ABNORMAL STOCK RETURNS AND INFORMED TRADING AROUND MERGERS AND ACQUISITIONS ANNOUNCEMENTS IN NORDIC STOCK MARKETS

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Examiner(s): Professor Satu Pätäri

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ABSTRACT

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Abnormal stock returns and informed trading around mergers and acquisitions announcements in Nordic stock markets

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Companies are seeking growth to meet the expectations of shareholders. Mergers and acquisitions are used to create synergies, eliminate competition, and grow businesses. In previous studies, the focus has usually been on the short-term value creation of targets in M&A deals, and many studies have reported that M&A activity is value-creating, especially for the target. Although there are studies that reported gains for the acquiring company as well, others have reported losses.

Due to inconsistencies in previous literature, this study aimed to provide information about the abnormal returns and find evidence of possible information leakages around the mergers and acquisitions announcement in Nordic stock markets. Also, the effects of different deal and company characteristics on the abnormal returns and trading volumes were investigated. The final sample consisted of 208 M&A transactions between the years 2010-2019. Acquirers in the sample were public companies from Finland, Sweden, or Denmark. A market-model-based event study method was used in the study.

Results of this study indicate that the announcement of M&As in Nordic stock markets is perceived positively in the short term by the shareholders of the acquiring company as the announcement date average abnormal return peaks to 2,111 % and the day after is 0,647 %. Also, the different deal or company characteristics had their effect on the abnormal returns and abnormal trading volumes. The examination revealed some unsignificant evidence of information leakages or informed trading before the announcement of M&As for the whole sample. For acquirers of public targets, there is statistically significant evidence of informed trading or information leakages before the announcement of M&As.

TIIVISTELMÄ

Lappeenrannan–Lahden teknillinen yliopisto LUT

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Kauppatieteet

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Yrityskauppailmoitusten yhteydessä esiintyvät epänormaalit tuotot ja epänormaali kaupankäynti Pohjoismaisilla pörssimarkkinoilla

Kauppatieteiden pro gradu -tutkielma

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Yritykset etsivät kasvua täyttääkseen osakkeenomistajien odotukset. Yritysostoja ja fuusioita tehdään, jotta saavutetaan synergioita, eliminoidaan kilpailua markkinoilla sekä kasvatetaan yrityksen liiketoimintoja. Aikaisemmissa tutkimuksissa on keskitytty tutkimaan ostokohteiden arvonluontia lyhyellä aikavälillä ja useat tutkimukset ovatkin raportoineet tuloksista, joiden mukaan yrityskaupat ovat arvoa kasvattava toiminto, erityisesti ostokohteille. Osa tutkimuksista on raportoinut myös ostajan positiivista tuotoista yrityskaupoissa, kun taas joissakin tutkimuksissa on raportoitu ostajayrityksien tappioista.

Tämän tutkimuksen tavoitteena oli tutkia yrityskauppailmoitusten yhteydessä esiintyviä ostajayrityksien epänormaaleja tuottoja ja etsiä todisteita mahdollisista tietovuodoista Pohjoismaisissa pörsseissä. Lisäksi tutkimuksessa tarkasteltiin erilaisten kauppa- ja yritysominaisuuksien vaikutuksia epänormaaleihin tuottoihin ja epänormaaliin kaupankäyntiin. Lopullinen tutkimusotos koostui 208 yrityskaupasta vuosina 2010–2019. Tutkimusotoksessa yritysostajat olivat suomalaisia, ruotsalaisia tai tanskalaisia pörssiyhtiöitä. Tutkimuksessa käytettiin markkinamalliin perustuvaa tapahtumatutkimusmenetelmää.

Tutkimuksen tuloksien mukaan yrityskauppailmoitukset saivat positiivisen vastaanoton ostajayrityksen osakkeenomistajilta, kun epänormaalien tuottojen keskiarvo yrityskaupan julkaisupäivänä oli 2,111 % ja sitä seuraavana päivänä 0,647 %. Lisäksi erilaisilla kauppa- ja yritysominaisuuksilla oli vaikutusta epänormaaleihin tuottoihin ja epänormaaliin kaupankäyntiin. Koko tutkimusotokselle löytyi myös joitakin tilastollisesti merkityksettömiä todisteita tietovuodoista ennen julkisen yrityskauppailmoituksen tekemistä. Lisäksi pörssilistatun yrityksen ostajilla havaittiin tilastollisesti merkitseviä todisteita tietovuodoista ennen julkisen yrityskauppailmoituksen tekemistä.

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1. INTRODUCTION

Mergers and acquisitions (M&As) come in waves (Martynova & Renneboog, 2008) and the total number of M&As peaked in 2017 and has been on a high level since then. Figure 1 presents the last three waves and the total number and value of worldwide M&As from 1985 to 2021. An increase in M&As is because the world becomes increasingly globalized (Simões, et al., 2012; Ali-Yrkkö, 2002) and the competition intensifies (Sachdeva, et al., 2015). Public as well as private companies are seeking growth to meet the expectations of shareholders. Companies use M&As to create synergies and eliminate competition (Pandey & Kumari, 2020). At the same time, M&As are a strategic method to grow the value creation capabilities of companies (Yang, et al., 2019), and an inorganic method to grow the businesses (Sachdeva, et al., 2015; Ma, et al., 2009). Even though M&As are a fast and effective way to fulfill the expectation of shareholders, at the same time it is an insecure and risky way to do that. (Katramo, et al.,2013).

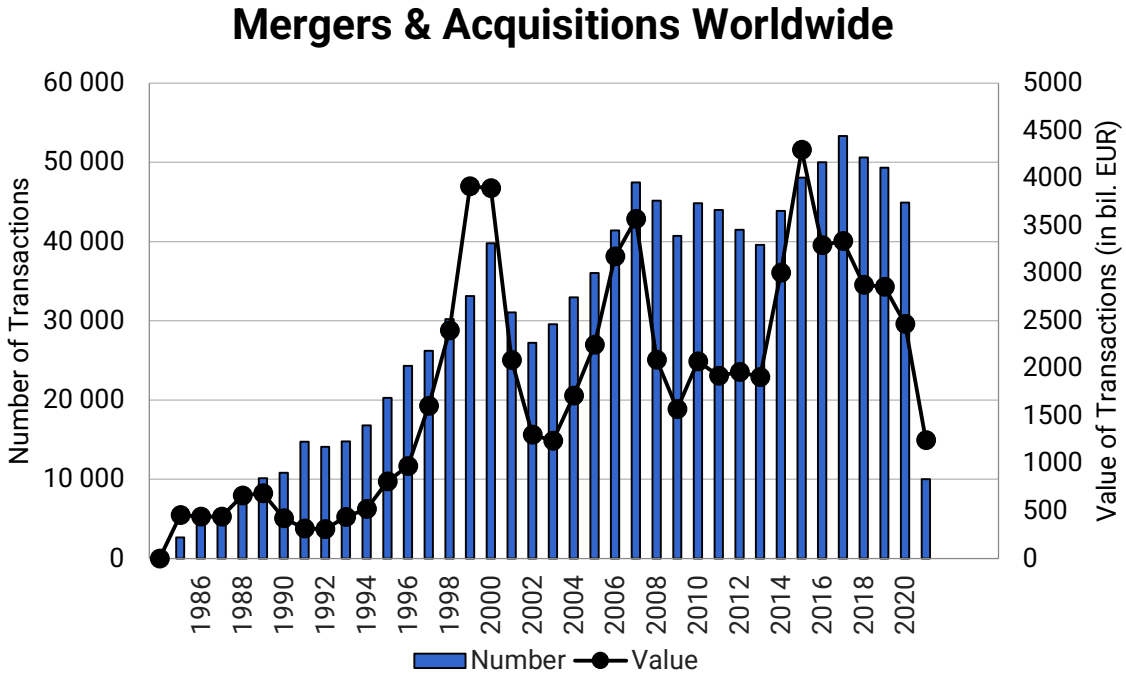

Figure 1. *Total value and number of worldwide M&As from 1985 to 2021 (Institute of Mergers, Acquisitions, and Alliances (IMAA), 2021).*

This study aims to provide information about the abnormal stock returns and find evidence of possible information leakages around the mergers and acquisitions announcement in Nordic stock markets. Most of the recent studies (Justice, 2019; Cai, et al., 2011; Danbolt & Maciver, 2012; Draper & Paudyal, 2006) have focused on the large U.S. and UK markets. Moreover, few studies have focused on the Nordic stock markets (Ali-Yrkkö, 2002), which lack empirical evidence related to the abnormal stock returns around mergers and acquisitions announcements. The amount of M&As is on a high level in Nordic stock markets also (IMAA, 2021), even though it does not play a crucial role as a border market such as the markets of the U.S. and UK.

For this study, it was of interest to also investigate the information leakages and trading behavior around the announcement dates of M&As, because there has been less previous evidence for possible information leakages in Nordic stock markets. Brunnermeier (2005) stated that information leakages and informed trading reduce the information efficiency of markets in the long run as well as the risk-sharing and allocative efficiency of the markets. For example, in Finland in the recent past also the number of individual small investors has increased, and investing is more popular than before (Finanssiala Ry, 2021). However, Jegadeesh and Tang (2010) stated that small investors usually rely on public information, while institutional investors are also able to gather private information because of their scale and resources.

Due to the above-mentioned aspects, the possible abnormal returns around announcements of M&As are in interest and the results of this study can aid the small investors to understand the stock price movement around M&As better. As the study sheds light on the possible information leakages in Nordics stock markets, it will also provide evidence to market regulators about the possible information leakages. The market regulators should investigate the cases of possible information leakages and evaluate those cases when setting new policies as was suggested by Justice (2019). These actions will thereby improve the protection of small investors and increase the market efficiency in the long run as was stated by Brunnermeier (2005).

1.1 Theoretical background and motivation

Studies are seeking answers whether the target or acquirer benefits from the acquisition process (Justice, 2019; Yilmaz & Tanyeri, 2018; Danbolt & Maciver, 2012; Campa & Hernando, 2004). Usually, the focus is on short-term value creation of targets in M&A deals, and many studies have reported that M&A activity is value-creating, especially for the target (Yilmaz & Tanyeri, 2018; Kiymaz & Baker, 2008; Campa & Hernando, 2004; Andrade, et al., 2001; Jensen & Ruback, 1983). Although there are studies that reported gains for the acquiring company as well (Justice, 2019; Mateev, 2017; Sachdeva, et al., 2015; Cai, et al., 2011; Ma, et al., 2009; Draper & Paudyal, 2006; Martynova & Renneboog, 2006). However, others suggest negative returns, namely losses (Bradley, et al., 2012; Kiymaz & Baker, 2008; Sudarsanam & Mahate, 2003; Andrade, et al., 2001; Mulherin & Boone, 2000).

Gains or losses are depending on multiple factors (Mateev, 2017; Draper & Paudyal, 2006), but the following are discussed and investigated in this research: payment method, target ownership, the relative size of the deal, and the internationality of the deal. In this research, the wealth effect, or namely abnormal returns, of the acquirer are under investigation. The studied factors in this study were chosen so that there would be comparable results, especially from European markets, like the studies of Mateev (2017) and Draper and Paudyal (2006). An additional reason for the chosen factors in this research was also the availability of data, as it is necessary to have enough high-quality data to conduct a decent event study and regression analysis.

The impact of payment method

Company growth requires financial resources from the acquirer and thus acquisitions are financed with equity or a combination of equity and cash. There has been a decline in the proportion of all-cash paid acquisitions starting from 1980 and the all-equity paid acquisitions peaked in the late 1990s (Martynova & Renneboog, 2008). This behavior is reasonable as in general, stocks were overvalued in the late 1990s, and acquirers were enthusiastic to use the overvalued stock as a payment method. Sudarsanam and Mahate

(2003) supported this point of view as they found out that highly valued and growing companies used more likely their equity to finance deals, and low growth companies use cash instead of equity.

The trend in all-equity bids is positively correlated with the stock market index and when equity is used as a payment method, it should be adjusted to the peak of a stock market cycle or rising markets (Martynova & Renneboog, 2008). Mixed bids are the most common payment method in M&As. In mixed bids, the payment is made with cash, debt, and equity (Martynova & Renneboog, 2008; Draper & Paudyal, 2006).

The announcement of an all-equity bid may signal that the acquirer's share is overpriced, so the abnormal returns will be negative or lower than in cash bids since the investors are informed about the equity bid. (Martynova & Renneboog, 2008). Martynova and Renneboog (2008) reported that the all-cash offers generated abnormal returns of 12 %, and all-equity bids generated 7 % abnormal returns which are significantly lower. Draper and Paudyal (2006) reported similar results as the shareholders of acquiring firms that pay all-cash gained 2 % significant excess returns around the announcement date. When the payment was made with all-equity, positive and significant returns were noticed during the pre-event window before the announcement and no loss for the acquirer was reported. However, Mateev (2017) reported contradicting results with Martynova and Renneboog (2008) and Draper and Paudyal (2006) as he suggested that shareholders of bidding companies earn higher abnormal returns (ARs) in equity offers than in other payment methods.

In Indian markets, Ladkani and Banerjee (2018) showed that cash offers earned significant positive abnormal returns for acquirer on the deal announcement, and equity offers witnessed non-negative returns on the announcement. So, neither of the payment methods is value-destroying in Indian markets (Ladkani & Banerjee, 2018). It was also noted by the authors that larger deals and deals for public targets increased the use of equity offers.

Target ownership

The ownership of the target company plays a crucial role in M&As as the available information of public companies is more comprehensive compared to privately held companies, and as Draper & Paudyal (2006) stated, the takeovers of private companies represent over 80 % of all takeovers. Previous studies have analyzed the takeovers of public firms and the results are not representative when discussing privately held firms (Draper & Paudyal, 2006).

In Draper and Paudyal's (2006) study companies that acquired public targets suffered a significant 0,4 % loss around the announcement date. Compared to public companies, authors reported that acquiring private companies a significant 2,19 % excess return was made in the same period. Also, Aybar & Ficici (2009) showed that the bids for privately owned targets improved the shareholder wealth effects.

The relative size of the M&A deal

Previous research showed that small firms got the largest cumulative abnormal returns (CARs) and CARs decreased as the size of the firm increased (Justice, 2019). Usually, the targets are smaller than the acquirers (Draper & Paudyal, 2006). Draper and Paudyal (2006) reported that low relative size ratio acquirers earned higher returns around the announcement date. The relative size ratio in Draper and Paudyal's (2006) study was calculated by dividing the market valuation of the acquirer 10 days prior to the announcement of M&A by the value of the deal. Also, in Ladkani and Banerjee's (2018) study, authors found out that deals with relatively high deal size were received positively by stock markets and the bigger the relative size of the deal was, the greater was the abnormal returns on the announcement.

Aybar & Ficici (2009) showed that the size of the target has an increasing impact on shareholder wealth. However, bidders acquiring very small firms relative to the size of a bidder, will not cause any noticeable abnormal returns, whereas when bidders are acquiring larger firms, so that the relative size ratio is low, significantly higher abnormal returns are gained.

The internationality of the deal

Most of the recent studies have focused on cross-border M&A deals in developed countries (Mateev, 2017; Danbolt & Maciver, 2012; Martynova & Renneboog, 2006; Campa & Hernando, 2004; Conn & Connell, 1990), whereas only a few have focused on emerging markets (Ladkani & Banerjee, 2018; Tao, et al., 2016; Aybar & Ficici, 2009). The literature on the shareholder wealth effect of the acquiring company is less consistent. Aybar and Ficici (2009), Campa and Hernando (2004) reported negative abnormal returns for acquirers in cross-border acquisitions whereas Ladkani and Banerjee (2018), Mateev (2017) Tao, et al. (2016), Martynova and Renneboog (2006) reported positive abnormal returns.

In Latin American countries news of M&A deals signal value creation to shareholders (Simões, et al. 2012). Pandey and Kumari (2020) reported that in the banking sector news of M&A deals generated some negative abnormal returns around the announcement date to the bidder. However, Ladkani and Banerjee (2018) reported that in India the M&As are not destroying the value of shareholders of the acquiring company in the short term. An emerging market is also more sensitive to M&A news and information compared to developed markets (Pandey & Kumari, 2020), whereas Yilmaz & Tanyeri (2018) stated that the magnitudes of M&A deals CARs are higher in developed countries than in emerging markets. This may be due to the differences in market efficiency, deal premiums, corporate governance structures, and information leakages.

Information leakages around the announcement of M&As

If positive and significant cumulative abnormal returns (CARs) are generated before the event date, it will indicate information leakage concerning the specific event (Simões, et al., 2012). Simões, et al.'s (2012) research provided evidence that in the stock markets of Argentina and Chile, there is information leakage before the announcement of M&A deals. Also, Yilmaz & Tanyeri (2018) found evidence of information leakage in the emerging market when they were investigating CARs generated by news of M&A deals. Significant

abnormal returns before the announcements of M&A deals signal possible information leakages.

A recent study by Sachdeva, et al. (2015) concluded that there are also signs of information leakage in the Indian stock market. They showed positive and significant pre-event CARs, which is a sign of dissemination of news. There is also evidence of possible information leakage in the U.S. market, as the pre-event CARs for small-cap firms were significant (Justice, 2019). Yang, et al. (2019) examined the stock price movements and trading behaviors around the announcements of M&A deals in Korea. They reported from results that the average abnormal return (AAR) becomes slightly positive three days before the announcement date, which signals information leakage.

