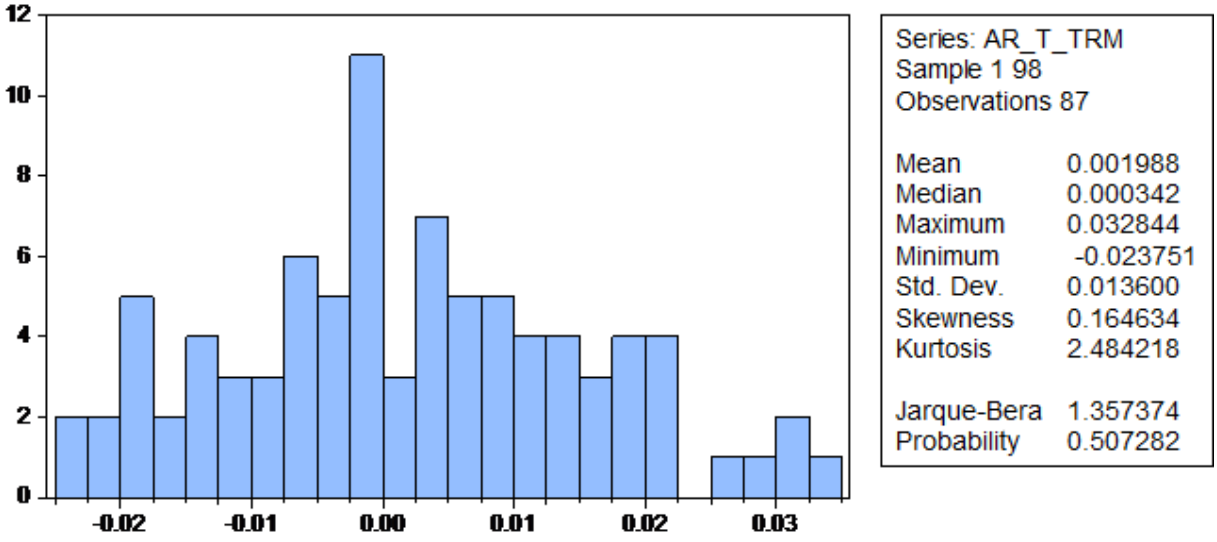
Source: created by the Authors using EViews

Table 1.27: *Acquiring Public target sample CAR (1)*



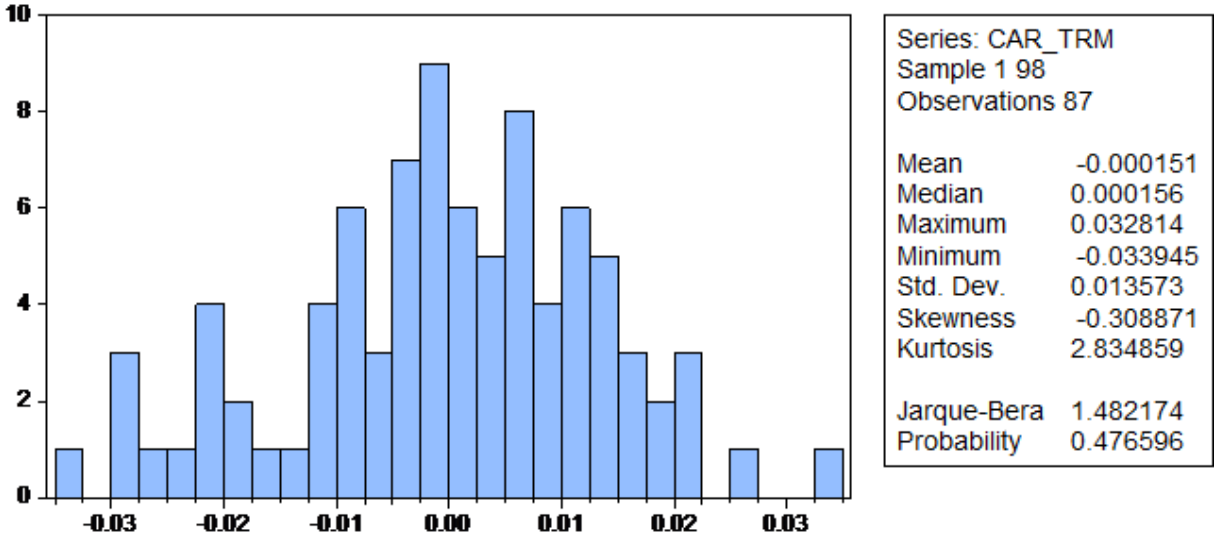
Source: created by the Authors using EViews

Table 1.29: *Acquiring Private target sample AR (T)*



Source: created by the Authors using EViews

Table 1.30: *Acquiring Private target sample CAR*



Source: created by the Authors using EViews

APPENDIX 10: Total data sample

Table 1.31: *Data overview*

Announcement Date	Acquirer Name	Acquirer Nation	Target Name	Target Nation	Form Dummy	Serial acquirer	TPS Dummy	Deal Size (USD MM)	Relative Size	Implied Premium	AR (T-2)	AR (T-1)	AR (T)	AR (T+1)	AR (T+2)	AR (T+3)	CAR
2013-09-05	AB SKF	Sweden	Kaydon Corp	United States	1	1	1	1 243	10,93%	70,64%	-0,12%	0,83%	-0,99%	-0,45%	-1,45%	-0,29%	-2,47%
2013-08-19	Atlas Copco AB	Sweden	Edwards Group Ltd	United Kingdom	1	0	1	1 606	6,91%	68,42%	-0,21%	0,16%	1,68%	0,62%	0,08%	0,61%	2,94%
2013-08-19	Rockwool International A/S	Denmark	Chicago Metallic Corp	United States	0	0	0	140	7,94%	-	0,83%	-1,84%	-1,11%	0,78%	0,62%	0,72%	-0,01%
2013-07-16	Cargotec Oyj	Finland	Hatlapa Uetersener Maschinenfabrik GmbH & Co KG	Germany	0	0	0	211	13,67%	-	0,05%	-0,10%	0,75%	0,64%	10,72%	3,83%	15,89%
2013-06-17	Sweco AB	Sweden	Vectura Consulting AB	Sweden	1	0	0	143	15,12%	-	-0,85%	-1,19%	7,46%	-0,07%	-0,95%	-1,21%	3,20%
2013-06-12	Jeudan A/S	Denmark	Properties Portfolio	Denmark	0	1	0	146	14,28%	-	1,56%	1,23%	-0,28%	-0,37%	-2,88%	2,33%	1,58%
2013-05-22	Victoria Park AB	Sweden	Property Portfolio	Sweden	0	0	0	137	300,37%	-	-2,29%	-0,32%	8,33%	1,08%	-0,28%	5,67%	12,20%
2013-05-02	Wallenstam AB	Sweden	Commercial Properties, Gothenburg(9)	Sweden	0	0	0	59	2,72%	-	2,81%	-0,07%	-0,27%	-1,12%	0,74%	1,40%	3,50%
2013-03-15	Technopolis Oyj	Finland	UAB Domestas,UAB Urban housing,UAB Gama projektai	Lithuania	1	1	0	80	20,01%	-	0,74%	0,26%	-1,12%	-0,47%	-0,24%	0,78%	-0,05%
2012-12-13	XANO Industri AB	Sweden	AGES Industrier i Unnaryd AB	Sweden	1	0	0	70	86,63%	-	-0,08%	3,31%	24,60%	-4,75%	-0,32%	0,85%	23,61%
2012-09-24	Fastighets AB Balder	Sweden	Stockholm Sparvagnen 4 Property	Sweden	0	1	0	168	20,88%	-	0,37%	3,28%	-3,55%	1,81%	0,71%	0,92%	3,54%
2012-09-07	AF AB	Sweden	Advansia AS	Norway	1	0	0	52	8,16%	-	-1,09%	3,22%	-0,08%	3,32%	1,51%	0,92%	7,80%
2012-08-08	Gunnebo AB	Sweden	Hamilton Safe	United States	0	0	0	65	20,05%	-	-0,81%	-0,59%	0,20%	1,12%	0,76%	-1,47%	-0,79%
2012-06-28	Jeudan A/S	Denmark	Office Buildings,Copenhagen(7)	Denmark	0	1	0	58	7,45%	-	0,20%	-0,56%	0,18%	-0,76%	0,78%	0,68%	0,52%
2012-06-22	Orkla ASA	Norway	Jordan Personal & Home Care AS, Jordan House Care AS	Norway	1	0	0	198	2,80%	-	-1,56%	0,79%	0,79%	-0,31%	0,99%	0,53%	1,23%
2012-06-07	Saab AB	Sweden	HITT NV	Netherlands	1	1	1	33	2,05%	18,93%	-0,27%	0,03%	-0,06%	-1,43%	-0,98%	0,47%	-2,25%
2012-04-18	Betsson AB	Sweden	Nordic Gaming Group Ltd	Malta	1	0	0	85	7,39%	-	-0,97%	1,78%	9,66%	2,18%	-1,56%	2,67%	13,75%