Yang, et al. (2019) proposed the use of strict surveillance tools to identify deviant trading behavior before an M&A announcement, which will decrease the use of information leakage and thus increase the fairness of capital markets. Justice (2019) also pointed out the use of the above-mentioned remarks when setting policies by financial regulators. Brunnermeier (2005) study concluded that inside information and information leakages decrease information efficiency of stock prices in long term, thus reducing risk-sharing and allocation efficiency. The efficient market hypothesis suggests that the stock prices fully and fairly reflect all available information on the market (Justice, 2019). Fama (1970) identified three forms of market efficiency: strong form, semi-strong form, and weak form. In short, the forms of market efficiency depend on the possibility of an agent to make excess profit with the aid of private information, public information, and historical prices, respectively (Brunnermeier, 2005).

Most studies have relied on studying the abnormal returns around announcements of mergers and acquisitions, but only a few have focused on abnormal trading volume around M&A announcements (Jansen, 2015; Lei & Wang, 2014; Chae, 2005), even though the trading volume is one of the key characteristics in stock markets and it also provides insight into the information content of the announcement (Jansen, 2015). Trading volume aggregates trading activity whereas abnormal returns average the value assessments (Jansen, 2015). Lei and

Wang (2014) investigated insider trading before corporate announcements and the authors stated:

> *"It is now generally accepted that such private information is often revealed through orders from informed traders and through learning these orders by other market participants such as market makers and uninformed traders." (Lei & Wang, 2014, p. 321-322.)*

Jansen (2015) examined the abnormal volume reaction for acquiring firms and investigated the impact of company size, payment method, target ownership, and relative size on abnormal volume reactions. Jansen (2015) stated that these company and deal characteristics contribute also to greater disagreement among investors about the valuation of M&A activities. So, these characteristics can be used to assess the impact on abnormal returns as well.

Lei & Wang (2014) found a striking feature of the time-series patterns about inside trading. Insiders' trading increased dramatically five days before the positive announcement which was not scheduled. This finding is consistent with the results of Chae (2005). Chae (2005) examined the trading volume before scheduled and unscheduled announcements of companies to find out how investors react to private information. Chae (2005) showed that cumulative trading volume decreased over 15 % before the scheduled earnings announcement, whilst before the unscheduled announcement the cumulative trading volume increased.

1.2 Research objectives, research questions, and delimitations

This study aims to contribute to filling the literature gap by providing empirical evidence on short-term abnormal returns and possible information leakages in Nordic stock markets around mergers and acquisitions announcements. In this study, the short-term abnormal returns are examined, and the long-term wealth effects of M&As are not discussed. The

reason to examine the short-term returns is that in general there will not be other news than the M&A deal during the inspection period and the returns are due to the deal announcement. This study focuses on the acquiring companies since the targets are mainly privately held companies and it is already shown in the previous literature that shareholders of targets gain in M&As (Campa & Hernando, 2004; Jensen & Ruback, 1983). Information of the targets is used only to determine the deal characteristics like ownership structure, size of the deal, and possible internationality of the deal.

This study aims at fulfilling the following research propositions from the viewpoint of the acquirers:

1. How do Nordic stock markets react to the announcement of M&As in the short term?
2. How do the Nordic stock markets react to M&As with different characteristics of the company or the deal?
3. Are there signs of information leakages before the announcement dates of M&As in Nordic stock markets?

In the short term, a procedure to determine the wealth effect of an announcement of M&As is a company stock price reaction to the news. In the long term, the actual benefit of an M&A deal is measured. However, abnormal returns may be generated before the public announcement due to information leaks (Panayides & Gong, 2002). For that reason, the trading behavior and possible information leakages are investigated in this study.

1.3 Research methods and data

The Empirical data was obtained from Thomson Reuters Refinitiv – database. First, the announcement dates of M&As and data concerning the deal were gathered from the Mergers & Acquisitions – Advanced Search application in Thomson Reuters Refinitiv – database. After collecting the announcement dates for M&A deals, the necessary daily stock price data for the inspection period was gathered using the Thomson Reuters Refinitiv – DataStream.

In the final sample, 208 M&A deals met the criteria presented in section 4. In this study the terms “acquisitions”, “tender”, “merger”, “takeover” are used for synonyms for M&A. Furthermore, the terms “bidder” and “acquirer” are synonyms.

Methods that were used in this study were based on previous articles by MacKinlay (1997) and Brown & Warner (1985). The majority of prior research has applied the event study method in similar studies and referred to these the most popular articles concerning the event study method. Also, the market model is a widely used model to estimate the normal returns in similar research (Yang, et al., 2019; Ladkani & Banerjee, 2018; Mateev, 2017; Brown & Warner, 1985). Most of the previous studies investigate short-term abnormal returns around the M&A announcement dates using CARs as a measure of shareholder value creation or destruction (Ma, et al., 2009).

In the event study, the estimation window was set to last for 250 trading days, going from day -270 until day -21. The event window was divided into shorter periods to analyze the impact of the announcement: pre-event (17 trading days) going from day -20 until day -4, event (7 trading days) going from day -3 until day +3, and post-event (17 trading days) going from day +4 until day +20. All these days are relative to the announcement date, which is set to day 0.

1.4 Research structure

This study is organized as follows:

In Section 2, the definition and classification, motives, forms, and process of mergers and acquisitions are discussed as well as inside information rules and confidentiality issues. Section 3 presents a review of the recent literature on short-term abnormal returns around the announcement dates of M&As, information leakages concerning company announcements, and trading behavior around M&As. In section 3 the research hypotheses are also presented. Data collection and limitations as well as the measurement and analysis

methods are presented and discussed in Section 4. In section 5 the results of the empirical part of the study are presented and discussed. Section 6 concludes the study.

2. MERGERS & ACQUISITIONS

In this chapter, the idea of mergers and acquisitions is introduced, starting with the definition and classification of mergers and acquisitions. This chapter defines and discusses the transactions which are included in this study. Afterward, the motives and forms of M&As, as well as the process of M&A, are presented. In addition, the reasons for failure of M&As are discussed as they play a crucial role in the light of this study. Last the rules of inside information and public disclosure in Finland are presented. In the empirical part of the study acquirers from Sweden and Denmark are also studied in addition to acquirers from Finland, even though the rules of inside information and public disclosure in Sweden or Denmark are not presented. However, Finland, Sweden, and Denmark are each members of the European Union, and the legal systems in these countries are similar, based on the civil law tradition (Ek, 2021). In addition, the stock exchanges in Finland, Sweden, and Denmark are all owned by OMX AB and thus the guidelines of NASDAQ are followed in each stock exchange (Nasdaq, 2022).

2.1 Definition and classification of M&As

When discussing the terms merger and acquisitions it may be confusing as the terms are used interchangeably in the literature despite the differences between them. To make it more complicated there are also a lot of different terms used in the literature to refer to the merger or the acquisition. However, both merger and acquisition have their definition even though they are mistakenly discussed as they are substitutable.

Acquisitions can be divided into the acquisition of shares or stocks and acquisition of assets (Katramo, et al., 2013). In literature, the term takeover is also used. Also, the reverse takeover is a popular concept, and it means that the acquirer is a smaller company than the target, and the usual situation is that a private company is acquiring a public company (Immonen, 2018). Takeovers can be also divided into hostile and friendly takeovers, depending on the attitude of management and shareholders. The takeover term is sometimes

used only to refer to hostile transactions (Gaughan, 2015). In a merger, a company is absorbed into the acquiring company and the acquirer receives all the assets and liabilities of the absorbed company.

As Gaughan (2015) stated the merger is a combination of two companies in which one company survives and the other is ceased to exist. In a subsidiary merger, the target company becomes a subsidiary or part of a subsidiary of the parent company and the subsidiary merger can be divided into forward triangular merger and reverse triangular merger depending on the surviving entity in the merger. In a forward triangular merger, the subsidiary of the acquirer is merged with the target and the subsidiary is the surviving entity. Whereas in a reverse triangular merger the target is the surviving entity. In a reverse merger private company goes public by merging with a public company that may be inactive or a shell company. With the aid of reverse merger, the costs and lengthiness of initial public offering can be reduced (Gaughan, 2015).

There are two types of acquirers, industrial and private equity acquirers, which both have their strengths and weaknesses as well as different motives for M&A deals (Katramo, et al.,2013). The industrial acquirers usually operate in the same industry as the targets and M&A aims to grow and to benefit from synergies and scale. The integration process plays a crucial role in this process, especially for industrial acquirers. For industrial acquirers, the M&A deal is seen as a long-term investment and the holding period is usually very long or infinite. In industrial M&As the final capital structure is a combination of acquirer's and target's capital structures and the use of leverage does not make a difference compared to private equity acquirers, which in general improves the return of investment by using the leverage. (Katramo, et al.,2013).

Private equity acquirers aim to scale the business organically and in addition to that improve profitability. The M&A deal is seen as a short-term investment and the holding period is 3-5 years. The short holding period is due to the fixed duration of the funds the private equity acquirer is managing. The return for the investment is comprised of dividends, interests for subordinate loans, an increase of stock valuation, and capital returns during the investment

period. Previous experience of M&As is a strength of private equity acquirers in general. Private equity acquirers are professionals in M&As and they compete for the same targets as the industrial acquirers. For example, the industrial acquirer may perform a more concise due diligence check and the whole process may be slower compared to private equity acquirers. Private equity investors invest in several industries, so the knowledge of industries is constricted compared to industrial investors. For that reason, the due diligence process is more extensive, and external consults and experts are used more often. (Katramo, et al.,2013).

Katramo, et al. (2013) presented a distribution of M&A deals based on the strategic objectives of the deal. Deals can be divided into horizontal and vertical M&As and concentric and conglomerative M&As (Cartwright & Cooper, 1999) depending on the strategic objective of the deal. In horizontal deals, an acquirer is operating in the same industry and at the same stage in the value chain as the target. The purpose of horizontal deals is to grow the market share and reduce competition (Katramo, et al.,2013). In vertical deals, the acquirer operates in the same industry as the target, but at a different stage in the value chain. In vertical deals, the companies have usually a buyer-seller relationship (Gaughan, 2015). The purpose of vertical deals is to control the market more compendiously and to achieve cost savings (Katramo, et al.,2013). In concentric deals the target's industry is different, but all the other functions like marketing, delivery channels, technologies, or research and development operations are similar. In conglomerative deals the target operates in a different industry with different products, so the companies are not competitors and do not have a buyer-seller relationship (Gaughan, 2015). The purpose of conglomerative deals is to reduce the risk of business and to moderate the variation of returns. However, the risks in conglomerative M&As are higher as the industry and products are not familiar to the acquirer (Katramo, et al.,2013).

2.2 Motives for M&As

Ali-Yrkkö (2002) stated that the driving force for M&As is economic performance improvement and as Gaughan (2015) presented one of the most common motives for M&As

is an expansion to a new line of business or geographic area. Public as well as private companies are seeking growth to meet the expectations of shareholders. Mergers & acquisitions are a fast and effective way to fulfill the expectation but at the same time, it is an insecure and risky way to do that (Katramo, et al.,2013). For instance, private equity firms may seek undervalued targets and sell the target shortly after the deal with a higher value (Gaughan, 2015). Motives such as taxation may also play role in decision-making when considering M&As. However, M&As should be used as a strategic way to grow or improve the business, and as Kiymaz, and Baker (2008) stated there is no single standard set of motives to explain the M&A activity and the motives change over time.

There is a variety of different motives for M&As and the reasons are individualistic for companies (Immonen, 2018). However, the corporate structure is modified through M&As so that it will correspond to the demands of markets. Immonen (2018) divided the motives for M&As into internal and external. Internal motives may be related for example to ownership structure, personnel structure or resources, level of technology, capital structure, funding opportunities, generational change, need for reorganization, and directing the company resources. External motives may be related to competition circumstance, competition of market shares, availability of workforce, rules and regulation of acquisitions, taxation, and circumstances in financial markets. (Immonen, 2018).

In addition to company-level motives, the macro-level trends and waves will also motivate to M&As. Figure 2 presents these macro-level and company-level causes for M&As suggested by Ali-Yrkkö (2002). Macro-level shocks are the driving force for companies to consider the M&As, and those macro-level elements presented in figure 2 may cause the industry-level shocks and the impacts are industry-related (Ali-Yrkkö, 2002).

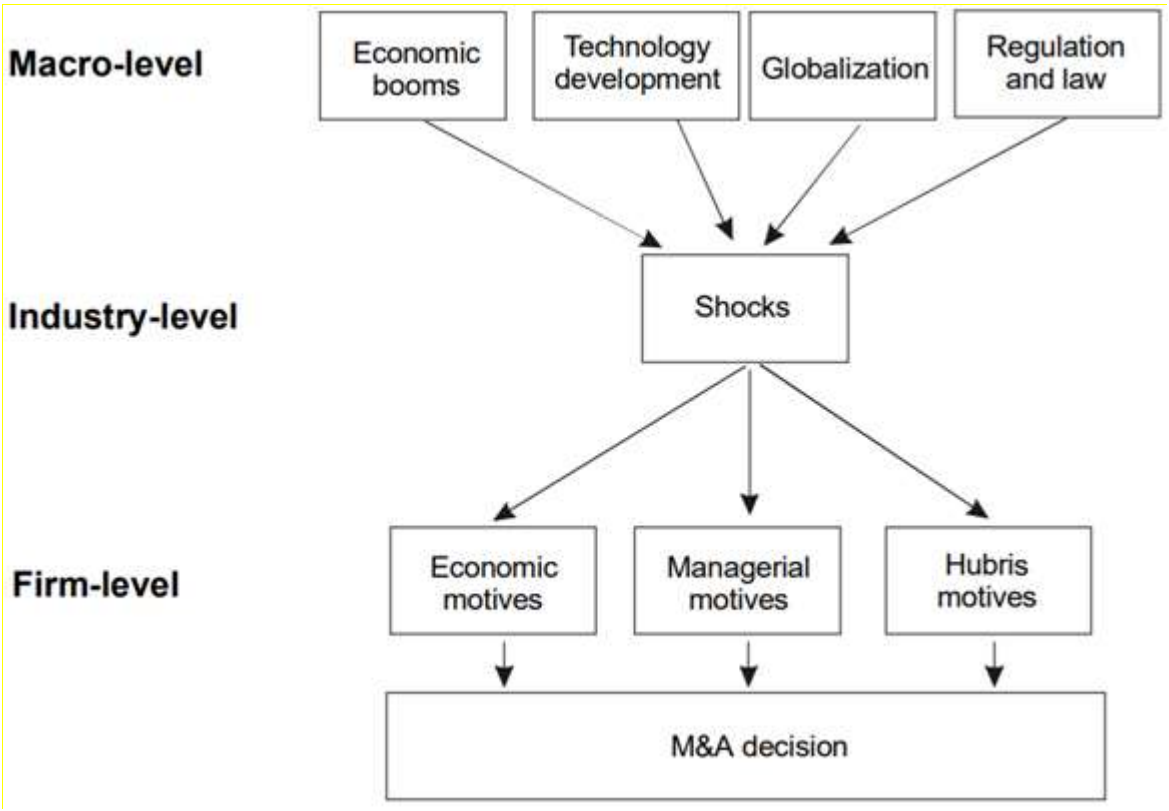

Figure 2. *Company- and macro-level motivators for M&As. (Originally from Ali-Yrkkö, 2002).*

In general, the restructuring of a company should support the business, improve profitability, efficiency, and productivity (Immonen, 2018). The most significant motives for the M&A deals are value creation through horizontal or vertical integration, value creation through diversification, growing the market share of the company, more effective use of resources, and obtaining a competitive advantage (Katramo, et al.,2013).

Companies need to expand their businesses into new markets, reduce costs, benefit from the scale, invest and at the same time increase the shareholder value (Sachdeva, et al., 2015). Immonen (2018) mentioned benefits of the scale, removal of overlaps, rearrangements in the industry, expanding to the new markets, focusing on the core business, and expanding to a new industry or expanding the portfolio of conglomerate for reasons to M&As. In general, the M&A deals are executed due to long-term strategic plans, but short-term M&A activities may impact immediately the stock price of companies involved (Panayides & Gong, 2002).

Benefits of synergies are mentioned in most of the literature discussing the motives for M&As (Immonen, 2018; Katramo, et al.,2013; Ali-Yrkkö, 2002). The benefits of synergies are described with the equation 2+2=5. Or as Ali-Yrkkö (2002) presented the equation $V_{AB} > V_A + V_B$. The value of two companies after the M&A deal may be higher than the sum of each company's value alone due to benefit of synergies. Katramo, et al. (2013) suggested that the benefits of synergies are the highest in financing except in horizontal deals. Ali-Yrkkö (2002) used cost savings as a synonym for synergy. Kiymaz & Baker (2008) found evidence of synergy and hubris motives in their study, which concentrated on large M&A deals in the U.S. between the late 1980s and early 2000s.

In international M&As the motive is usually the access to market, which is protected, or the costs of organic expanding are higher than the costs of an M&A deal (Katramo, et al.,2013). Acquisitions can also be used to obtain a new technology as presented by Ali-Yrkkö (2002), and in international deals, the geographical know-how is acquired as well.

2.3 Process of M&As

The M&As are commonly divided into the following three phases: planning, execution, and integration (Immonen, 2018). In the planning phase, an acquisition strategy and goal are defined. In the execution phase, the terms of M&A are negotiated, and the M&A contract is formed and signed. In the integration phase, which is usually the most sensitive and challenging phase, the target is integrated into the acquiring company. In addition, all these three phases are usually more challenging when the M&A is international, as the process is controlled by laws and regulations of different countries as well as the working and owning cultures of countries may vary a lot. (Immonen, 2018).

The planning phase includes identification, mapping, filtering, and defining the financial status of possible targets (Immonen, 2018; Katramo, et al., 2013). In the planning phase, the market risks, taxation, and accounting issues are solved before the execution phase. Before

the due diligence check, the value of the target must be assessed. Due diligence check is carried out before the execution phase also (Katramo, et al., 2013). In due diligence check the risks and responsibilities are mapped in advance, so that they can be considered in the deal.

The M&As include a lot of negotiations among the different phases and most M&As are negotiated in a friendly environment. However, in some cases, the negotiation is not friendly and may lead to the termination of the bid or a hostile takeover (Gaughan, 2015). In general, the bargaining power is even, but the acquirer will benefit if the financial status of the target is poor. Of course, the situation will be vice versa if the target is profitable and the deal size is determined in the auction (Katramo, et al., 2013). The party to negotiate with public targets is the board of directors or management. The Board of directors is not able to sell the shares but can recommend it to shareholders. There are also differences in the process depending on the form of transaction. Definition of merger and tender by Jensen & Ruback (1983, p 52) is as follows:

> *"Mergers are negotiated directly with target's managers and approved by the target's board of directors before going to a vote of target shareholders for approval. Tender offers are offers to buy shares made directly to target shareholders who decide individually whether to tender their shares for sale to the bidding firm"*

After the preliminary negotiations, parties may form a letter of intent (LOI) to secure the status of the acquirer and to protect the trade secrets of the target (Katramo, et al., 2013). The LOI is usually formed and signed before the due diligence check. In most M&As a material adverse change clause is included in the agreement. With the aid of the material adverse change clause, either party can withdraw from the M&A if a major change arises which would change the value of the transaction (Gaughan, 2015).

The execution phase follows the planning phase. In the execution phase, the payment method and financing are negotiated in addition to the formatting and signing of the M&A contract. In general, the deal size depends on the future returns of the company (earnout), and only a down payment is made at the execution phase (Immonen, 2018). Valuation of the target between the acquirer and seller may differ due to different opinions of the growth potential of the target or the different uses of target assets (Gaughan, 2015). After the contract signing, there might also be closing terms that must be met to consummate the deal (Katramo, et al., 2013). The closing terms may be based on the due diligence check.

The integration phase is the last phase of the M&A deal, and it is in order after the execution phase. As it was mentioned, the integration phase is sensitive and challenging, because the integration must be actualized in all functions and operations of both companies. This phase includes the integration of operational resources, production processes, organization, and information systems (Katramo, et al., 2013). To obtain the best possible results of M&A, the integration phase must follow the integration plan.

In the M&A process, the communication between acquirer, target, and personnel is the key factor (Katramo, et al., 2013). The M&A process will be a new situation for most of the personnel, so open and honest communication during the whole process will decrease uncertainties and support the integration process and approval of the deal. Davy, et al. (1988) showed that employee problems caused one-third to one-half of the failed mergers.

2.4 Reasons for failure of M&A

Regardless of the popularity of mergers and acquisitions, most of the M&As fail financially and induce harm for people and companies involved (Marks & Mirvis, 2011). Craninckx and Huyghebaert (2011) reported that 30-50 % of the M&As in Europe failed, or in other words, destroyed shareholders' value in the two-year window after the deal closure. Also, Katramo, et al. (2013) stated that few of the M&As meet the objectives which were set before the deal. Although there are many studies concerning the human, organizational and cultural

aspects of M&As, the success rate has improved only modestly in the last 30 years (Marks & Mirvis, 2011). So, it is pertinent to find and analyze the factors that are affecting the failure of M&As.

Financial and strategic factors are examined thoroughly during the M&A process and yet the reasons for failure are generally financial or strategic. The problem is in the implementation of the benefits of M&A into practice (Cartwright & Cooper, 1999). Implementation requires employees to co-operate and to adapt to the new situation, which is poorly managed M&As affect "people problems" and thus the implementation fails. Companies tend to fail in not taking the human side into account in the M&A process as employees live in uncertainty and insecurity, the HR department is too busy and middle managers are failed to communicate with employees properly (Marks & Mirvis, 2011). In the previous M&A wave, the concerns were already in cultural change and integration (Cartwright & Cooper, 1999).

Immonen (2018) mentioned that especially in mergers, the integration process has failed in many cases, so the assumed synergies and planned development of the business have not been achieved. The primary reason behind the failures may be the differences in corporate cultures. Cultural factors are crucial in the perspective of final integration and need investments from both acquirer and target (Katramo, et al, 2013).

Dikovan and Sahib's (2013) literature review shows that in cross-border acquisitions, the cultural distance has shown both negative and positive reactions to acquisition performance. The negative reactions are suggested to arise due to higher integration costs and cultural clashes whereas positive reactions are suggested due to a diverse set of new routines and repertoires. Dikovan and Sahib's (2013) own suggestion is that the effect of cultural distance on acquisition performance depends on the former acquisition experiences of the acquirer. Acquirer's higher experience of cross-border acquisitions will have a positive impact on the acquisition performance as the integration is managed properly and the potential of diversity is utilized. However, Dikovan and Sahib (2013) did not find evidence that the acquirer's experience of domestic acquisitions will benefit in cross-border acquisitions as well. Results emphasize the importance of the integration process and experience of similar acquisitions.

Katramo, et al. (2013) listed the following reasons which will reduce the benefit of synergy in the M&A deals and thus decrease shareholder value:

- Management hubris (Roll, 1986), managers overestimate their skills and may pay overprice for the targets.
- Biased evaluation process, management incentives are based on the growth or size of the company. Also, investment banks may exaggerate the benefits of synergy to get the deal done.
- Lack of plan for integration, several acquirers did not have a plan for integration.

Ali-Yrkkö (2002, p. 13) presented the management hubris hypothesis and overprice payment as follows:

> *"The bidder knows that the current market price is the lowest price that a target company shareholder can accept. Hence, when bidder's valuation is below the market price, it does not make offer. If bidder believes that there are potential synergies but actually there are not, the takeover premium is a mistake made by the bidder. Of course such errors are made also in the opposite direction but those can not be observed empirically because they are not make public. In sum, the hubrid hypothesis does not imply that managers act consciously against owner's interests. The main implication is that managers make mistakes in valuateing target."*

2.5 Rules of inside information and public disclosure

Insider information may include information for example company result, financial position, possible merger or acquisition, other corporate arrangements, combination, or division of shares for example. Inside information shall be precise in nature and likely to have

significant effect (Nasdaq Helsinki Ltd, 2021). In addition, precise in nature requires that the circumstance or an event exists or has occurred or may come in existence or to occur (Market Abuse Regulation). The inside Insider information is defined in Market Abuse Regulation Article 7(1) as:

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

Based on the Market Abuse Regulation (MAR) the acquisition or disposal of a financial instrument is prohibited if a person has received inside information about the instrument. In addition to that, advising other people to acquire or dispose of the instrument is also prohibited. Apart from the general rule that the disclosure of inside information is prohibited, inside information is allowed to disclose if it is made in exercise of the disclosing person's employment, profession, or duties (Financial Supervisory Authority, 2021).

Nasdaq Helsinki Ltd has its guideline for listed companies to help companies listed in Nasdaq Helsinki to use the Market Abuse Regulation (MAR) and to clarify the operation in the securities market. The guideline aims to unify insider information issues and raise confidence in the securities markets. The following list is the quotation of a summary of the guidelines for insiders (Nasdaq Helsinki Ltd, 2021, pp. 5-6):

- *A listed company shall handle inside information carefully and in such a manner that its confidentiality is not jeopardised*
- *In addition to separate insider lists concerning inside information (event-based insider list), listed companies may draw up a list of permanent insiders (permanent*

insiders), in which case permanent insiders are not entered in event-based insider lists

- *A listed company is always responsible for drawing up the insider lists and for keeping them up-to-date, even if it had outsourced the task. The persons acting on company's behalf or on its account shall each draw and maintain separate insider list*
- *The prohibition against insider dealing and unlawful disclosure of inside information covers all natural and legal persons who possess inside information, regardless of where and how they have obtained the information*
- *Inside information may not be disclosed to another person unless this takes place in the normal course of the disclosing person's employment, profession or duties*
- *A listed company shall instruct the persons entered in the insider list on their obligations and any possible consequences*
- *Listed companies shall monitor and supervise the proper management of insider issues*
- *An insider list shall be delivered to the Financial Supervisory Authority at request as soon as possible*

The Finnish corporate governance is based on majority rule, which is equalized with principle of equal treatment and rights given to minority shareholders. Figure 3 illustrates the corporate governance in Finland for listed companies, which is based on laws and decrees issued based on the laws, self-regulation, and other practices. EU-level regulations are the top-level laws that shall be followed. Listed companies are also bound to the Rules of Helsinki Stock Exchange and regulations and guidelines issued by the Financial Supervisory Authority. (Securities Market Association, 2021).

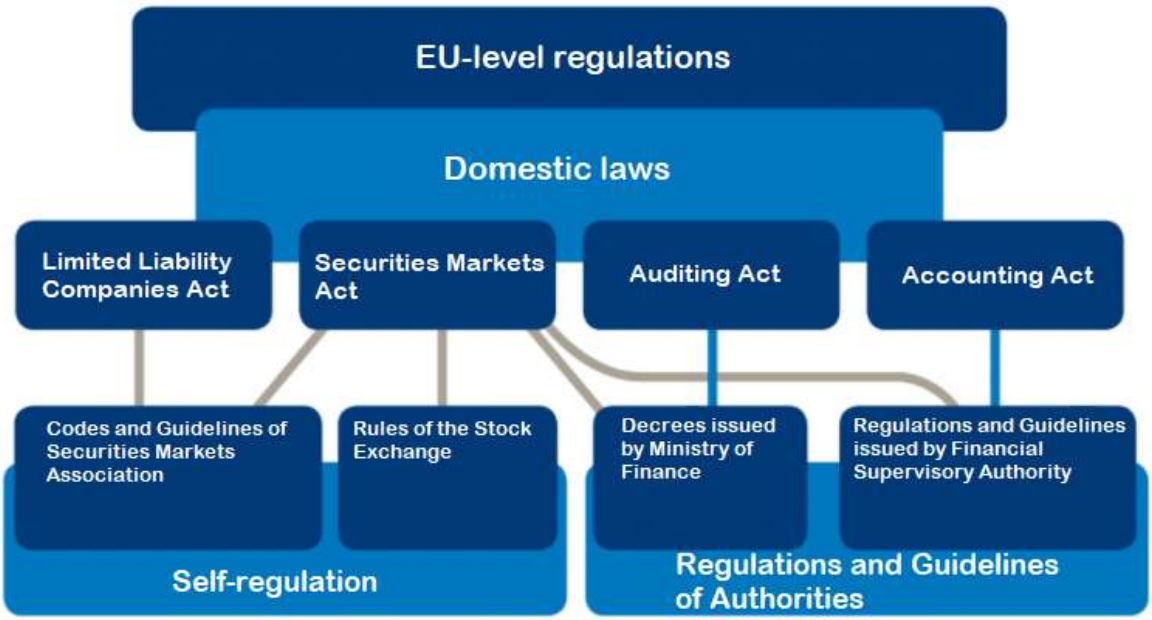

Figure 3. *Corporate Governance in Finland (Securities Market Association, 2021).*

The principle of equal treatment, insider regulation, directors' and executives' duties of confidentiality and loyalty restrict the use of insider information about the company. In Finland, listed companies should disclose information about the company, unless the same information is available to all investors (Securities Market Association, 2021). As can be seen in figure 3, the Securities Markets Act is linked to self-regulation as well as the regulations and guidelines of authorities. It is stated in the securities markets act, that the issuer shall disclose the regulated information in a fast and non-discriminatory manner. The regulated information is listed in Market Abuse Regulation Article 17(1).

Financial Supervisory Authority (FIN-FSA) has given the regulations and guidelines regarding the issuer's disclosure obligation. The aim of the regulations and guidelines is also to ensure the equality of investors and to serve simultaneous access to information. The disclosure obligations are applied to issuers whose securities are traded on a regulated market or a multilateral trading facility (MTF), which are Nasdaq Helsinki and First North Finland, respectively. The disclosure requirements of First North Finland are lighter than for Nasdaq Helsinki. (Financial Supervisory Authority, 2021).

The disclosure obligation is divided into periodic and ongoing disclosure obligations. The periodic disclosure obligation includes the regularly provided information about financial position and results. The ongoing disclosure obligation includes the inside information and other ongoing information which is required by regulations. Ongoing disclosure obligation shall be performed in a timely manner and on a continuous basis. (Financial Supervisory Authority, 2021). In this study, the M&As are discussed so the ongoing disclosure obligation is on focus.

The general rule is that the issuers must inform the public about inside information as soon as possible. On the own responsibility of the issuers, the disclosure of inside information may be delayed. To delay the disclosure, the immediate disclosure is likely to prejudice the legitimate interests of the issuer, delay may not mislead the public and the confidentiality of inside information is ensured. (Financial Supervisory Authority, 2021). If the inside information is delayed based on the Market Abuse Regulation and there has been an information leakage or the confidentiality of the inside information cannot be ensured, the issuer must disclose the inside information without delay. The same procedure must be followed if the market rumour is related to inside information (Securities Market Association, 2021). The exemplary procedure is illustrated in figure 4.

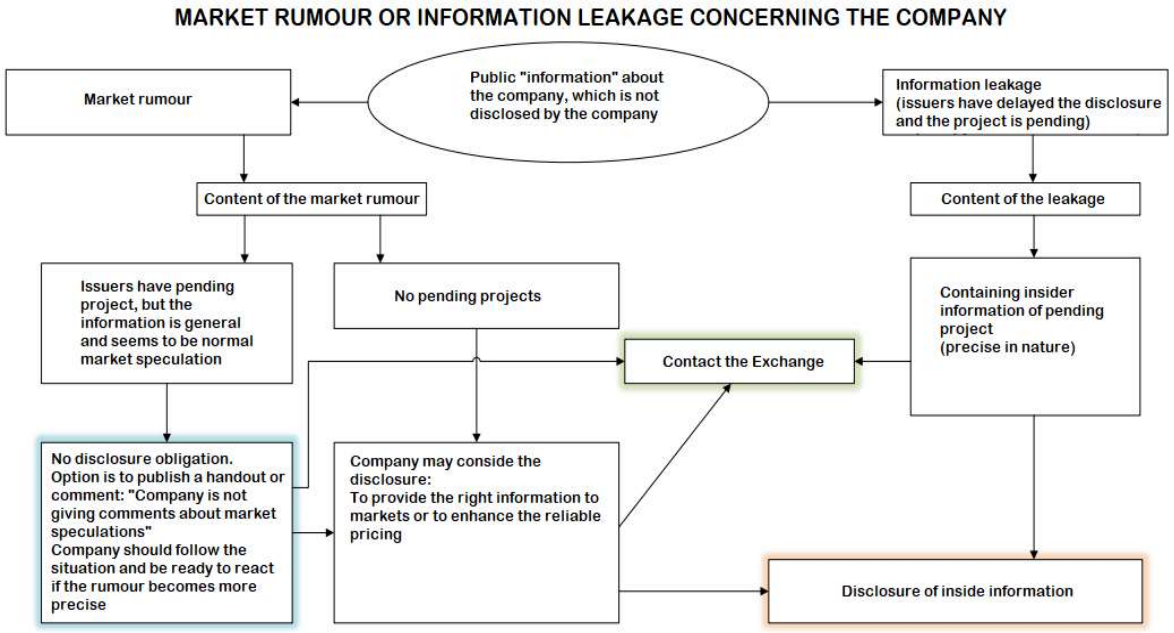

Figure 4. *Exemplary procedure in market rumour or information leakage situations for listed companies (Securities Market Association).*

In the U.S. the SEC introduced Regulation Fair Disclosure (FD) in 2000 to ensure that information is public simultaneously to all investors. In cases when information leaks accidentally, companies are forced to reveal it to the public within 24 hours. SEC Rule 10b-5 binds the insiders, as insiders must disclose or abstain from trading the stocks of the company. Illegal insider trading occurs in situations where insider uses information that is unavailable to other investors for their benefit detriment to the other investors (Gaughan, 2015).

Insiders are not only the management of the company, as insiders may include also "temporary insiders" who have access to confidential information. There is also a SEA's rule 16b, called the Short Swing Rule, which prohibits corporate insiders from buying and selling the same stock within 6 months. (Brunnermeier, 2005). Tanimura & Wehrly (2012) argued that insider trading restrictions has a meaningful effect already during the 1960s and 1970s as insiders sold less frequently before the announcement and abnormal profits of insiders declined. Gaughan (2015) stated that insider trading laws have had a deterrent effect on insider trading, but insider trading remains still a part of the M&A activity of public companies.