2012-03-22	Huhtamaki Oyj	Finland	Josco(Holdings)Ltd	Hong Kong	0	0	0	88	6,09%	-	-0,39%	0,82%	0,01%	1,51%	0,75%	0,25%	2,95%
2012-02-25	Svenska Cellulosa AB SCA	Sweden	Everbeauty Corp	Taiwan	1	1	0	290	2,73%	-	-0,11%	-0,16%	1,43%	1,30%	0,14%	1,03%	3,63%
2012-02-22	Jeudan A/S	Denmark	Property Portfolio	Denmark	0	1	0	81	10,53%	-	-1,01%	0,93%	2,24%	-1,49%	1,35%	1,80%	3,82%
2012-02-16	Opera Software ASA	Norway	Mobile Theory Inc	United States	0	1	0	40	5,53%	-	1,45%	-0,52%	2,57%	1,37%	-3,49%	-3,18%	-1,80%
2012-02-13	AB SKF	Sweden	General Bearing Corp	United States	0	1	0	125	1,21%	-	-0,64%	-0,01%	0,82%	-0,65%	-0,10%	0,05%	-0,53%
2012-02-06	Bilia AB	Sweden	Stenshagen Bil Oslo AS, Stenshagen Bil Kongsvinger AS	Norway	1	0	0	36	8,16%	-	2,51%	-0,40%	1,73%	1,47%	-0,14%	-1,52%	3,64%
2012-01-12	Schibsted ASA	Norway	Aspiro AB	Sweden	1	0	1	19	0,70%	-4,32%	-1,05%	2,87%	2,27%	-0,03%	1,15%	-0,70%	4,50%
2012-01-03	Fastighets AB Balder	Sweden	Residential Block Oesterfaelled,Copenhagen	Denmark	0	1	0	189	32,59%	-	1,07%	-0,01%	0,68%	3,19%	0,24%	0,00%	5,18%
2011-12-19	Sweco AB	Sweden	Finnmap Consulting Oy	Finland	1	0	0	85	13,59%	-	-0,50%	0,50%	5,10%	4,69%	4,46%	0,87%	15,11%
2011-12-06	Klovern AB	Sweden	Dagon AB	Sweden	1	1	1	777	123,09%	339,60%	-0,39%	-0,21%	-2,18%	0,69%	-3,31%	1,07%	-4,33%
2011-12-01	Outotec Oyj	Finland	Energy Products of Idaho Inc	United States	0	1	0	91	4,34%	-	0,43%	-0,52%	3,06%	0,02%	1,37%	-0,10%	4,26%
2011-10-17	Statoil ASA	Norway	Brigham Exploration Co	United States	1	1	1	4 782	6,13%	43,60%	-0,16%	-0,07%	0,59%	0,89%	-1,31%	0,27%	0,19%
2011-09-01	Svenska Cellulosa AB SCA	Sweden	Pro Descart Industria e Comercio Ltda	Brazil	0	1	0	70	0,87%	-	-0,36%	-1,69%	-1,54%	1,36%	0,19%	1,75%	-0,30%
2011-08-19	Electrolux AB	Sweden	CTI Cia Tecno Industrial SA	Chile	0	1	1	551	11,55%	29,15%	-0,64%	-2,33%	0,45%	-1,29%	1,95%	-0,21%	-2,07%
2011-06-29	Saab AB	Sweden	Sensis Corp	United States	0	1	0	195	8,11%	-	0,22%	0,65%	0,69%	-0,31%	-1,00%	-1,38%	-1,12%
2011-06-23	AB Sagax	Sweden	Properties(2),Stockholm	Sweden	0	0	0	54	13,60%	-	-1,22%	-1,38%	1,73%	-0,20%	1,82%	-1,56%	-0,81%
2011-06-21	Elekta AB	Sweden	Nucletron BV	Netherlands	0	1	0	526	12,73%	-	-0,15%	3,29%	3,85%	-1,05%	-0,27%	-0,12%	5,56%
2011-05-11	TDC A/S	Denmark	OnFone ApS	Denmark	1	1	0	55	0,62%	-	0,67%	1,25%	1,63%	0,17%	0,28%	-0,24%	3,76%
2011-04-28	CDON Group AB	Sweden	Tretti AB	Sweden	1	0	1	50	12,64%	16,73%	0,24%	-1,97%	-3,42%	1,83%	1,61%	0,43%	-1,27%
2011-04-11	Medivir AB	Sweden	BioPhausia AB	Sweden	1	0	1	101	15,57%	63,44%	-0,61%	-1,30%	-1,14%	-1,51%	-0,42%	-1,49%	-6,47%
2011-04-11	NIBE Industrier AB	Sweden	Schulthess Group AG	Switzerland	0	0	0	471	34,36%	-	-1,16%	0,87%	-1,32%	-0,57%	-0,94%	0,33%	-2,79%