3. LITERATURE REVIEW OF SHORT-TERM ABNORMAL RETURNS AND INFORMATION LEAKAGE AROUND MERGERS AND ACQUISITIONS

In this section, the comprehensive literature review about the wealth effects of M&As and information leakages around the announcement of M&As is presented. There exist a considerable body of literature about the wealth effects of mergers and acquisitions. Most of the studies investigate short-term abnormal returns around the M&A announcement date and use the cumulative abnormal returns (CARs) as a measure of shareholder value creation or destruction (Ma, et al., 2009). The basic assumption is that the share prices reflect possible profits and dividends in the future. So, changes in future profits and dividends should be reflected in changes in share prices. The time between the new information being available and stock price changes will depend on the market efficiency.

The short-term abnormal returns around M&A announcement are first discussed in different perspectives: impact of the payment method, differences in cross-border versus domestic M&As, impacts of target ownership, and the effect of the relative size of the deal. Then in the following subsections, the literature about information leakage of M&A deals and trading behavior around M&As is discussed. As well the research hypotheses of this study are presented in this section in the corresponding subsections where the issue of hypothesis is discussed.

3.1 Short-term abnormal returns around M&A announcements

Studies are seeking answers whether the target or acquirer benefits from the acquisition process (Justice, 2019; Yilmaz & Tanyeri, 2018; Danbolt & Maciver, 2012; Campa & Hernando, 2004). Usually, the focus is on short-term value creation of targets in M&A deals, and many studies have reported that M&A activity is value-creating, especially for the target (Yilmaz & Tanyeri, 2018; Kiymaz & Baker, 2008; Campa & Hernando, 2004; Jensen &

Ruback, 1983). Although there are studies that reported gains for the acquiring company as well (Justice, 2019; Mateev, 2017; Sachdeva, et al., 2015; Bhabra & Huang, 2013; Cai, et al., 2011; Ma, et al., 2009; Draper & Paudyal, 2006; Martynova & Renneboog, 2006). However, others suggest negative returns, namely losses (Bradley, et al., 2012; Kiymaz & Baker, 2008; Sudarsanam & Mahate, 2003; Andrade, et al., 2001; Mulherin & Boone, 2000).

Cai, et al. (2011) suggested that if the market anticipates an announcement of an M&A deal, the actual announcement will not fully capture the wealth effects of the acquirer and the magnitude of anticipation effects may alter some well-known results. Cai, et al. (2011) reported also that the acquirer's abnormal returns increase as the time between bids from the same industry increases. Based on the study of Cai, et al. (2011) the markets appear to have information about the future acquirers and non-acquirers, but the first acquirer in the industry is always a surprise. Figure 5 illustrates the acquirer's CARs around the announcement of M&A. The long raise prior to the announcement of M&A may be due to the market anticipation suggested by Cai, et al. (2011). The long rise of stock price and high market value of the company gives a good position to M&A activity (Ali-Yrkkö, 2002).

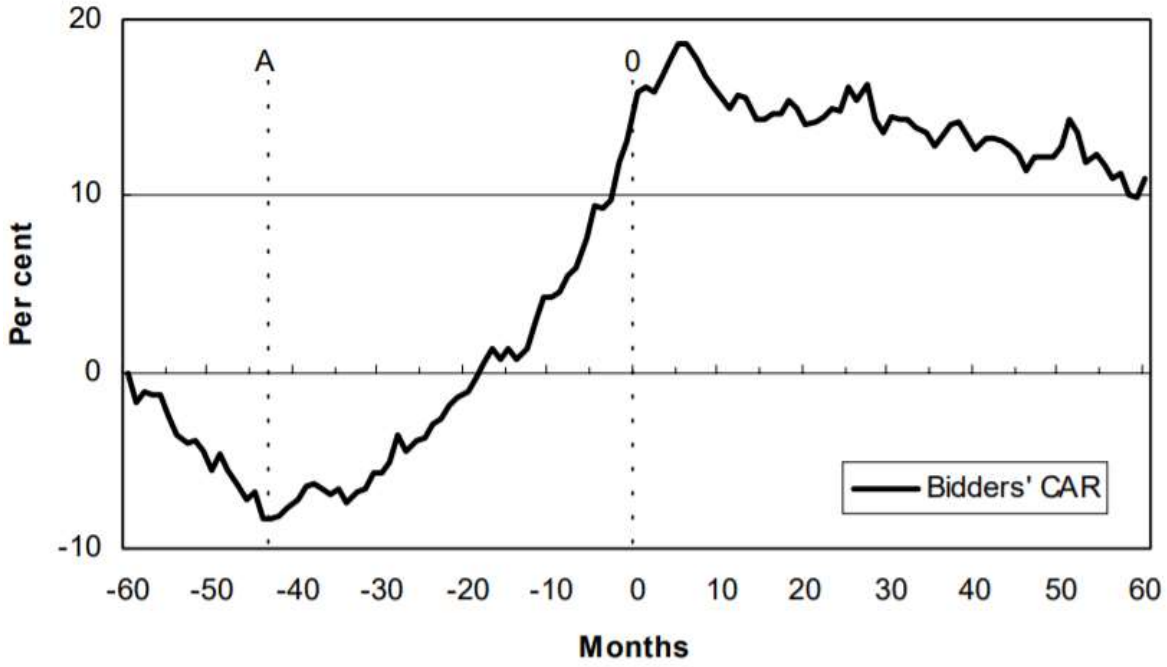

Figure 5. *Long-term CARs of acquirers around the announcement of M&A (Dodd & Ruback, 1977).*

There exists a considerable body of literature on short-term abnormal returns of acquirer around the announcement of M&As in which positive abnormal returns (Sachdeva, et al., 2015; Ma, et al., 2009), as well as negative abnormal returns (Bradley, et al., 2012; Sudarsanam & Mahate, 2003), were reported. In addition to contradicting results of previous studies, Cai, et al. (2011) suggested that the market anticipation of M&A deals will fade the wealth effects of the acquirer prior to the announcement date. The research hypothesis H1 is:

> *H1: There are abnormal returns associated with an M&A announcement for the acquiring company.*

Bradley, et al. (2012) studied M&A in the U.S. market and emphasized that generally in M&A deals, target shareholders gain in deal announcements as the shareholders of acquiring firms experience negative or zero abnormal returns in the short-term. The author also mentioned that post-event abnormal returns for acquirers are usually negative in the long

term. On a global scale, Yilmaz & Tanyeri (2018) reported positive short-term CARs for both, the target and acquirer, in their survey which consisted of 263 461 deals in 47 countries. Campa & Hernando (2004) reported that the takeovers in Europe create more value to shareholders of target firms compared to bidders' value creation.

Sachdeva, et al. (2015) suggest that the bidders receive significant and positive average abnormal returns (AARs) around the announcement date of the M&A deal in three- and five-days windows. On the contrary to the AARs around the announcement date, the post-event returns of bidders are negative but insignificant in short term. In general, M&A deals are perceived as long-term strategic investments and should not be evaluated based on the stock price reaction of days around the announcement date (Ma, et al., 2009).

Gains or losses are depending on multiple factors (Mateev, 2017; Draper & Paudyal, 2006), but the following are discussed and investigated in this research: payment method, target ownership, the relative size of the deal, and the internationality of the deal. In this research, the wealth effect, or namely abnormal returns, of the acquirer are under investigation. The studied factors in this study were chosen so that there would be comparable results, especially from European markets, like the studies of Mateev (2017) and Draper and Paudyal (2006). An additional reason for the chosen factors in this research was also the availability of data, as it is necessary to have enough high-quality data to conduct a decent event study and regression analysis.

3.1.1 The impact of the payment method

Company growth requires financial resources from the acquirer and thus acquisitions are financed with cash, equity, or a combination of equity and cash (Gaughan, 2015). Equity transactions may offer certain tax benefits for the acquirer that the cash transactions do not provide. The problem in equity transactions is that the parties of M&A must agree on both the value of target as well as the value of equity used for payment (Gaughan, 2015). There has been a decline in the proportion of all-cash paid acquisitions starting from 1980 and the all-equity paid acquisitions peaked in the late 1990s (Martynova & Renneboog, 2008). This

behavior is reasonable as in general, stocks were overvalued in the late 1990s, and acquirers were enthusiastic to use the overvalued stock as a payment method (Savor & Lu, 2009). Sudarsanam and Mahate (2003) supported this point of view as they found out that highly valued and growing companies used more likely their equity to finance deals, and low growth companies use cash instead of equity.

The trend in all-equity bids is positively correlated with the stock market index and when equity is used as a payment method, it should be adjusted to the peak of a stock market cycle or rising markets (Martynova & Renneboog, 2008). Ali-Yrkkö (2002) also suggested that high market capitalization helps the acquirer to finance the acquisition if payment is made with equity. In general, cash reserves are high, and debt is more easily available during economic booms compared to recession (Ali-Yrkkö, 2002). Mixed bids are the most common payment method in M&As. In mixed bids, the payment is made with cash, debt, and equity (Martynova & Renneboog, 2008; Draper & Paudyal, 2006).

Justice (2019) pointed out that small firm acquirers create wealth for their shareholders. The reason may be the use of acquirers' highly valued stocks as a payment. In competitive markets, the takeover should be a zero net present value (NPV) transaction and the amount of overpricing is equivalent to the value of synergies (Draper & Paudyal, 2006). However, the public companies are usually more experienced in M&A activities, public companies invest more in corporate monitoring, and there is information asymmetry in public companies.

In large companies, corporate monitoring, namely agency costs, will be cost-effective. In cases where the privately-held target is acquired by a large public company and payment is made with equity, the new owners of a public company will monitor the managers more closely as they are used to doing in their private company, which will reduce the agency costs. (Draper & Paudyal, 2006).

In the light of information asymmetry, when the payment is equity-based, the number of shareholders increases, and the information asymmetry increases. Also, the incentive of the privately held target to investigate and to get acquainted with the acquiring company is much more powerful compared to a public company. This indicates that in equity-based deals the private target has examined and approved the information of acquiring firm, which should signal a positive market reaction. (Draper & Paudyal, 2006).

There will be also different motivations for cash-financed and equity-financed acquirers (Savor & Lu, 2009). Cash-financed acquirers create value only through synergies whereas equity-financed acquirers create value from synergies as well as from the difference between the market and fundamental value of their equity used in the deal. The market-timing theory of acquisitions predicts that in equity-financed M&As the shareholders of acquirer benefit from the use of overvalued equity as a payment method as it is converted to hard assets of the target at a discount (Savor & Lu, 2009). Savor and Lu (2009) found evidence to the market-timing hypothesis in their research.

The announcement of an all-equity bid may signal that the acquirer's share is overpriced, so the abnormal returns will be negative in those cases (Martynova & Renneboog, 2008). Martynova & Renneboog (2008) reported that the all-cash offers generated abnormal returns of 12 % and all-equity bids generated 7 % abnormal returns which is significantly lower. Draper and Paudyal (2006) reported similar results as the shareholders of acquiring firms that pay all-cash gained 2 % significant excess returns around the announcement date. When the payment was made with all-equity positive and significant returns were noticed during the pre-event window before the announcement and no loss for the acquirer was reported.

However, Mateev (2017) reported contradicting results with Martynova and Renneboog (2008) and Draper and Paudyal (2006) as he found out that shareholders of bidding companies earn higher abnormal returns (ARs) in equity offers than in other payment methods. Mateev (2017) suggested that the higher ARs for equity offers may be due to the larger number of acquisitions of private targets using the acquirer's equity. In Mateev's (2017) study the acquirer's ARs were larger when equity was used as a payment method

instead of cash in the acquisitions of private companies. For public targets, the ARs were negative only for equity offers.

In Indian markets, Ladkani and Banerjee (2018) showed that cash offers earned significant positive abnormal returns for acquirer on the deal announcement, and equity offers witnessed non-negative returns on the announcement. So, neither of the payment methods is value-destroying in Indian markets (Ladkani & Banerjee, 2018). It was also noted by the authors that larger deals and deals for public targets increased the use of equity offers. Similar results were reported by Bhabra and Huang (2013) as they showed significant positive CARs for cash acquirers in Chinese markets, whereas equity acquirers were accompanied by insignificant negative CARs. Travlos' (1987) study revealed different return relationships for equity and cash offers, significant negative abnormal returns, and normal returns, respectively.

The previous studies about the impact of payment method on short-term abnormal returns in M&As are less consistent as Mateev (2017) reported contradicting results with Martynova and Renneboog (2008) and Draper and Paudyal (2006). Due to the inconsistency, the research hypothesis H2a is as follows:

> *H2a: The payment method of the M&A has an impact on short-term abnormal returns of the acquiring company.*

Faccio and Masulis (2005) also suggested that acquirers will offer all-cash deals to avoid corporate control threats when the voting power is on an intermediate level before the M&A as the authors examined the European M&A payment choices in the late 1990s. Ladkani & Banerjee (2018) found also supporting evidence from Indian markets for the Faccio and Masulis (2005) suggestion.

3.1.2 Cross-border versus domestic M&As

Most of the recent studies have focused on cross-border M&A deals in developed countries (Mateev, 2017; Danbolt & Maciver, 2012; Martynova & Renneboog, 2006; Campa & Hernando, 2004; Conn & Connell, 1990), whereas only a few have focused on emerging markets (Ladkani & Banerjee, 2018; Tao, et al., 2016; Aybar & Ficici, 2009). The literature on the shareholder wealth effect of the acquiring company is less consistent. Aybar and Ficici (2009), Campa and Hernando (2004) reported negative short-term abnormal returns for acquirers in cross-border acquisitions whereas Ladkani and Banerjee (2018), Mateev (2017), Tao, et al. (2016), Martynova and Renneboog (2006) reported positive short-term abnormal returns.

Despite the comprehensive research about the wealth effects of the acquirer in international M&As, the debate is whether the acquirer's international M&A activity is value-creating or value destructing (Mateev, 2017; Martynova & Renneboog, 2006). However, results of the previous literature appear to be consistent with the existence of abnormal returns around the announcement of international M&As (Tao, et al., 2016; Campa & Hernando, 2004). So, based on the consistency, the research hypothesis H2b is as follows:

> *H2b: The internationality of the M&A has an impact on short-term abnormal returns of the acquiring company.*

Tao, et al. (2016) investigated the Chinese stock market reaction to cross-border M&A deals. Authors found out that Chinese companies that acquire a target from a country with a low level of political risk received higher abnormal returns compared to targets from countries with high political risk. Conn & Connell (1990) found similar evidence when analyzing 73 mergers between the U.S. and the UK firms during 1971-1980. The objective of the study was to investigate shareholders' returns when the company was involved in international mergers. The authors stated that the cumulative abnormal returns (CARs) for the UK bidders were approximately half of the comparable U.S. bidders' CARs in the first month. This was

due to lower corporate governance and regulation requirements in the UK (Conn & Connell 1990).

Bris & Cabolis (2008) investigated the impact of changes in corporate governance on the value of the firm. Their study was based on the awareness that in cross-border acquisitions (100 % of the target shares) firms change their corporate governance. Bris & Cabolis (2008) analyzed 506 acquisitions between the years 1989-2002, in 39 countries. They found out that the merger premium is larger in cases where the bidder's shareholder protection is higher than the target's. It was also found out that firm value will increase when the better accounting standards of the bidders are taken into use by the target. Similar results were found in Rossi & Volpin's (2004) study, where authors analyzed mergers and acquisitions finished between the years 1990-2002, in 49 countries. The purpose of their research was to investigate whether the differences in laws and regulations between countries can explain the activity in the M&A field. Research findings were that strong corporate governance, especially investor protection, increases M&A activity. Rossi & Volpin (2004) found out also that in cross-border acquisitions targets are usually from countries, where the investor protection is on a lower level compared to their acquirers.

Aybar & Ficici's (2009) study aimed to investigate the wealth effect of cross-border acquisitions of emerging-market multinationals. Aybar & Ficici (2009) found out that cross-border acquisitions announcement of emerging-market multinationals negatively affects shareholder wealth. Authors show that the size of the target, bids for privately owned targets and diversified corporate structure has an increasing impact on shareholder wealth.

Harris & Revenscraft (1991) analyzed 1273 firm acquisitions from the United States during the period 1970-1987. Their research revealed the following findings related to cross-border acquisitions: Wealth effects are larger in cross-border acquisitions than in domestic ones. Cross-border acquisitions are concentrated on R&D-related industries rather than domestic acquisitions.

In Latin American countries news of M&A deals signal value creation to shareholders (Simões, et al. 2012). Pandey and Kumari (2020) reported that in the banking sector news of M&A deals generated some negative abnormal returns around the announcement date to the bidder. However, Ladkani and Banerjee (2018) reported that in India the M&As are not destroying the value of shareholders of the acquiring company in the short term. An emerging market is also more sensitive to M&A news and information compared to developed markets (Pandey & Kumari, 2020), whereas Yilmaz & Tanyeri (2018) stated that the magnitudes of M&A deals CARs are higher in developed countries than in emerging markets. This may be due to the differences in market efficiency, deal premiums, corporate governance structures, and information leakages.