***Table 1.31:** Data overview cont.*

2011-04-11	TGS-NOPEC Geophysical Co ASA	Norway	Stingray Geophysical Ltd	United Kingdom	1	0	0	80	2,91%	-	-2,35%	2,07%	-1,15%	1,32%	0,60%	-1,89%	-1,40%
2011-03-31	Rederi AB Transatlantic	Sweden	Osterstroms International AB	Sweden	1	0	0	41	17,89%	-	-0,28%	-2,80%	3,47%	-2,47%	-4,00%	1,96%	-4,12%
2011-01-10	Biotie Therapies Oyj	Finland	Synosia Therapeutics Holding AG	Switzerland	1	0	0	119	90,09%	-	-0,01%	9,37%	2,78%	14,62%	-0,81%	-5,67%	20,29%
2010-12-13	Assa Abloy AB	Sweden	Cardo AB	Sweden	0	1	1	1 056	11,04%	49,96%	-0,68%	1,60%	-2,09%	1,44%	-2,21%	1,11%	-0,83%
2010-11-30	Inmeta ASA	Norway	Crayon Group AS	Norway	1	1	0	55	141,75%	-	2,99%	-2,25%	0,08%	4,15%	1,56%	-0,53%	5,99%
2010-11-29	Ratos AB	Sweden	Biolin Scientific AB	Sweden	0	1	1	46	1,11%	47,72%	-1,43%	0,51%	-1,14%	1,61%	1,31%	2,71%	3,57%
2010-10-28	Stora Enso Oyj	Finland	Inpac International Print & Packaging Co Ltd	China (PRC)	0	0	0	115	6,26%	-	0,14%	1,33%	-2,32%	-0,97%	-0,10%	-0,04%	-1,96%
2010-10-22	Fagerhult AB	Sweden	LTS Licht & Leuchten GmbH	Germany	1	1	0	85	31,33%	-	6,86%	-0,35%	6,35%	-0,28%	1,01%	2,67%	16,26%
2010-10-11	Assa Abloy AB	Sweden	ActivIdentity Inc	United States	1	1	1	76	0,88%	-27,59%	0,59%	-2,15%	-0,64%	0,15%	1,25%	-0,52%	-1,31%
2010-10-11	Electrolux AB	Sweden	Olympic Group for Financial Investments SAE	Egypt	0	1	1	249	3,15%	62,71%	2,69%	0,73%	3,50%	-0,36%	0,09%	0,87%	7,52%
2010-09-28	UPM-Kymmene Oyj	Finland	Myllykoski Oy	Finland	0	0	0	1 128	12,82%		1,44%	-1,93%	3,91%	-0,37%	-0,12%	0,58%	3,52%
2010-09-27	Softronic AB	Sweden	Modul 1 Data AB	Sweden	0	0	1	14	31,48%	90,75%	0,52%	-0,47%	1,05%	-0,29%	-1,23%	-0,88%	-1,29%
2010-09-13	William Demant Holding AS	Denmark	Otix Global Inc	United States	1	0	1	62	1,44%	177,47%	-0,21%	1,44%	0,28%	-0,51%	0,54%	-0,85%	0,68%
2010-09-08	Finnair Oyj	Finland	Undisclosed Group of Airline Cos,Finland	Finland	1	0	0	48	6,14%	-	0,08%	0,99%	-0,67%	0,95%	-0,41%	-0,50%	0,43%
2010-07-06	Hexagon AB	Sweden	Intergraph Corp	United States	0	1	0	2 125	62,76%	-	-0,69%	-0,06%	0,78%	5,75%	3,28%	-1,69%	7,37%
2010-06-23	YIT Oyj	Finland	caverion GmbH	Germany	1	0	0	90	3,65%	-	0,34%	-0,20%	1,91%	-0,38%	-0,23%	1,52%	2,96%
2010-06-21	BW Offshore Limited	Norway	Prosafe Production PLC	Cyprus	1	0	1	1 385	208,83%	255,24%	-0,17%	1,22%	0,58%	0,75%	-0,88%	-2,40%	-0,90%
2010-05-24	RusForest AB	Sweden	Nord Timber Group	Russia	1	0	0	67	100,22%	-	-14,40%	0,55%	18,71%	-4,11%	0,61%	-0,13%	1,24%
2009-12-10	Outotec Oyj	Finland	Ausmelt Ltd	Australia	1	1	1	36	2,54%	68,98%	-2,33%	1,74%	-0,33%	-2,16%	-0,53%	0,14%	-3,48%
2009-11-05	Metso Oyj	Finland	Tamfelt Oyj Abp	Finland	1	0	1	301	7,17%	36,30%	-0,06%	-0,25%	0,56%	1,54%	-1,41%	1,78%	2,16%
2009-11-05	Biovitrum AB	Sweden	Swedish Orphan International AB	Sweden	1	0	0	584	125,38%	-	-1,03%	0,08%	5,91%	0,84%	0,45%	-1,55%	4,70%
2009-10-15	Outotec Oyj	Finland	Larox Oyj	Finland	0	1	1	99	6,57%	30,46%	-0,04%	0,57%	4,38%	-0,09%	-0,62%	-0,49%	3,71%
2009-10-12	Jeudan A/S	Denmark	Undisclosed Real Estate Portfolio,Copenhagen	Denmark	0	1	0	238	39,95%	-	-1,41%	0,54%	2,19%	-0,40%	4,27%	-0,63%	4,56%
2009-07-10	F-Secure Oyj	Finland	Steek SA	France	0	0	0	42	7,84%	-	0,70%	-1,03%	0,43%	-1,48%	1,62%	-1,69%	-1,44%
2009-06-26	Fastighets AB Balder	Sweden	Din Bostad Sverige AB	Sweden	1	1	1	626	625,25%	40,63%	-3,86%	4,20%	-3,56%	-0,63%	0,16%	-2,97%	-6,66%