3.1.3 Target ownership

The ownership of the target company plays a crucial role in M&As as the available information of public companies is more comprehensive compared to privately-held companies, and as Draper & Paudyal (2006) stated, the takeovers of private companies represent over 80 % of all takeovers. Previous studies have analyzed the takeovers of public firms and the results are not representative when discussing privately-held firms (Draper & Paudyal, 2006). Draper and Paudyal (2006) compared the shareholder wealth effects of a listed company when a company was acquiring public companies versus private companies. The authors presented the three following hypotheses that may explain the differences in wealth effect: 1) managerial motive, 2) liquidity, and 3) negotiation power. As an author I add the fourth hypothesis 4) information to the list.

Managerial motives

Managers of the acquiring company may try to maximize their benefit or the wealth of shareholders. In cases where managers are maximizing their benefit, they are generally maximizing the size of the company, so they may pay overprice for the large and respected targets. As public companies are usually larger and more respected compared to private companies, managers are paying overprice for public companies. Vice versa, when managers are maximizing the wealth effect of shareholders and acquiring private companies they are not paying overprice when the motives are different in the acquisition, and thus the stock

price would not react that much on the announcement date. The integration process of a small private company may be easier than the integration of a large publicly listed company. (Draper & Paudyal, 2006).

Liquidity

In general, the market of private companies is illiquid, and thus the negotiation power of the acquirer is better, which will result in underpricing by the acquirer (Draper & Paudyal, 2006). Martynova and Renneboog (2008) have also recognized that the share of a privately-held company is illiquid and due to that may create a discount in price. Martynova & Renneboog (2008) reported that in their study the announcement of the acquisition of a private firm caused 0,8 % significant abnormal returns and the announcement of a public firm caused insignificant -0,1 % abnormal return. Roosenboom, et al. (2014) found out that privately-held target companies with lower stock liquidity impacted acquirer gains positively. The authors did not notice the same trend for public target companies.

Negotiation power

As privately held companies are typically controlled by a small group of people, there are no agency problems at the same level as in large public companies. So, the owners of private companies are usually able to sell their company more easily than the owners of a public company. In this light, the negotiation power is on the side of a privately held company. (Draper & Paudyal, 2006). In general, unfriendly bids for private firms usually fail, which increases the negotiation power of the private company.

Information

The available information of publicly held companies is more accurate and comprehensive than privately held companies. The information imbalance between public and private companies is well recognized. Acquiring a private firm is riskier as the true information may not be available or reliable (Martynova & Renneboog, 2008). Craninckx and Huyghebaert (2011) also suggested that acquiring a private company includes more information

asymmetries than the acquisition of a public company. However, failures rates of M&As do not differ very much between private and public targets (Craninckx & Huyghebaert, 2011).

In Draper and Paudyal's (2006) study companies that acquired public targets suffered a significant 0,4 % loss around the announcement date. Compared to public companies, authors reported that acquiring private companies a significant 2,19 % excess return was made in the same period. Mateev (2017) reported that the announcement of an acquisition of a private company caused positive ARs whereas the announcement of an acquisition of a public company caused negative ARs. Cai, et al. (2011) reported also negative ARs for the acquirer when acquiring public companies. Also, Aybar & Ficici (2009) showed that the bids for privately owned targets improved the shareholder wealth effects.

Prior research suggests that acquiring privately-held companies generate higher abnormal returns than acquiring public companies (Mateev, 2017; Roosenboom, et al., 2014; Draper & Paudyal, 2006). Based on the above-mentioned aspects about the ownership of the target company the research hypothesis H2c is:

> *H2c: Acquiring private companies generate higher abnormal returns than acquiring public companies.*

3.1.4 Relative size of the M&A deal

Previous research showed that small firms got the largest CARs and CARs decreased as the size of the firm increased (Justice, 2019). Usually, the targets are smaller than the acquirers (Draper & Paudyal, 2006). Draper and Paudyal (2006) reported that low relative size ratio acquirers earned higher returns around the announcement date. Also, in Ladkani and Banerjee's (2018) study, the authors found out that deals with relatively high deal size were received positively by stock markets, and the bigger the relative size of the deal was, the greater was the abnormal returns on the announcement.

Aybar & Ficici (2009) showed that the size of the target has an increasing impact on shareholder wealth. However, bidders acquiring very small firms relative to the size of the bidder, will not cause any noticeable abnormal returns, whereas when bidders are acquiring larger firms, so that the relative size ratio is low, significantly higher abnormal returns are gained.

In the light of reported findings of the effects of the relative size of the M&A deal (Ladkani & Banerjee, 2018; Aybar & Ficici, 2009; Draper & Paudyal, 2006) the research hypothesis H2d is as follows:

> *H2d: As the relative size of the M&A deal increases, the abnormal returns of the acquirer increase.*

3.2 Information leakage

Companies disclose new information to the market regularly and insiders can take the advantage of their information by buying or selling the stock prior to the announcements (Tanimura & Wehrly, 2012). However, insider trading is prohibited, and legal penalties are expected for insider trading. There is also the procedure for public companies to follow if information leakage is noticed, which was presented in figure 4. As was mentioned in section 2, based on the Market Abuse Regulation (MAR) the acquisition or disposal of a financial instrument is prohibited if a person has received inside information about the instrument. In addition to that, advising other people to acquire or dispose of the instrument is also prohibited.

If positive and significant cumulative abnormal returns (CARs) are generated and not linked to the event date, it will indicate information leakage concerning the specific event (Simões, et al., 2012). Simões, et al.'s (2012) research provided evidence that in the stock markets of Argentina and Chile, there is information leakage before the announcement of M&A deals.

Also, Yilmaz & Tanyeri (2018) found evidence of information leakage in the emerging market when they were investigating cumulative abnormal returns generated by news of M&A deals. The possible information leakages have been noticed when the abnormal returns before the announcements of M&A deals are significant.

A recent study by Sachdeva, et al. (2015) concluded in their study that there are also signs of information leakage in the Indian stock market. They showed positive and significant pre-event CARs, which is a sign of dissemination of news. There is also evidence of possible information leakage in the U.S. market, as the pre-event CARs for small-cap firms were significant (Justice, 2019). Mateev (2017) also reported evidence of information leakage prior to the announcement of an M&A deal for acquirers from the UK, not for acquirers from Continental Europe.

Figure 6 presents the average cumulative abnormal returns for the acquiring company. In figure 6, X-axis presents the days prior to and after the announcement of M&A. There are two different samples: sample A consists of the public acquirers and public targets whereas sample B consists of public acquirers and private targets (Craninckx & Huyghebaert, 2011). Cumulative abnormal returns increase prior to the announcement in the window of -50 days to the announcement date when the acquirer and target are public companies, which indicates information leakage. The raise prior to the announcement of M&A may be due to the market anticipation suggested by Cai, et al. (2011). Similar behavior is not noticed for private targets in sample B.

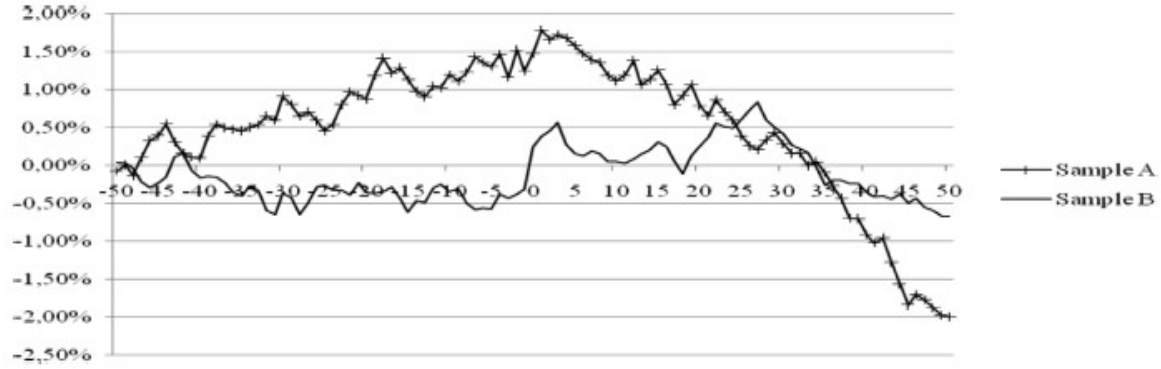

Figure 6. *Cumulative average abnormal returns for acquiring companies. Sample A for public targets and sample B for private targets (Craninckx & Huyghebaert, 2011).*

Yang, et al. (2019) examined the stock price movements and trading behaviors around the announcements of M&A deals in Korea. They reported from results that the average abnormal return (AAR) becomes slightly positive three days before the announcement date, which signals information leakage. In their research, the AARs became insignificant after the announcement date. Yang, et al. (2019) proposed the use of strict surveillance tools to identify deviant trading behavior before an M&A announcement, which will decrease the use of information leakage and thus increase the fairness of capital markets. Justice (2019) also pointed out the use of the above-mentioned remark when setting policies by financial regulators.

Jansen (2015) studied the abnormal trading volumes around M&A deal announcements using a sample of 16 868 M&A announcements during the years 1980–2008. In the light of the authors' report, it is conceivable that there are signs of information leakage, as the abnormal trading volume increased almost 10 % on one day before the announcement. Aktas, et al. (2007) reported increasing cumulative average abnormal volumes (CAAVs) in the period preceding the announcement of M&A, providing clear evidence of information-based trading before the public announcement.

The literature review about information leakage shows that there is evidence of information leakages before the announcement of M&As (Yang, et al., 2019; Justice, 2019; Mateev,

2017; Sachdeva, et al., 2015; Jansen, 2015). Based on these findings, the research hypothesis H3 is:

> *H3: There is evidence of information leakages before the announcement date of M&As.*

Institutional investors are the major shareholders of public companies, for example in the U.S. they own about 70 % of public companies (Jegadeesh & Tang, 2010). Jegadeesh and Tang (2010) emphasized that the institutional trades around takeover announcements are not profitable regardless of made before or after the announcement. However, the authors revealed evidence of information leakage as the institutional fund whose broker is also a target advisor in M&A deals bought the shares in the month before announcements and earned a significant profit (5 % ARs) in those trades. Even though large institutions may have unfair access to insider information, they have a lot of resources to gather and analyze private and publicly available data compared to small investors and the general market (Jegadeesh & Tang, 2010).

Brunnermeier (2005) stated that most of the information leaks happen a few days before the announcement date. Brunnermeier (2005) suggested that with the information from the leak, the pre-informed party will expose the following three features:

1) Based on the information, the informed party will trade twice, once before the information is public and a second time after a public announcement.
2) The informed party intends to partly unwind the position after the announcement, assuming that the public will overreact to the information.
3) The pre-announcement trading makes it difficult for the non-informed public to learn from past stock price movements.

3.2.1 Market efficiency

Brunnermeier (2005) study concluded that inside information and information leakages decrease information efficiency of stock prices in long term, thus reducing risk-sharing and allocation efficiency. The efficient market hypothesis suggests that the stock prices fully and fairly reflect all available information on the market (Justice, 2019). Fama (1970) identified three forms of market efficiency:

1) strong form, when relevant information is held by individual investors or groups that have monopolistic access to it

2) semi-strong form, when recent and publicly available information is available

3) weak form, when only historical prices or returns are available

In short, the forms of market efficiency depend on the possibility of an agent to make excess profit with the aid of private information, public information, and historical prices, respectively (Brunnermeier, 2005).

Cai, et al. (2011) defined the efficient market as a market that rapidly processes new information. The authors also noted the problematic issue about efficient markets is that due to information leakages and market anticipations the new information is not always a surprise to all. Jegadeesh & Tang (2010) argued that larger institutional ownership results in more efficient markets as they obtain their informational advantage. Although authors noted that, at the same time some institutional investors obtain insider information, which destructs the market integrity.

Bradley, et al. (2012) examined the inside trading behavior of executives around the M&A deals and suggest that companies that use their stock to finance the acquisitions and when the executives exercise options before the announcement will underperform in the long term. The authors showed that the underperformance will be revealed approximately a year or two after the announcement.

3.2.2 Trading volume around M&A announcements

Most studies have relied on studying the abnormal returns around announcements of mergers and acquisitions, but only a few have focused on abnormal trading volume around M&A announcements (Jansen, 2015; Lei & Wang, 2014; Chae, 2005), even though the trading volume is one of the key characteristics in stock markets and it also provides insight into the information content of the announcement (Jansen, 2015). Trading volume aggregates trading activity whereas abnormal returns average the value assessments (Jansen, 2015). Lei and Wang (2014) investigated insider trading before corporate announcements and the authors stated:

> *"It is now generally accepted that such private information is often revealed through orders from informed traders and through learning these orders by other market participants such as market makers and uninformed traders." (Lei & Wang, 2014, p. 321-322.)*

Jansen (2015) examined the abnormal volume reaction for acquiring firms and investigated the impact of company size, payment method, target ownership, and relative size on abnormal volume reactions. Jansen (2015) stated that these company and deal characteristics contribute also to greater disagreement among investors about the valuation of M&A activities. So, these characteristics can be used to assess the impact on abnormal returns as well.

Company size

Acquisitions of small companies will generate higher trading volumes around the announcements as the information environment is not as wide as for large companies (Jansen, 2015).

Payment method

As the acquisitions are made with acquirer's equity, cash, or a combination of equity and cash. Using only equity as the payment method will signal the overvaluation of the acquiring company for investors (Travlos, 1987). This will generate disagreement among investors, thus increasing the trading volume (Jensen, 2015).

Target ownership

Public companies are usually more widely owned (Jansen, 2015), and have a wider information environment than private companies, which will increase the disagreement among investors as well as trading volume of public companies.

The relative size of the deal

When the deal size is made proportional to the size of the acquiring company, an increase in the relative size of the deal increases the wealth effects as well. At the same time, relatively large deals are more significant and will also increase the disagreement among investors as well as trading volume (Jansen, 2015).

Lei & Wang (2014) found a striking feature of the time-series patterns about inside trading. Insiders' trading increased dramatically five days before the positive announcement which was not scheduled. This finding is consistent with the results of Chae (2005). Chae (2005) examined the trading volume before scheduled and unscheduled announcements of companies to find out how investors react to private information. Chae (2005) showed that cumulative trading volume decreased over 15 % before the scheduled earnings announcement, whilst before the unscheduled announcement the cumulative trading volume increased.

Mazouz, et al. (2015) argues that informed traders are active in option markets during a month before the announcement of M&A, especially ahead of bad news rather than good news. Mazouz, et al. (2015) reported significant abnormal option volumes before negative

news and significant abnormal stock volumes immediately prior to positive news. Based on the Mazouz, et al. (2015) results, listing stock options does not necessarily increase the market efficiency.

4. RESEARCH METHOD AND DATA

This chapter presents the data and methodologies used in this study. The following subsections describe the data collection and the limitations made in the data gathering along with the measurement and analysis methods used in this study. The hypotheses presented in the previous chapter will be tested using event study methodologies and multivariate regression analysis.

4.1 Data collection and delimitations

The data was obtained from Thomson Reuters Refinitiv – database. First, the M&A announcement dates and data concerning the deal were gathered from the Mergers & Acquisitions – Advanced Search application in Thomson Reuters Refinitiv – database. After collecting the announcement dates for M&A deals, the necessary daily stock price data for the inspection period was gathered using the Thomson Reuters Refinitiv – DataStream. The data in this study was limited so that it met the following criteria:

- The announcement date of the deal was between 1.1.2010 and 31.12.2019. In this study, the financial crisis, as well as the corona pandemic, were left outside the inspection because the impact of M&A deals will differ in crisis. For instance, companies were unwilling or unenthusiastic about M&A during the financial crisis (Justice, 2019).
- The deal size is greater than 50 M$, and the deal value was available in the database. Limitation to deal value was set so that the deal is significant and has possible effects on the company market value. Draper & Paudyal (2006) stated that companies acquiring relatively small companies may not cause any change in their share price.
- Bidder was a publicly listed company from Finland, Sweden, or Denmark.
- Stock price data was available for estimation, pre-event, and post-event periods.

- Only M&As with whole estimation and event periods without overlaps were included. All M&As with overlapping in estimation or event windows were excluded.
- Form of the transaction was merger or acquisition, and in acquisitions over 50 % of the target company was acquired. LBOs and MBOs were excluded.
- The deal was completed.

The initial screening of M&A deals resulted in 359 completed M&As, but when the deals with missing stock price data and overlaps were removed, the final sample consists of 208 M&A deals. The sample of M&A deals was divided so that the acquirer was from Sweden in 141 transactions and from Finland and Denmark in 35 and 32 transactions, respectively. The yearly number of M&A deals by the country for the sample period is presented in figure 7.

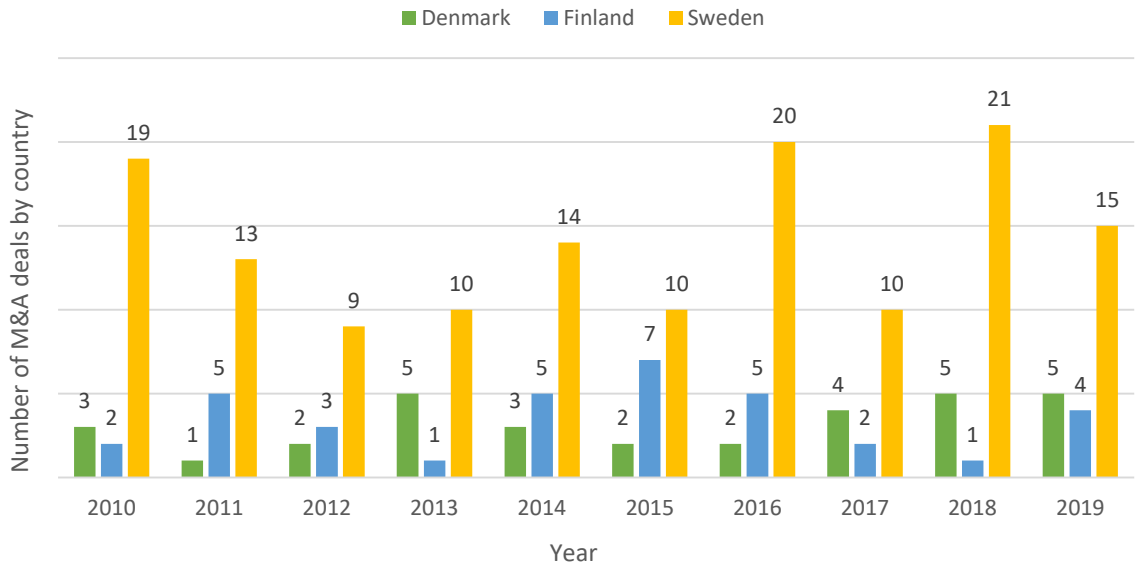

Figure 7. *Number of M&A deals in the sample by the country for years between 2010-2019.*

The form of the transaction was a merger in 79 of the transactions and acquisition in 129 of the deals. There is a trend in the data to suggest that the cross-border deals are dominant in

the sample, with 152 of the transactions, as there are only 56 domestic deals. The targets in transactions are privately held in 55 cases and publicly held or subsidiaries in 30 and 123 cases, respectively. According to the data the payment method was unknown in 129 transactions. The payment method was categorized also to the unknown in transactions where the payment method was reported to be other than all-cash, all-equity, or hybrid. The deals that were defined in the database as cash plus earnout were classified into a group of cash. The relative size of the deal was calculated by dividing the market valuation of the acquirer 10 days prior to the announcement of M&A by the value of the deal, which is consistent with Draper and Paudyal's (2006) approach. The relative size of the deal varied from 0,08 to 3780 with a median of 52,58. The descriptive statistics of the sample data are presented in table 1.

Table 1. *Descriptive statistics of the sample data.*

Deal characteristics		Denmark	Finland	Sweden	Total
Number of M&A deals		32	35	141	208
Form of the Transaction	Merger	14	14	51	79
	Acquisition	18	21	90	129
Inter-nationality of the Deal	Domestic	9	7	40	56
	Cross-border	23	28	101	152
Target Ownership	Private	11	11	33	55
	Public	8	6	16	30
	Subsidiary	13	18	92	123
Payment Method	Cash	9	7	46	62
	Equity	3	2	3	8
	Hybrid	0	4	6	10
	Unknown	20	22	86	128
Relative Size of the Deal	Min	8,99	0,08	0,69	0,08
	Max	1096,14	77,78	3780,03	3780,03
	Median	62,91	5,56	64,82	52,58

As can be seen from table 1, cash is the most used payment method in the transactions of the sample, and equity is used only in 8 of the transactions. In the analysis of the effects of payment methods on the abnormal returns, the unknowns are excluded. So, the sample of transactions including the information considering the payment method is smaller than the final sample, comprising only 80 transactions. Information needed to analyze the effects of target ownership, internationality, and relative size of the deal to abnormal returns are provided to the whole final sample of 208 M&A deals.

4.2 Measurement and analysis methods

Abnormal stock returns and informed trading in Nordic stock exchanges around the mergers and acquisitions announcements were investigated with the statistical event study method. The majority of prior research has applied the event study method in similar studies and referred to the most popular articles concerning the event study method by MacKinlay (1997) and Brown & Warner (1985).

In this research logarithmic returns were used to calculate the daily returns of each company individually and market index returns as well. Logarithmic returns are normally distributed, which is beneficial in a statistical study (Vaihekoski, 2004). The natural logarithmic return for the company is calculated using the following equation:

$$R_t = \ln\left(\frac{Pt}{Pt-1}\right) \quad (1)$$

where P_t and P_{t-1} are prices of the stock at the time t and t-1, respectively. The market model was used to calculate the normal stock returns. The normal stock returns are expected returns that will occur if the event is not happening. The market model is a widely used model to estimate the normal returns in similar research (Yang, et al., 2019; Ladkani & Banerjee, 2018; Mateev, 2017; Brown & Warner, 1985). Using the market model, the normal return of stock i on day t, R_{it}, is calculated with the equation

$$R_{it} = \alpha_i + B_i R_{mt} + \varepsilon_{it} \quad (2)$$

where α_i, is the market model parameter, β_i (beta) is the risk rate of the company compared to market risk (Vaihekoski, 2004). R_{mt} is the return of market index on day t and ε_{it} is the random disturbance term. In the market model, α_i presents the intersection point of the y-axis and the regression line. In this study, OMXN40 was chosen for the market index to calculate the normal return for each company. OMXN40 is comprised of Helsinki's, Stockholm's, Copenhagen's, and Island's stock exchanges 40 most frequently traded shares. Beta, β_i, is calculated using the following equation:

$$B_i = \frac{Cov(Ri,Rm)}{Var(Rm)} \quad (3)$$

where $Cov(R_i,Rm)$ is the covariance of the stock i and market index return, $Var(R_m)$ is the variance of the market index return. In this research, the beta was calculated in the estimation period for each stock. After calculating the normal returns for each stock in the study sample, the abnormal returns (ARs) are calculated in the event window. ARs are calculated by subtracting the normal daily return from the actualized daily return for each stock, and it is performed according to the formula below (MacKinlay, 1997):

$$AR_i = R_{it} - \alpha_i - \beta_i R_{mt} \quad (4)$$

where AR_i is the abnormal return at time t. The calculation of cumulative abnormal returns (CARs) is conducted by summing the abnormal returns of a given period, and it is performed with the following equation:

$$CAR_i(t_1, t_2) = \sum_{t_1}^{t_2} AR_{it} \quad (5)$$

When the ARs and CARs are calculated for individual stocks, these individual values are aggregated to test the statistical significance of the returns. The average abnormal return (AAR) and cumulative average abnormal return (CAAR) are calculated with the following equation (Vaihekoski, 2004; MacKinlay, 1997):

$$\mathrm{AAR_i(t_1, t_2)} = \frac{1}{\mathrm{N}} \sum_{\mathrm{i=1}}^{\mathrm{N}} \mathrm{AR_{it}} \quad (6)$$

$$CAAR_i(t_1, t_2) = \frac{1}{N} \sum_{i=1}^{N} CAR_{it} \quad (7)$$

Where N is the number of stocks in the final sample. The statistical significance test will be conducted after the calculation of AARs and CAARs. The statistical significance of AARs and CAARs is tested with the Student t-test and J_1 Statistic test, respectively. Under the null hypothesis, H0, that the M&A deal announcements do not affect the returns for the inspection period are zero. The assumption is that the abnormal returns of sample companies do not correlate with each other (Vaihekoski, 2004). J_1 Statistic test is performed with the following formula:

$$J_1 = \frac{CAR\ (t_1, t_2)}{\sqrt{\sigma^2(t_1, t_2)}} \sim N(0,1) \quad (8)$$

Where the calculation of the variance in the denominator is performed by using the equation:

$$\sigma^2(t_1,t_2) = \frac{1}{N}\sum_{i=1}^{N}(t_2 - t_1 + 1)\,\sigma_i^2(t_1,t_2) = (\ t_2 - t_1 + 1)\sigma_t^2(t_1,t_2) \qquad (9)$$

4.2.1 Event study

An event study is an econometric tool that can be used to examine the wealth effect of M&A deals (Yang, et al., 2019). The event study method is a widely used and effective tool to gather statistical evidence from the market and to show that the market prices do not immediately adjust to new information (MacKinlay 1997; Simões, et al. 2012). In the event study, the impact of a specific event is measured from the perspective of company market value or stock price (MacKinlay 1997).

The event study method requires the following steps:

1. Finding the M&A deals meeting the criterion
2. Identification of the event dates.
3. Definition of the estimation and event windows for each company and deal. Figure 8. illustrates the timeline for estimation and event windows.
4. Calculation of normal returns, abnormal returns (ARs), and cumulative abnormal returns (CARs)
5. Calculation of average abnormal returns (AARs) and cumulative average abnormal returns (CAARs).
6. Testing the statistical significance of AARs and CAARs with t-test and J_1 statistic test.

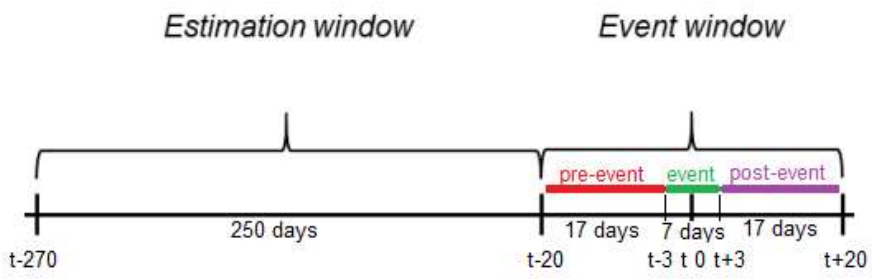

Figure 8. *Illustrating the estimation and event windows on the timeline (Originally picture from MacKinlay 1997).*

As illustrated in figure 8 the event window is going from day -20 until day +20, lasting 41 trading days. The estimation window was set to last for 250 trading days, going from day -270 until day -21. The event window was divided into shorter periods to analyze the impact of the announcement: pre-event (17 trading days) going from day -20 until day -4, event (7 trading days) going from day -3 until day +3, and post-event (17 trading days) going from day +4 until day +20. All these days are relative to the announcement date, which is set to day 0. However, if the announcement date is a non-trading day, the event is replaced by the next trading day. On the announcement date, the market reaction will differ if the time of the announcement is close to or after the end of the trading session compared to the announcement made just after the opening of the trading session (Ma, et al., 2009). It also takes time to analyze the content of an announcement, so the stock price reaction will arise a few days after the announcement. This is considered when the event window (-3, +3 days) was set.

The length of the event window is much shorter than the length of the estimation window, which is in line with the previous literature (MacKinlay 1997; Brown & Warner 1985). In event studies, there is also a high risk of influences from issues that are not related to the event around the announcement date (Panayides & Gong, 2002). The predictive power of the event study will decrease when days are added to the event window, as the probability of non-event-related issues increases (MacKinlay, 1997).

4.2.2 Multivariate regression analysis

In this study, the ordinary least squares (OLS) analysis is used to estimate the market model parameters and as MacKinlay (1997) suggested OLS method is a compatible procedure to estimate the parameters for the market model. In addition to the estimation of market model parameters the multivariate regression analyses are used to test the following research hypotheses:

H1: There are abnormal returns associated with an M&A announcement for the acquiring company.

H2a: The payment method of the M&A has an impact on short-term abnormal returns of the acquiring company.

H2b: The internationality of the M&A has an impact on abnormal returns of the acquiring company

H2c: Acquiring private companies generate higher abnormal returns than acquiring public companies.

H2d: As the relative size of the M&A deal increases, the abnormal returns increase.

In this research multivariate regression analysis is used to examine the relationship between the dependent variable cumulative abnormal returns (CARs) and independent variables (payment method, internationality of the M&A deal, target's ownership, relative size of the M&A deal). The CARs are examined in three different time windows around the announcement date: announcement date and 5 following days (0,5), three days prior and after the announcement date (-3,3), and one day prior and after the announcement date (-1,1). The payment method is used only as an independent variable in the last three regression analysis because there are only 80 observations with the known payment method. Multivariate regression analysis is executed with Excel software and the following formulas are used:

$$CAR\ (0,5) = \beta_0 + \beta_1 INTERNAT + \beta_2 OWNER + \beta_3\ RELSIZE + \varepsilon \quad (10)$$

$$CAR\ (-3,3) = \beta_0 + \beta_1 INTERNAT + \beta_2 OWNER + \beta_3\ RELSIZE + \varepsilon \quad (11)$$

$$CAR\ (-1,1) = \beta_0 + \beta_1 INTERNAT + \beta_2 OWNER + \beta_3\ RELSIZE + \varepsilon \quad (12)$$

$$CAR\ (0,5) = \beta_0 + \beta_1\ CASH + \beta_2 EQUITY + \beta_3 INTERNAT + \beta_4 OWNER + \beta_5\ RELSIZE + \varepsilon \quad (13)$$

$$CAR\ (-3,3) = \beta_0 + \beta_1\ CASH + \beta_2 EQUITY + \beta_3 INTERNAT + \beta_4 OWNER + \beta_5\ RELSIZE + \varepsilon \quad (14)$$

$$CAR\ (-1,1) = \beta_0 + \beta_1\ CASH + \beta_2 EQUITY + \beta_3 INTERNAT + \beta_4 OWNER + \beta_5\ RELSIZE + \varepsilon \quad (15)$$

where CAR is the dependent variable, β_1, β_2, β_3, β_4 and β_5 are regression coefficients, *CASH, EQUITY, INTERNAT, OWNER* and *RELSIZE* are independent variables, and ε is the error term. The value of the regression coefficient informs, how much the value of the dependent variable changes when other regression coefficients remain constant. Excel also provides the standard deviation, coefficient of determination (adj. R^2), t- and p-values. With the aid of these statistical parameters, the statistical significance of the regression analysis can be evaluated.

To analyze the effect of M&A characteristics, dummy variables are included to control the payment method, internationality of the deal, and target's ownership. If the payment method in M&A is all-cash, then the CASH dummy variable equals 1. If the payment method in M&A is all-equity, then the EQUITY dummy variable equals 1. CASH and EQUITY values equal 0 when other forms of payment than all-cash or all-equity are used. The INTERNAT dummy variable equals 1 if the M&A deal is cross-border, 0 if domestic. The dummy variable OWNER equals 1 if the target is public, otherwise, it is 0 and presents privately-held targets. Finally, the relative size of the deal, RELSIZE, is calculated by dividing the

acquirers' market capitalization 10 days prior to the announcement of the deal by the value of the deal as in Draper and Paudyal (2006) study.

4.2.3 Abnormal trading volume

Trading volume is measured using a natural log transformation of share turnover, which is calculated with equation 16. Trading volume is defined as the natural log of shares traded scaled by shares outstanding.

$$Log\ Turnover\ (\tau_{i,t}) = \ln\left(\frac{Trading\ volume\ _{i,t}}{Shares\ outstanding\ _{i,t}}\right) \quad (16)$$

$$Abnormal\ trading\ volume = \tau_{i,t} - \frac{\sum_{t=-270}^{t=-20} \tau_{i,t}}{250} \quad (17)$$

Abnormal daily trading volume is calculated by subtracting the average trading volume over the estimation period from the daily trading volumes in the event windows -20 to +20 days around the announcement. Abnormal trading volume (AV) presents the x % above or below the normal trading volume (Jansen, 2015). After the calculations daily abnormal trading volume is averaged across all announcements to calculate average abnormal trading volumes (AAVs) and cumulated over -20 to +20 days around the announcement to calculate the cumulative average abnormal trading volumes (CAAVs) as in the study of Lei & Wang (2015).

5. RESULTS

In this section, the results of the event study are described. Hypotheses are examined through the event study results. First, the short-term abnormal returns of acquiring companies around the announcement of M&As in Nordic stock markets are presented, including the multivariate regression analysis. After that, the abnormal trading volumes and possible evidence of information leakage are presented. The statistical significance of the results is tested with the aid of regressions- and variate analyses.

5.1 Short-term abnormal returns

The previous literature on the short-term abnormal returns of the acquirer is less consistent as studies have reported gains for the acquiring company (Justice, 2019; Mateev, 2017; Sachdeva, et al., 2015; Bhabra & Huang, 2013; Cai, et al., 2011; Ma, et al., 2009; Draper & Paudyal, 2006; Martynova & Renneboog, 2006) as well as losses (Bradley, et al., 2012; Kiymaz & Baker, 2008; Sudarsanam & Mahate, 2003; Andrade, et al., 2001; Mulherin & Boone, 2000). The results of the event study in this study provide clear support for the studies that have reported gains for acquiring company in short-term (Mateev, 2017; Bhabra & Huang, 2013; Cai, et al., 2011; Ma, et al., 2009) as positive and statistically significant AARs on the announcement date (2,111 %) and the following trading day (0,647 %) are reported. Also, the CAAR for the whole sample in the event window (0,20) is positive and statistically significant at the 1 % level, which supports the findings. Table 2 reports the daily AARs and CAARs for the whole sample in the event window. The p-values for the CAARs in table 2 are presented in appendix 2.