2009-04-17	Peab AB	Sweden	Annehem Fastigheter AB	Sweden	1	1	1	59	5,93%	94,35%	5,34%	-1,27%	-3,64%	2,02%	-0,77%	-0,01%	1,67%
2009-04-15	Fiskars Oy AB	Finland	Agrofin Oy AB	Finland	1	1	0	157	31,85%	-	-0,11%	-0,10%	-0,10%	0,35%	-0,52%	1,18%	0,69%
2009-03-13	TDC A/S	Denmark	Fullrate A/S	Denmark	0	1	0	73	1,31%	-	0,60%	1,75%	1,06%	-1,26%	0,99%	2,05%	5,20%
2009-02-09	H Lundbeck A/S	Denmark	Ovation Pharmaceuticals Inc	United States	1	0	0	900	19,67%	-	0,34%	-2,25%	6,60%	5,58%	-4,99%	0,43%	5,70%
2008-10-21	Panaxia Security AB	Sweden	PanAlarm AB	Sweden	1	0	1	27	81,12%	91,49%	-4,23%	-2,37%	5,42%	2,35%	-2,24%	4,81%	3,75%
2008-10-15	Peab AB	Sweden	Peab Industri AB	Sweden	1	1	1	932	152,11%	90,40%	8,16%	1,00%	-10,80%	-3,83%	-1,56%	-8,21%	-15,25%
2008-09-16	Getinge AB	Sweden	Datascope Corp	United States	1	0	1	613	13,35%	-23,43%	0,34%	-0,95%	-2,53%	1,42%	-2,27%	-89,03%	-93,03%
2008-07-04	Aker Solutions ASA	Norway	Qserv Ltd	United Kingdom	1	0	0	218	3,54%	-	-2,73%	1,43%	-0,53%	2,14%	-0,66%	-4,64%	-4,99%
2008-07-03	Wartsila Oyj Abp	Finland	Vik-Sandvik AS	Norway	0	0	0	267	4,09%	-	0,63%	3,17%	4,13%	-2,44%	-0,49%	-0,25%	4,76%
2008-06-03	Inmeta ASA	Norway	Exense Consulting AS	Norway	1	1	1	19	55,77%	29,10%	-0,68%	4,18%	3,58%	-1,86%	0,44%	-3,59%	2,08%
2008-05-09	Norsk Hydro ASA	Norway	Alumafel SA	Spain	0	1	0	119	0,65%	-	-8,86%	-1,86%	-1,00%	-0,07%	4,32%	2,31%	-5,17%
2008-04-18	Norsk Hydro ASA	Norway	Expral SA	Spain	0	1	0	49	0,27%	-	-1,32%	0,45%	-3,25%	0,67%	-2,04%	4,83%	-0,66%
2008-04-16	PSI Group ASA	Norway	CashGuard AB	Sweden	1	0	1	66	76,46%	-2,33%	1,65%	-1,80%	7,72%	-3,82%	-1,49%	-4,49%	-2,23%
2008-03-17	Oriola-KD Oyj	Finland	Vitim & Co	Russia	0	0	0	141	35,43%	-	-0,24%	2,11%	0,27%	-1,62%	2,56%	0,39%	3,46%
2008-03-06	H&M Hennes & Mauritz AB	Sweden	Fabric Scandinavien AB	Sweden	0	0	0	92	0,23%	-	-0,04%	-0,13%	-1,66%	0,16%	0,46%	0,09%	-1,11%
2008-02-28	Fortum Oyj	Finland	Territorial Generation Co No 10{TGC-10}	Russia	0	0	1	3 188	8,26%	11,43%	-1,99%	-0,17%	2,31%	-2,22%	-2,59%	1,64%	-3,02%
2008-02-22	Haldex AB	Sweden	Concentric PLC	United Kingdom	1	0	0	180	51,60%	-	2,68%	0,64%	6,88%	6,57%	-2,20%	2,64%	17,20%
2008-01-28	Nokia Oyj	Finland	TrollTech ASA	Norway	1	1	1	137	0,10%	42,09%	2,04%	-0,83%	-0,45%	-1,80%	1,14%	2,02%	2,12%
2008-01-08	Elekta AB	Sweden	CMS Inc	United States	0	1	0	75	5,15%	-	1,89%	1,47%	-0,81%	-0,44%	1,24%	2,27%	5,61%
2007-12-18	Cybercom Group Europe AB	Sweden	Plenware Oy	Finland	0	0	0	69	39,66%	-	-1,08%	2,60%	1,60%	3,76%	0,26%	-2,32%	4,83%
2007-12-10	Aker ASA	Norway	Aker Philadelphia Shipyard ASA	Norway	0	0	1	54	1,20%	5,13%	0,01%	3,56%	-0,18%	0,75%	-0,86%	-0,28%	2,99%
2007-11-12	Petroleum Geo-Services ASA	Norway	Arrow Seismic ASA	Norway	0	1	1	377	7,28%	58,28%	0,03%	-1,13%	0,44%	-79,78%	1,58%	-3,86%	-82,73%
2007-11-05	Technopolis Oyj	Finland	Kuopion Teknologiakeskus Teknia Oy	Finland	0	1	0	99	25,82%	-	-3,11%	-2,54%	-1,00%	1,62%	-3,39%	0,02%	-8,41%
2007-10-17	Wega Mining ASA	Norway	Goldbelt Resources Ltd	Canada	1	0	1	110	40,43%	54,54%	0,15%	-0,99%	6,47%	4,17%	-2,74%	-8,67%	-1,62%
2007-10-15	Orexo AB	Sweden	Biolipox AB	Sweden	1	0	0	121	69,36%	-	0,51%	-1,02%	-11,16%	1,28%	-1,37%	0,07%	-11,69%
2007-10-08	Hexagon AB	Sweden	NovAtel Inc	Canada	1	1	1	378	7,06%	13,22%	-0,40%	-1,93%	7,44%	0,45%	0,14%	0,93%	6,63%