Table 2. *Average abnormal returns (AARs) for the whole sample and cumulative average abnormal returns (CAARs) for private, public, and all targets. Day 0 is the announcement date. *, **, *** denote statistical significance at 10, 5, and 1 percent levels, respectively.*

				All targets	Private targets	Public targets
Day	**AAR (%)**	**% of positive**	**p-value**	**CAAR (%)**	**CAAR (%)**	**CAAR (%)**
-20	-0,099 %	46,63 %	0,3914	-0,099 %	-0,085 %	-0,179 %
-19	0,080 %	50,00 %	0,4874	-0,019 %	0,040 %	-0,369 %
-18	0,163 %	51,44 %	0,1587	0,144 %	0,244 %	-0,451 %
-17	-0,096 %	44,71 %	0,4051	0,048 %	0,110 %	-0,317 %
-16	-0,037 %	49,04 %	0,7476	0,011 %	0,033 %	-0,119 %
-15	-0,012 %	51,44 %	0,9178	-0,001 %	0,049 %	-0,298 %
-14	0,000 %	47,12 %	0,9985	-0,001 %	0,011 %	-0,070 %
-13	0,061 %	50,96 %	0,6000	0,060 %	0,088 %	-0,109 %
-12	-0,243 % **	42,79 %	0,0364	-0,183 %	-0,188 %	-0,150 %
-11	0,172 %	53,37 %	0,1371	-0,011 %	-0,012 %	-0,003 %
-10	-0,008 %	46,63 %	0,9458	-0,019 %	-0,007 %	-0,090 %
-9	-0,166 %	44,23 %	0,1510	-0,185 %	-0,183 %	-0,196 %
-8	0,084 %	53,37 %	0,4685	-0,101 %	-0,103 %	-0,089 %
-7	-0,087 %	52,40 %	0,4497	-0,188 %	-0,191 %	-0,175 %
-6	0,239 % **	52,88 %	0,0396	0,050 %	0,006 %	0,310 %
-5	-0,070 %	46,15 %	0,5445	-0,020 %	-0,054 %	0,181 %
-4	0,125 %	52,88 %	0,2794	0,105 %	0,107 %	0,094 %
-3	0,012 %	50,96 %	0,9184	0,117 %	0,100 %	0,217 %
-2	-0,203 % *	43,75 %	0,0790	-0,086 %	-0,115 %	0,081 %
-1	0,181 %	51,44 %	0,1178	0,095 %	0,083 %	0,165 %
0	2,111 % ***	63,46 %	0,0000	2,205 % ***	2,360 % ***	1,287 %
1	0,647 % ***	56,73 %	0,0000	2,852 % ***	3,126 % ***	1,225 %
2	-0,026 %	46,63 %	0,8204	2,826 % ***	3,112 % ***	1,129 %
3	0,121 %	52,40 %	0,2941	2,947 % ***	3,293 % ***	0,895 %
4	0,002 %	47,12 %	0,9841	2,950 % ***	3,335 % ***	0,662 %
5	-0,016 %	45,67 %	0,8918	2,934 % ***	3,317 % ***	0,660 %
6	0,027 %	50,96 %	0,8182	2,960 % ***	3,334 % ***	0,744 %
7	0,075 %	44,71 %	0,5160	3,035 % ***	3,448 % ***	0,588 %
8	0,092 %	53,37 %	0,4274	3,127 % ***	3,567 % ***	0,514 %
9	-0,055 %	48,08 %	0,6348	3,072 % ***	3,593 % ***	-0,021 %
10	0,107 %	53,37 %	0,3556	3,179 % ***	3,722 % ***	-0,046 %
11	0,018 %	54,33 %	0,8745	3,197 % ***	3,708 % ***	0,167 %
12	-0,231 % **	43,27 %	0,0461	2,966 % ***	3,557 % ***	-0,544 %
13	-0,363 % ***	47,60 %	0,0018	2,602 % ***	3,209 % ***	-0,997 %
14	-0,021 %	44,23 %	0,8545	2,581 % ***	3,201 % ***	-1,098 %
15	0,024 %	51,44 %	0,8322	2,606 % ***	3,248 % ***	-1,207 %
16	0,091 %	51,92 %	0,4305	2,697 % ***	3,315 % ***	-0,974 %
17	0,018 %	48,56 %	0,8789	2,714 % ***	3,321 % ***	-0,888 %
18	-0,053 %	51,44 %	0,6455	2,661 % ***	3,276 % ***	-0,984 %
19	-0,136 %	48,08 %	0,2395	2,525 % ***	3,205 % ***	-1,509 %
20	-0,055 %	48,08 %	0,6330	2,470 % ***	3,102 % ***	-1,276 %

***, Statistically significant at 99 % level
**, Statistically significant at 95 % level
*, Statistically significant at 90 % level

There is a positive reaction for the announcement of M&As as the percentage of positive AARs on days -1, 0, and 1 are 51,44 %, 63,46 %, and 56,73 %, respectively. On the other days in the event window, the percentage of positive AARs fluctuates between 42-54 %. It should also be noted that there are statistically significant and negative AAR (-0,243 %) 12 trading days prior to the announcement as well as statistically significant and positive AAR (0,239 %) 6 trading days before the announcement. Also, AARs 12 and 13 trading days after the announcement are statistically significant and negative (-0,231 % and -0,363 %, respectively). Figures 9 and 10 illustrate the AARs and CAARs, respectively, for the whole sample around the announcements of M&As.

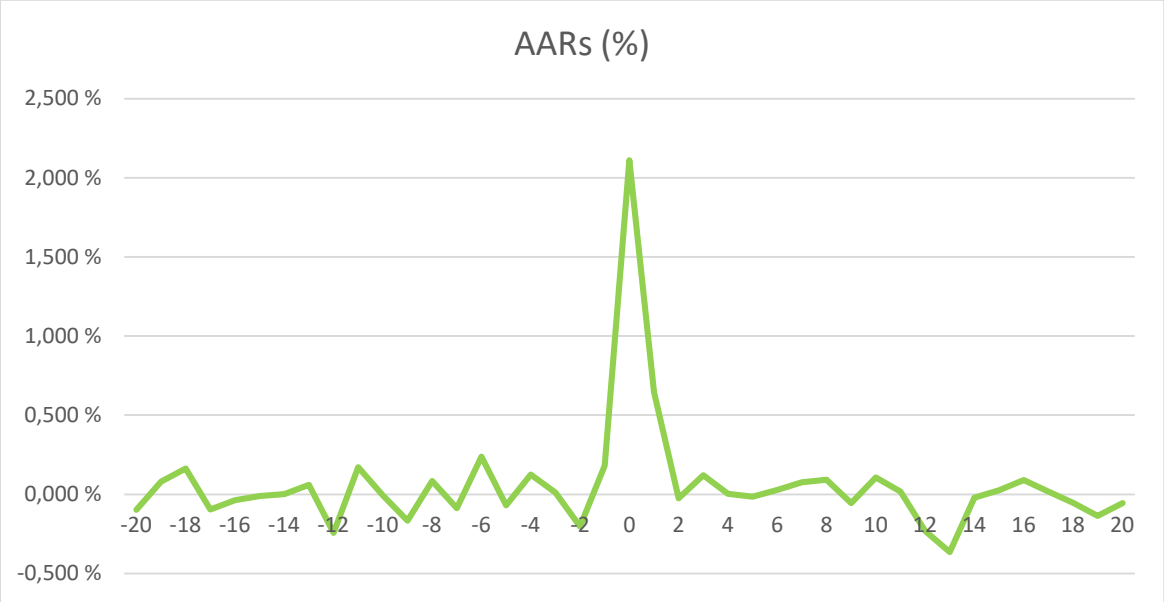

Figure 9. *Daily average abnormal returns (AARs) of the whole sample for the event periods -20 to +20 days.*

The graph in figure 9 clearly illustrates the effect of the M&A announcements on the AARs. On the announcement date "day 0" AAR peaks to 2,111 % and on the day after is 0,647 %. Otherwise, the AARs fluctuate moderately between -0,4 and 0,3 %. The 0,647 % AAR the day after the announcement indicates that the market is not in strong form, vice versa it is in semi-strong form as there is a possibility to gain excess profits with the aid of public information (Brunnermeier, 2005).

In figure 10 the graphs of CAARs show that the cumulation of AARs starts one day before the announcement and continues for 11 days after the announcement date for companies that acquires private targets. After day 11, there is a clear decline in the CAARs as it peaks at 3,197 % on day 11 and ends at 2,470 % on day 20. The negative AARs on days 12 and 13 and a low percentage of positive AARs could simply mean that the market has processed the new information concerning the M&A deal and corrects the price according to the available information. Cai, et al. (2011) defined the efficient market as a market that rapidly processes new information and, in this case, it takes 11 days to process the new information, so based on the definition, the market is not efficient. However, another explanation might be that there are market participants that took the advantage of the positive short-term returns, redeem their gains 11 days after the M&A announcement.

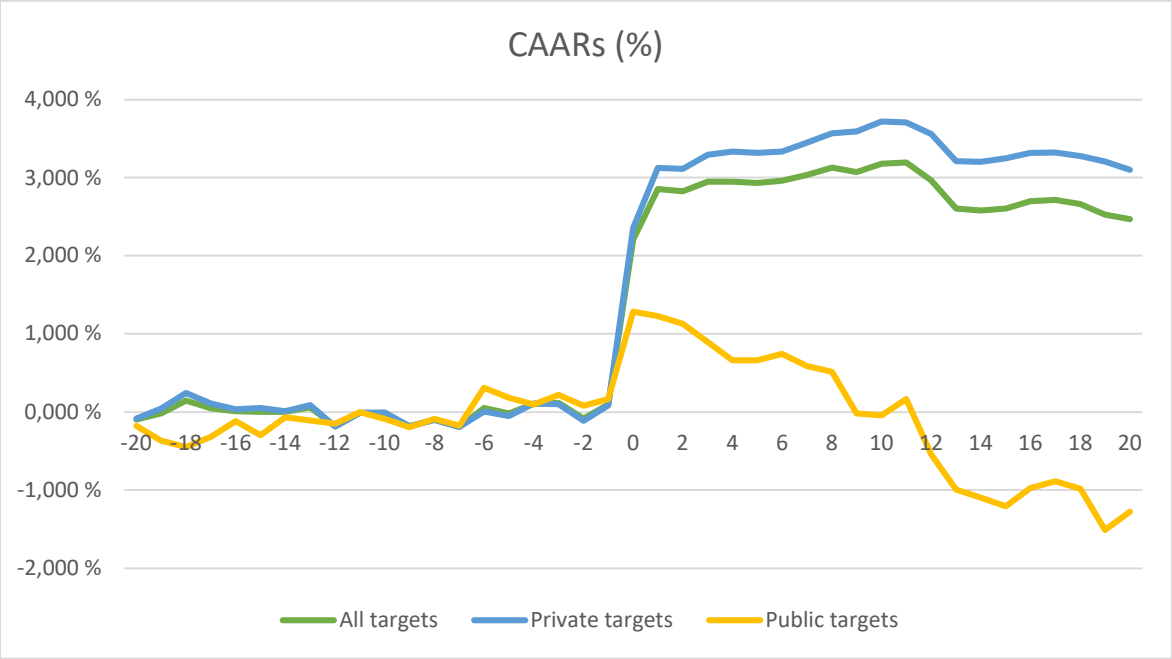

Figure 10. *Cumulative average abnormal returns (CAARs) of acquirers for public, private, and all targets.*

In a short period, there are no signs of raise of abnormal returns prior to the announcement of M&As as in the Dodd and Ruback (1977) study. The CAARs for acquirers of public

targets peak at 1,287 % on the announcement date and declines gradually after that, ending at -1,276 % on day +20. However, CAARs of public firms are insignificant whereas CAARs for privately held firms are statistically significant at a 1 % level from announcement date 0 to day 20 after the announcement. The limitation is that there are only 30 public targets in the sample whereas privately-held targets present 178 of the transactions. Anyhow, the moderate abnormal returns after the announcement of acquiring a public target may be due to the already available information concerning the public target. Also, informed trading prior to the announcement of M&As may decrease the returns after the announcement.

Table 3 presents the CAARs of the whole sample for 14 different event windows around the announcement of M&As. Different event windows are divided so that they present CAARs prior to the announcement, after the announcement, and in the proximity of the announcement. Event windows in table 3 differ in event duration, varying from 3 trading days to 21 trading days. CAARs for all events including the announcement date or the following trading day, except event (1,20), are statistically significant. At the same time, those statistically significant CAARs also present the highest CAARs. It is important to highlight the fact that the announcement date is included in all statistically significant and over 2 % positive event windows and CAARs without the announcement date fall to under 1 % CAARs. Over 50 % of the CARs in the post-event and event windows are positive for the whole sample of 208 M&A transactions.

Table 3. *Cumulative average abnormal returns (CAARs) of the whole sample for different time windows. *** denote statistical significance at 1 percent level.*

	Cumulative average abnormal returns [CAARs]					Probability test	
[t1,t2]	Min	Max	Average	% of positive	Variance	J1 statistic	p-value
Pre-event [-20,-4]	-14,66 %	42,11 %	0,11 %	52,40 %	0,00002	0,2214	0,4124
[-20,-1]	-23,35 %	37,95 %	0,09 %	48,56 %	0,00003	0,1835	0,4272
[-10,-1]	-21,23 %	19,48 %	0,11 %	48,08 %	0,00001	0,2897	0,3860
[-5,-1]	-8,27 %	16,27 %	0,04 %	51,92 %	0,00001	0,1725	0,4315
Post-event [4,20]	-37,17 %	24,36 %	-0,48 %	50,00 %	0,00002	-1,0042	0,1576
[1,20]	-49,65 %	25,66 %	0,26 %	51,44 %	0,00003	0,5141	0,3036
[0,20]	-48,22 %	46,24 %	2,38 % ***	61,06 %	0,00003	4,4996	0,0000
[1,10]	-11,92 %	19,94 %	0,97 % ***	59,62 %	0,00001	2,6719	0,0038
[0,10]	-25,57 %	58,28 %	3,08 % ***	66,35 %	0,00001	8,0716	0,0000
[1,5]	-13,44 %	20,57 %	0,73 % ***	55,29 %	0,00001	2,8278	0,0023
[0,5]	-23,56 %	55,63 %	2,84 % ***	67,31 %	0,00001	10,0610	0,0000
Event [-3,3]	-29,95 %	49,56 %	2,84 % ***	66,83 %	0,00001	9,3238	0,0000
[0,3]	-25,79 %	54,08 %	2,85 % ***	68,75 %	0,00001	12,3802	0,0000
[-1,1]	-19,15 %	52,15 %	2,94 % ***	70,67 %	0,00000	14,7261	0,0000

***, Statistically significant at 99 % level

The reported, statistically significant, abnormal returns around the announcement of M&As confirm hypothesis H1 *(There are abnormal returns associated with an M&A announcement for the acquiring company.),* which can be fully accepted. Overall, the results indicate that announcements of M&As in the Nordic stock markets are perceived positively by the shareholders of the acquiring company. This is in line for example with Justice (2019), Bhabra and Huang (2013), Ma, et al. (2009), and inconsistent for example with Bradley et al. (2012), Kiymaz and Baker (2008), and Sudarsanam and Mahate (2003).

As the abnormal returns around the announcement of M&As are depending on multiple factors (Mateev, 2017; Draper & Paudyal, 2006) the multivariate regression analyses were conducted to investigate the hypotheses H2a-d. First, the whole sample was analyzed and the internationality of the deal, target ownership, and relative size of the deal was examined. Regression analyses were conducted as presented in equations 10-15. Results of the regression analyses are presented in tables 4 and 5.

Table 4. *Results of multivariate regression analyses 10-12 for the whole sample of 208 M&A transactions.*

Variable	CAR (0,5)		p-value	CAR (-3,3)		p-value	CAR (-1,1)		p-value
	(10)			(11)			(12)		
Intercept	0,0429	***	0,0000	0,0424	***	0,0000	0,0373	***	0,0000
Internationality	-0,0085		0,4342	-0,0082		0,4574	-0,0002		0,9871
Owner	-0,0292	**	0,0357	-0,0257	*	0,0690	-0,0224	*	0,0646
Relative size	-0,00003	**	0,0412	-0,00003	**	0,0370	-0,00003	**	0,0112
R^2	0,0434			0,0391			0,0453		
Adjusted R^2	0,0293			0,0250			0,0313		
Standard Error	0,0699			0,0712			0,0611		
N	208			208			208		
F	3,0815			2,7687			3,2298		
Significance F	0,0285			0,0428			0,0234		

***, Statistically significant at 99 % level
**, Statistically significant at 95 % level
*, Statistically significant at 90 % level

The results in table 4 provide evidence of the impact of the target's ownership. The correlation coefficients of the owner are negative -2,92 %, -2,57 % and -2,24 %, for event windows (0,5), (-3,3), and (-1,1), respectively. The correlation coefficients of the owner are also statistically significant at 95 % level on event window (0,5) and at 90 % level on event windows (-3,3) and (-1,1), which implies that the public targets generate lower CARs compared to privately-held targets.

The correlation coefficients of internationality are negative, indicating that cross-border M&As yield lower CARs compared to domestic transactions. However, these are not statistically significant results. The coefficients for the relative size of the deal got values, which were statistically significant at 95 % level and negative, but near zero. The F-value of multivariate regression analyses CAR (0,5), CAR (-3,3), and CAR (-1,1) are 3,0815, 2,7687 and 3,2298, respectively. So, the regressions analyses in table 4 are statistically significant, but the adjusted coefficients of determination R^2 are only 2,5 - 3,13 %, which are low values.