Table 1.31: *Data overview cont.*

2007-10-01	Nokia Oyj	Finland	NAVTEQ Corp	United States	1	1	1	7 562	5,16%	10,04%	-0,74%	-0,15%	-1,13%	0,03%	-0,25%	0,02%	-2,22%
2007-10-01	Stockmann Oyj	Finland	Lindex AB	Sweden	1	0	1	1 262	86,10%	16,51%	4,22%	0,60%	-3,23%	1,61%	1,31%	1,38%	5,89%
2007-09-24	XPonCard Group AB	Sweden	All Cards Service Center AB {ACSC AB}	Sweden	0	0	1	296	559,65%	1161,95%	0,69%	-0,01%	10,69%	-0,91%	0,88%	-1,34%	10,00%
2007-09-06	Tandberg ASA	Norway	Codian Ltd	United Kingdom	0	0	0	270	9,47%	-	-0,11%	0,42%	0,35%	-1,59%	-0,09%	-1,05%	-2,06%
2007-08-30	AF AB	Sweden	Colenco Power Engineering Ltd	Switzerland	0	0	0	58	15,81%	-	0,35%	-2,67%	0,85%	-0,72%	-2,33%	0,70%	-3,81%
2007-08-15	Technopolis Oyj	Finland	Kiinteisto Oy Innopoli II	Finland	1	1	0	73	20,90%	-	-4,24%	2,76%	0,41%	-0,55%	1,42%	-3,81%	-4,00%
2007-08-07	Capio AB	Sweden	Unilabs SA	Switzerland	1	1	1	393	15,48%	116,95%	0,01%	0,11%	-0,36%	-0,57%	0,25%	0,35%	-0,21%
2007-07-25	TradeDoubler AB	Sweden	Interactive Marketing Works Ltd	United Kingdom	1	0	0	115	14,81%	-	-0,76%	-0,51%	0,85%	1,25%	-2,08%	-5,09%	-6,33%
2007-07-09	TeliaSonera AB	Sweden	MCT Corp	United States	1	1	0	300	0,83%	-	1,79%	1,61%	0,08%	-0,45%	0,02%	-0,04%	3,00%
2007-06-29	Fiskars Oy AB	Finland	Iittala Oy	Finland	0	0	0	312	32,87%	-	-0,56%	-1,31%	1,94%	2,89%	0,66%	5,54%	9,16%
2007-06-20	Petroleum Geo-Services ASA	Norway	MTEM Ltd	United Kingdom	0	0	0	276	5,53%	-	-0,30%	0,19%	1,43%	-7,92%	0,71%	-1,78%	-7,66%
2007-06-11	Affecto Oyj	Finland	Component Software Group ASA	Norway	1	0	1	59	58,17%	19,18%	-1,12%	0,01%	14,70%	-1,90%	1,33%	2,31%	15,33%
2007-05-16	Jeudan A/S	Denmark	Undisclosed Property Portfolio,Copenhagen	Denmark	0	1	0	454	68,96%	-	2,00%	6,48%	-3,12%	0,12%	-0,06%	-0,18%	5,24%
2007-05-03	Svenskt Stal AB	Sweden	IPSCO Inc	United States	1	0	1	8 211	124,29%	5,59%	-0,07%	1,65%	-4,36%	5,37%	3,30%	-0,31%	5,58%
2007-04-30	TTS Group ASA	Norway	Sense EDM AS	Norway	1	0	0	88	33,97%	-	-1,47%	1,83%	2,42%	-0,22%	4,16%	-1,23%	5,50%
2007-04-12	New Wave Group AB	Sweden	Cutter & Buck Inc	United States	1	1	1	133	26,14%	8,70%	-0,51%	0,75%	0,93%	8,27%	1,71%	-0,57%	10,58%
2007-02-26	Telefonaktiebolaget LM Ericsson	Sweden	TANDBERG Television ASA	Norway	1	1	1	1 095	2,00%	-2,27%	-0,50%	0,74%	-0,49%	2,16%	0,16%	-1,02%	1,04%
2007-02-26	AB SKF	Sweden	ABBA Linear Tech Co Ltd	Taiwan	0	1	0	61	0,72%	-	0,56%	-0,46%	-0,28%	1,38%	-0,42%	0,82%	1,61%
2007-02-16	Atria Group PLC	Finland	Sardus AB	Sweden	0	1	1	98	31,23%	26,92%	-0,40%	-0,58%	3,12%	7,87%	5,49%	-2,04%	13,46%
2007-02-09	TeleComputing ASA	Norway	Kentor	Sweden	0	0	0	41	27,38%	-	3,15%	1,62%	-1,77%	0,40%	-4,15%	0,20%	-0,54%
2007-01-11	Sanistal A/S	Denmark	Carl F A/S	Denmark	0	0	0	87	33,09%	-	2,00%	-1,89%	8,25%	3,37%	0,28%	2,31%	14,32%
2007-01-08	Castellum AB	Sweden	Undisclosed Swedish Properties(8)	Sweden	0	0	0	136	5,75%	-	0,77%	-2,06%	-0,91%	0,16%	-1,80%	-0,14%	-3,97%
2006-12-20	Lassila & Tikanoja Oyj	Finland	Biowatti Oy	Finland	0	0	0	40	3,67%	-	7,83%	-0,55%	1,05%	-1,61%	1,41%	-0,10%	8,03%
2006-12-19	Telefonaktiebolaget LM Ericsson	Sweden	Redback Networks Inc	United States	1	1	1	2 048	3,44%	65,12%	-0,67%	-0,16%	-0,01%	0,31%	-0,87%	-0,04%	-1,44%
2006-12-18	Statoil ASA	Norway	Norsk Hydro ASA	Norway	1	1	1	31 998	53,62%	2,55%	-1,59%	0,97%	-0,37%	0,80%	-0,23%	-7,09%	-7,51%
2006-12-08	Skanska AB	Sweden	McNicholas PLC	United Kingdom	0	0	0	98	1,34%	-	-0,45%	2,00%	0,60%	0,33%	-1,07%	2,19%	3,61%
2006-10-19	Componenta Oyj	Finland	Doktas Docum Sanayi ve Ticaret AS	Turkey	0	0	1	112	142,80%	3,32%	-1,68%	-0,80%	5,44%	0,77%	-0,50%	-0,27%	2,97%
2006-10-17	LjungbergGruppen AB	Sweden	Atrium Fastigheter AB	Sweden	1	0	0	557	121,52%	-	-0,03%	1,92%	8,51%	-0,19%	1,94%	-0,12%	12,04%
2006-09-25	TDC A/S	Denmark	Undisclosed Cable-TV & Internet Assets	Denmark	0	1	0	45	0,43%	-	-0,69%	0,73%	-0,18%	-0,96%	0,18%	1,39%	0,47%
2006-08-31	Yara International ASA	Norway	Fertibras SA	Brazil	1	0	1	109	2,43%	34,67%	1,42%	0,32%	-0,73%	0,54%	2,39%	-1,01%	2,92%
2006-08-23	NeuroSearch A/S	Denmark	Carlsson Research AB	Sweden	0	0	0	122	46,81%	-	1,77%	2,03%	-2,49%	-0,48%	1,06%	-2,85%	-0,97%
2006-08-21	Capio AB	Sweden	Deutsche Klinik GmbH	Germany	1	0	0	44	2,85%	-	0,83%	1,45%	0,06%	-2,09%	2,18%	2,32%	4,74%
2006-08-14	Novozymes A/S	Denmark	GroPep Ltd	Australia	1	1	1	64	1,72%	22,85%	-0,67%	-0,30%	0,85%	0,23%	0,90%	-0,97%	0,05%
2006-08-07	Nokia Oyj	Finland	Loudeye Corp	United States	1	1	1	104	0,13%	343,16%	0,33%	0,39%	-0,26%	-0,56%	1,57%	-0,19%	1,29%
2006-07-11	Polimoon ASA	Norway	Plastohm SA	France	0	0	1	51	40,97%	10,73%	1,14%	0,90%	-0,33%	-1,07%	-0,83%	0,73%	0,54%
2006-07-04	Hafslund ASA	Norway	Viken Fjernvarme AS	Norway	1	0	0	321	18,82%	-	-2,37%	-0,91%	-0,59%	-0,60%	-1,10%	1,29%	-4,28%
2006-06-14	Kungsleden AB	Sweden	Undisclosed Retirement Homes (9), Germany	Germany	0	1	0	93	7,02%	-	0,85%	-3,61%	0,34%	3,09%	-1,05%	1,44%	1,06%
2006-06-05	Telefonaktiebolaget LM Ericsson	Sweden	Netwise AB	Sweden	1	1	1	39	0,08%	30,51%	-0,74%	0,40%	-1,33%	0,10%	2,41%	-0,73%	0,11%
2006-06-05	Keops A/S	Denmark	M2 A/S	Denmark	0	0	0	40	3,67%	-	-0,77%	-5,17%	-0,43%	-5,79%	-5,10%	-6,15%	-23,41%
2006-05-29	Lundin Petroleum AB	Sweden	Valkyries Petroleum Corp	Canada	1	0	1	674	20,04%	1030,49%	-0,05%	2,05%	5,63%	1,58%	-1,28%	1,17%	9,10%
2006-05-29	Eltek ASA	Norway	Nera ASA	Norway	1	0	1	210	47,11%	-17,41%	0,01%	-2,47%	-8,79%	-1,12%	0,51%	-3,51%	-15,37%
2006-05-24	Sjaelso Gruppen A/S	Denmark	Ikast Byggeindustri A/S	Denmark	1	0	0	137	16,12%	-	0,39%	1,09%	-3,54%	-0,40%	2,11%	6,26%	5,92%
2006-05-23	Assa Abloy AB	Sweden	Fargo Electronics Inc	United States	1	1	1	300	4,70%	36,64%	3,91%	-0,01%	-0,62%	-0,33%	0,01%	2,90%	5,87%
2006-05-22	Citycon Oyj	Finland	Stenungs Torg Fastighets AB	Sweden	1	1	0	54	8,35%	-	-5,06%	0,32%	-8,47%	6,22%	-2,52%	-0,09%	-9,60%
2006-05-16	TeliaSonera AB	Sweden	NextGenTel AS	Norway	0	1	1	253	0,89%	31,00%	-0,89%	2,24%	-0,33%	1,50%	2,61%	-0,64%	4,49%
2006-05-11	Altinex ASA	Norway	Denerco Oil A/S	Denmark	1	0	0	269	43,69%	-	13,58%	11,25%	78,71%	-6,17%	-0,54%	-2,83%	94,01%
2006-04-24	Pricer AB	Sweden	Eldat Communication Ltd	Israel	1	0	0	40	39,51%	-	0,70%	-0,12%	4,73%	-3,14%	-1,85%	1,47%	1,79%
2006-04-11	Teleca AB	Sweden	Telma Ltd	Russia	0	0	0	57	15,05%	-	0,12%	-1,26%	7,87%	0,80%	-0,95%	-0,02%	6,56%
2006-04-10	Parken Sport & Entertainment A/S	Denmark	Fitness.dk A/S	Denmark	0	0	0	49	14,57%	-	0,87%	-0,36%	6,03%	2,73%	1,03%	-0,34%	9,96%
2006-04-07	Sandvik AB	Sweden	SDS Corp Ltd	Australia	1	0	1	89	0,61%	36,53%	-0,13%	-1,30%	0,48%	-1,53%	0,63%	-1,34%	-3,19%

Table 1.31: *Data overview cont.*

2006-04-03	AB SKF	Sweden	SNFA SAS	France	1	1	0	159	2,35%	-	2,55%	-0,10%	0,33%	-2,13%	1,23%	-0,37%	1,52%
2006-03-13	FLSmidth & Co A/S	Denmark	Potagua A/S	Denmark	1	0	1	885	53,85%	27,37%	-0,54%	0,68%	-2,21%	0,83%	-5,06%	1,14%	-5,17%
2006-03-06	Telelogic AB	Sweden	i-Logix Inc	United States	0	1	0	80	13,03%	-	0,55%	-1,86%	2,25%	3,22%	-0,76%	-1,67%	1,74%
2006-02-10	Wartsila Oyj Abp	Finland	Total Automation Ltd	Singapore	1	1	1	66	2,65%	2,34%	0,89%	-0,90%	2,36%	-0,54%	-0,32%	-0,03%	1,46%
2006-02-02	Fortum Oyj	Finland	E ON Finland Oyj	Finland	0	1	1	434	2,20%	-15,64%	-2,46%	1,44%	-1,06%	3,71%	-1,26%	1,48%	1,85%
2006-01-16	Citycon Oyj	Finland	Valtari Shopping Centre	Finland	0	1	0	45	7,55%	-	3,21%	0,03%	-2,58%	-0,31%	1,17%	0,05%	1,57%
2005-12-23	Fabege AB	Sweden	Tornet Fastighets AB	Sweden	0	0	1	391	21,66%	6,78%	0,59%	-1,26%	2,27%	-0,04%	-1,13%	0,16%	0,58%
2005-12-21	DSV A/S	Denmark	Koninklijke Frans Maas Groep NV	Netherlands	1	0	1	391	17,13%	72,52%	-0,36%	0,82%	-0,83%	3,57%	5,52%	-0,16%	8,57%
2005-11-16	Nokia Oyj	Finland	Intellisync Corp	United States	1	1	1	491	0,66%	66,53%	0,16%	0,75%	-0,06%	0,05%	0,40%	0,16%	1,45%
2005-11-10	A/S Schouw & Co	Denmark	Biomar Holding A/S(WAS 89407W)	Denmark	0	0	1	140	33,40%	-2,80%	-0,09%	-0,29%	0,28%	5,87%	1,97%	2,71%	10,44%
2005-09-26	Eniro AB	Sweden	Findexa AS	Norway	1	0	1	1 343	71,17%	51,31%	2,14%	-1,84%	-0,32%	-2,89%	-1,90%	0,20%	-4,61%
2005-09-19	Norsk Hydro ASA	Norway	Spinnaker Exploration Co	United States	1	1	1	2 545	8,56%	68,29%	0,42%	0,80%	-0,57%	-1,15%	0,74%	0,66%	0,89%
2005-09-15	GN Store Nord A/S	Denmark	Interton Hoergaraete GmbH	Germany	1	0	0	57	1,95%	-	1,10%	1,18%	-2,94%	-1,42%	1,33%	3,01%	2,25%
2005-08-29	TeliaSonera AB	Sweden	Vollvik Gruppen AS	Norway	0	1	0	250	1,13%	-	0,56%	1,54%	0,97%	0,24%	-0,42%	-0,24%	2,63%
2005-07-21	Citycon Oyj	Finland	Rocca al Mare Shopping Centre	Estonia	0	1	0	76	17,96%	-	0,64%	-1,39%	0,88%	-1,00%	-2,16%	0,22%	-2,83%
2005-07-17	Tele2 AB	Sweden	Versatel Telecom International NV	Netherlands	1	1	1	1 011	25,87%	17,02%	-0,09%	0,32%	0,38%	0,83%	1,41%	-1,17%	1,67%
2005-07-07	Elisa Oyj	Finland	Saunalahti Group Oyj	Finland	1	0	1	389	18,14%	18,25%	-1,34%	-0,56%	-0,69%	9,63%	-0,18%	0,32%	7,17%
2005-06-20	PA Resources AB	Sweden	MP Zarat Ltd	Cayman Islands	0	1	0	230	38,49%	-	-1,03%	-1,50%	43,97%	-1,58%	-2,77%	10,83%	47,91%
2005-06-17	Kungsleden AB	Sweden	Undisclosed Retail Properties (32)	Sweden	0	1	0	100	10,00%	-	-0,86%	-2,38%	-1,99%	1,66%	-2,94%	1,20%	-5,30%
2005-06-13	Hexagon AB	Sweden	Leica Geosystems AG	Switzerland	1	1	1	1 118	109,52%	60,50%	0,99%	1,27%	3,49%	-2,50%	2,74%	1,25%	7,24%
2005-05-11	AP Moller-Maersk A/S	Denmark	Koninklijke P&O Nedlloyd NV	Netherlands	1	0	1	3 297	15,90%	52,32%	0,21%	1,91%	-0,62%	-0,78%	-0,86%	0,04%	-0,10%
2005-04-25	Stora Enso Oyj	Finland	Schneidersohne Paper	Germany	1	0	0	588	24,74%	-	-4,32%	0,41%	-0,71%	1,11%	-0,09%	1,28%	-2,33%
2005-04-13	Telelogic AB	Sweden	Focal Point AB	Sweden	1	0	1	13	2,35%	0,08%	0,98%	1,34%	-1,41%	-1,17%	-2,12%	-0,52%	-2,91%
2005-03-24	KONE Oyj	Finland	Thai-Lift Industries PCL	Thailand	0	0	1	15	0,34%	4,83%	-0,01%	0,88%	1,22%	0,44%	-0,99%	1,80%	3,34%
2005-03-18	Kungsleden AB	Sweden	Care Properties(44),Vastra Gotaland	Sweden	0	1	0	152	18,89%	-	0,49%	0,41%	3,71%	5,00%	2,03%	-1,05%	10,58%
2005-01-18	Elekta AB	Sweden	Impac Medical Systems Inc	United States	1	1	1	196	21,22%	-3,24%	-0,14%	-1,37%	8,63%	3,16%	-0,05%	1,79%	12,01%
2004-11-08	Orkla ASA	Norway	Chips Abp	Finland	1	1	1	478	7,82%	55,98%	-1,15%	0,11%	-0,01%	-0,20%	2,14%	1,39%	2,28%
2004-11-01	Scania AB	Sweden	Ainax AB	Sweden	1	0	1	980	25,96%	3,65%	1,57%	-1,05%	3,17%	-2,04%	-0,38%	1,23%	2,49%
2004-09-14	TDC A/S	Denmark	Song Networks Holding AB	Sweden	1	1	1	690	9,12%	114,73%	-0,18%	-1,49%	-3,55%	-0,97%	-1,47%	0,54%	-7,12%
2004-08-11	Telenor ASA	Norway	Promonte		1	1	0	79	0,67%	-	-0,14%	-0,92%	-1,07%	0,10%	0,15%	-0,12%	-2,01%
2004-05-06	Securitas AB	Sweden	Bell Group PLC	United Kingdom	1	1	1	171	3,82%	67,62%	-0,10%	-1,53%	-8,91%	1,84%	3,45%	-2,04%	-7,29%
2004-05-06	Sigma AB	Sweden	RKS AB	Sweden	1	0	1	12	23,18%	4,71%	1,04%	-3,75%	5,33%	-3,17%	0,30%	-3,82%	-4,08%
2004-05-03	Thrane & Thrane A/S	Denmark	Eurocom Industries A/S	Denmark	0	0	1	17	10,93%	-52,78%	-0,51%	1,84%	-2,03%	4,69%	-1,29%	-0,93%	1,77%
2004-03-01	Svenska Cellulosa AB SCA	Sweden	Drypers	Malaysia	0	1	0	86	1,11%	-	-1,48%	-0,87%	3,06%	-0,47%	-1,10%	-0,33%	-1,19%
2004-02-02	Group 4 Falck A/S	Denmark	Securicor PLC	United Kingdom	1	0	1	2 086	105,24%	15,98%	-3,31%	2,11%	6,15%	4,24%	-0,51%	-0,38%	8,30%
2004-01-20	Carlsberg Breweries A/S	Denmark	Holsten-Brauerei AG	Germany	0	0	1	680	52,38%	202,57%	0,82%	1,72%	-2,87%	0,16%	-2,44%	-0,03%	-2,65%
											0,04%	**0,26%**	**1,73%**	**0,04%**	**0,04%**	**-0,49%**	**1,63%**