Based on the results of multivariate regression analyses, the equations 10-12 are presented mathematically as follows:

$$CAR\ (0,5) = 0{,}0429 + (-\ 0{,}0085)\ INTERNAT + (-0{,}0292)\ OWNER + (-0{,}00003)\ RELSIZE + \varepsilon \quad (10)$$

$$CAR\ (-3,3) = 0{,}0424 + (-0{,}0082)\ INTERNAT + (-0{,}0257)\ OWNER + (-0{,}00003)\ RELSIZE + \varepsilon \quad (11)$$

$$CAR\ (-1,1) = 0{,}0373 + (-0{,}0002)\ INTERNAT + (-0{,}0224)\ OWNER + (-0{,}00003)\ RELSIZE + \varepsilon \quad (12)$$

The results in table 5 provide evidence of the correlation of M&A deals' payment method and the abnormal returns. The correlation coefficients of deals paid with all-equity are positive and statistically significant at 95 % level, which implies that the M&A deals paid with all-equity generate 10,15 %, 9,63 %, and 9,12 % higher CARs in event windows of (0,5), (-3,3), and (-1,1), respectively, compared to deals which are paid with all-cash or combination of equity and cash. All-cash deals generate also 3,05 %, 4,06 %, and 2,34 % higher CARs than deals paid with a combination of equity and cash in corresponding event windows. However, these correlation coefficients are not statistically significant. Figure 11 illustrates the impact of the payment method on the CAARs of the acquirer in the event window from -20 to + 20 days. The cash and equity CAARs are statistically significant from day 0 to day +20, whereas hybrid deals are statistically significant on only days +19 and +20.

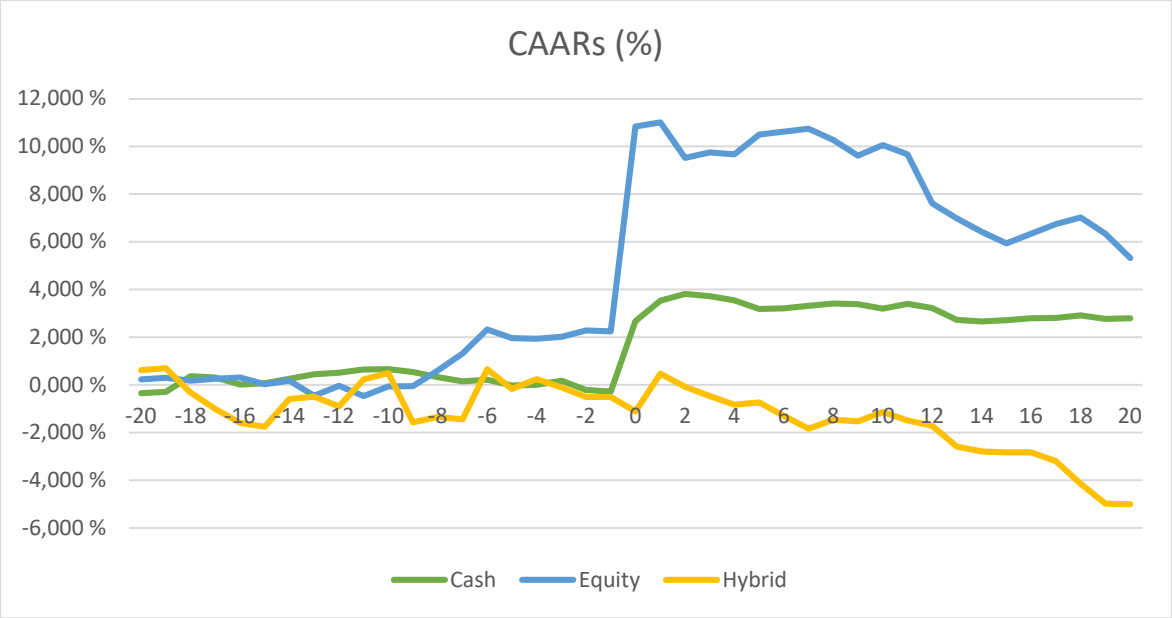

Figure 11. *Cumulative average abnormal returns (CAARs) of the acquirer for acquirers using all-cash, all-equity, or the hybrid payment method.*

Based on figure 11 and to the results of the regression analyses 13-15, the statistically significant and positive correlation coefficient of all-equity transactions confirms that the payment method of the M&A has an impact on short term abnormal returns and hypothesis H2a *(The payment method of the M&A has an impact on short-term abnormal returns of the acquiring company)* can be fully accepted. These findings are consistent with Mateev's (2017) results as the shareholders of acquirer earn higher abnormal returns in equity offers than in other payment methods but contradicts with the results of Martynova and Renneboog (2008) and Draper and Paudyal (2006), who reported that the all-cash acquirers generate higher returns than acquirers with other payment methods.

The correlation coefficients of internationality are negative in table 5, likewise in regressions 10-12, indicating that cross-border M&As yield lower CARs compared to domestic transactions. However, these are not statistically significant results. Based on these findings hypothesis H2b (The *internationality of the M&A has an impact on abnormal returns of the acquiring company),* is partly rejected as there is no statistically significant evidence that the internationality has an impact on abnormal returns of the acquiring company.

The correlation coefficients of owner are negative -6,19 %, -5,10 % and -5,25 %, for event windows (0,5), (-3,3), and (-1,1), respectively. The correlation coefficients of the owner are also statistically significant at 95 % level, which supports the results of regressions 10-12, that the public targets generate lower CARs compared to privately-held targets. In addition, the results presented in table 2 and figure 10 support the conclusion that acquiring private companies generates higher abnormal returns than acquiring public companies. Together, the present findings confirm that the hypothesis H2c (*Acquiring private companies generate higher abnormal returns than acquiring public companies.)* can be fully accepted. A similar pattern of results was obtained in studies of Mateev (2017), Roosenboom, et al. (2014), and Draper & Paudyal (2006).

In regressions 13-15 the coefficients for the relative size of the deal got similar values as in regressions 10-12. Unlike the results in regressions 10-12, the results of regressions 13-15 coefficients are not statistically significant. The results now provide evidence to hypothesis H2d *(As the relative size of the M&A deal increases, the abnormal returns increase.),* which can be partially accepted, because the values of correlation coefficients are negative and statistically significant in regressions 10-12, which implies that as the relative size of the deal increase the abnormal returns increase. However, regressions 13-15 did not provide statistically significant support to this finding, so the hypothesis is only partially accepted. This finding is consistent with Ladkani and Banerjee's (2018), Aybar and Ficici's (2009), Draper and Paudyal's (2006) results. However, the values of coefficients are negligible, -0,01 %, but the sample's relative sizes of the deal vary between 0,08 and 3780. So, effect of relative size of the deal to the CARs vary between 0,08*(-0,01 %) = -0,0008 % and 3780*(-0,01 %) = -37,8 %.

Table 5. *Results of multivariate analyses 13-15 for the transactions with the known payment method.*

Variable	CAR (0,5)		p-value	CAR (-3,3)		p-value	CAR (-1,1)		p-value
	(13)			(14)			(15)		
Intercept	0,0342		0,2804	0,0287		0,3708	0,0417		0,1504
Cash	0,0305		0,3147	0,0406		0,1890	0,0234		0,3974
Equity	0,1015	**	0,0158	0,0963	**	0,0239	0,0912	**	0,0176
Internationality	-0,0151		0,4712	-0,0205		0,3380	-0,0138		0,4720
Owner	-0,0619	**	0,0116	-0,0510	**	0,0390	-0,0525	**	0,0188
Relative size	-0,0001		0,3132	-0,0001		0,3230	-0,0001		0,2596
R^2	0,1568			0,1375			0,1514		
Adjusted R^2	0,0998			0,0792			0,0941		
Standard Error	0,0835			0,0848			0,0763		
N	80			80			80		
F	2,7521			2,3593			2,6406		
Significance F	0,0246			0,0482			0,0298		

***, Statistically significant at 99 % level
**, Statistically significant at 95 % level
*, Statistically significant at 90 % level

The F-value of multivariate regression analyses CAR (0,5), CAR (-3,3), and CAR (-1,1) are 2,7521, 2,3593 and 2,6406, respectively. So, the regressions in table 5 are statistically significant, and the adjusted coefficients of determination R^2 are 7,92 – 9,98%, which are similar to for example the values of Mateev (2017) in a similar study. Based on the results of multivariate regression analyses, the equations 13-15 are presented mathematically as follows:

$$CAR\ (0,5) = 0,0342 + 0,0305\ CASH + 0,1015\ EQUITY + (-0,00151)\ INTERNAT + (-0,0619)\ OWNER + (-0,0001)\ RELSIZE + \varepsilon \quad (13)$$

$$CAR\ (-3,3) = 0,0287 + 0,0406\ CASH + 0,0963\ EQUITY + (-0,0205)\ INTERNAT + (-0,0510)\ OWNER + (-0,0001)\ RELSIZE + \varepsilon \quad (14)$$

$$CAR\ (-1,1) = 0{,}0417 + 0{,}0234\ CASH + 0{,}0912\ EQUITY + (-0{,}0138)\ INTERNAT + (-0{,}0525)\ OWNER + (-0{,}0001)\ RELSIZE + \varepsilon \quad (15)$$

5.2 Abnormal trading volume around the announcement of M&As

Abnormal trading volumes (AVs) around the announcement of M&A deals were examined by calculating the average trading volume over the estimation period for each transaction and subtracting the average trading volume from the daily trading volumes in the event window -20 to +20 days around the announcement. As in Jansen's (2015) study, the abnormal trading volume (AV) presents the x % above or below the normal trading volume. Table 6 presents the average abnormal trading volumes (AAVs) and the cumulative average abnormal trading volumes (CAAVs) for the whole event window.

Table 6. *Average abnormal trading volumes (AAVs) and cumulative average abnormal trading volumes (CAAVs) around the announcement date of M&A deals for the whole sample.*

Day	AAV (%)		t-ratio	p-value	CAAV (%)		J1 Statistic	p-value
-20	6,19 %		1,1201	0,2640	6,19 %		1,1201	0,1313
-19	2,65 %		0,4790	0,6325	8,84 %		1,1307	**0,1291**
-18	1,25 %		0,2256	0,8217	10,08 %		1,0535	**0,1461**
-17	-8,99 %		-1,6268	0,1053	1,09 %		0,0989	**0,4606**
-16	4,49 %		0,8126	0,4174	5,58 %		0,4519	**0,3257**
-15	-12,61 %	**	-2,2829	0,0235	-7,03 %		-0,5195	**0,3017**
-14	-2,03 %		-0,3672	0,7138	-9,06 %		-0,6197	0,2677
-13	3,04 %		0,5511	0,5822	-6,02 %		-0,3849	0,3502
-12	4,25 %		0,7684	0,4431	-1,77 %		-0,1067	0,4575
-11	0,80 %		0,1441	0,8856	-0,97 %		-0,0557	0,4778
-10	-2,58 %		-0,4666	0,6413	-3,55 %		-0,1938	0,4232
-9	-3,61 %		-0,6529	0,5146	-7,16 %		-0,3740	0,3542
-8	1,82 %		0,3294	0,7422	-5,34 %		-0,2680	0,3944
-7	-4,11 %		-0,7436	0,4580	-9,45 %		-0,4570	0,3238
-6	5,32 %		0,9630	0,3367	-4,13 %		-0,1928	0,4235
-5	1,49 %		0,2701	0,7874	-2,63 %		-0,1192	0,4526
-4	2,43 %		0,4390	0,6611	-0,21 %		-0,0091	0,4964
-3	0,61 %		0,1101	0,9124	0,40 %		0,0171	0,4932
-2	3,94 %		0,7136	0,4763	4,34 %		0,1803	0,4284
-1	4,72 %		0,8535	0,3944	9,06 %		0,3666	0,3570
0	78,18 %	***	14,1487	0,0000	87,24 %	***	3,4453	0,0003
1	60,33 %	***	10,9180	0,0000	147,56 %	***	5,6938	0,0000
2	38,51 %	***	6,9699	0,0000	186,08 %	***	7,0220	0,0000
3	22,56 %	***	4,0836	0,0001	208,64 %	***	7,7077	0,0000
4	16,57 %	***	2,9994	0,0030	225,21 %	***	8,1518	0,0000
5	9,79 %	*	1,7721	0,0779	235,00 %	***	8,3411	0,0000
6	4,14 %		0,7484	0,4551	239,14 %	***	8,3292	0,0000
7	11,41 %	**	2,0652	0,0402	250,55 %	***	8,5694	0,0000
8	5,21 %		0,9428	0,3469	255,76 %	***	8,5954	0,0000
9	7,94 %		1,4365	0,1524	263,70 %	***	8,7132	0,0000
10	5,35 %		0,9691	0,3336	269,05 %	***	8,7456	0,0000
11	0,30 %		0,0534	0,9575	269,35 %	***	8,6173	0,0000
12	4,07 %		0,7363	0,4624	273,42 %	***	8,6139	0,0000
13	-2,03 %		-0,3679	0,7133	271,38 %	***	8,4232	0,0000
14	0,43 %		0,0779	0,9380	271,81 %	***	8,3151	0,0000
15	12,62 %	**	2,2838	0,0234	284,43 %	***	8,5795	0,0000
16	0,67 %		0,1209	0,9039	285,10 %	***	8,4826	0,0000
17	9,36 %	*	1,6949	0,0916	294,47 %	***	8,6452	0,0000
18	15,13 %	***	2,7387	0,0067	309,60 %	***	8,9722	0,0000
19	17,84 %	***	3,2281	0,0014	327,44 %	***	9,3697	0,0000
20	11,32 %	**	2,0483	0,0418	338,75 %	***	9,5747	0,0000

***, Statistically significant at 99 % level

**, Statistically significant at 95 % level

*, Statistically significant at 90 % level

The announcements of M&A deals introduce a positive reaction in trading volumes as there are positive AAVs on days 0-5, varying from 9,79-78,18 %. These AAVs are statistically significant at 99 % level on days 0-4 and at 90 % level on day 5. The abnormal trading volume peaks on the announcement date and decreases towards zero in the following 10 days. AAVs raise again on days 15-20.

CAAVs are statistically significant at 99 % level and positive on days 0-20. The CAAV between days -20 and -1 is 9 %, indicating that there might be some informed trading prior to the announcement. However, the AAVs and CAAVs prior to the announcement are not statistically significant, except the AAV on day -15. Figures 12 and 13 illustrate the AAVs and CAAVs, respectively, for the whole sample around the announcements of M&A.

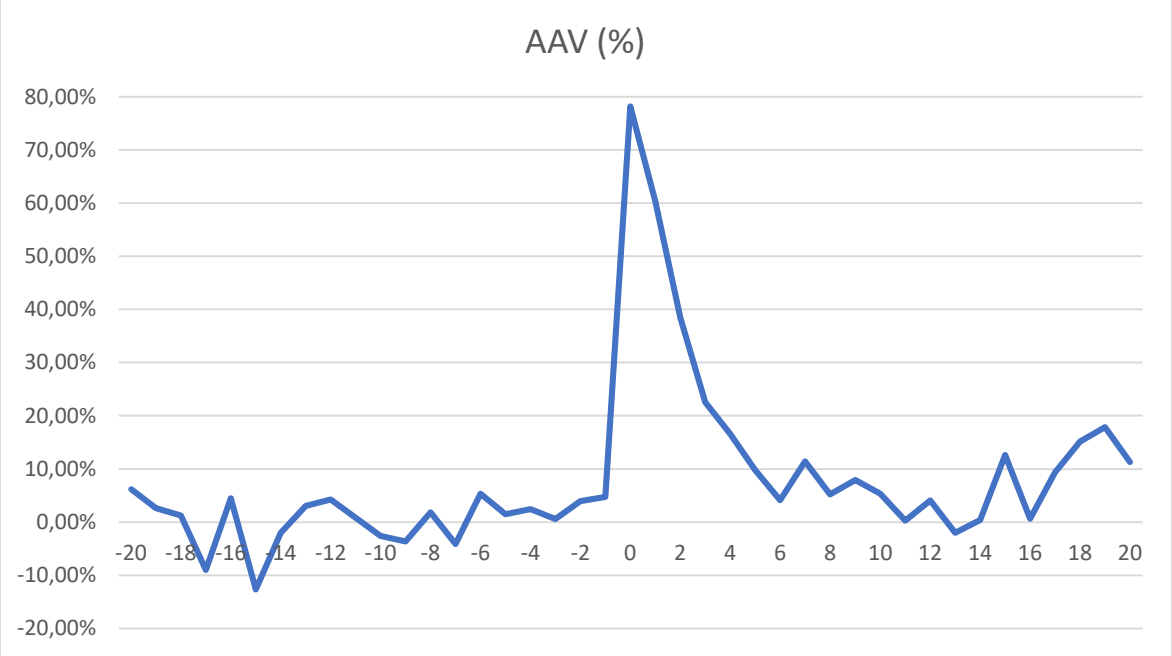

Figure 12. *Average abnormal trading volume (AAVs) of the whole sample for the event periods -20 to +20 days.*

The raise in AAVs after day 14 appears to be the case of redeeming the gains by the market participants that took the advantage of the positive short-term returns. In addition, there might be speculation about the value of the company and possible synergies after the M&A.

This may explain why the AAVs remain positive for 20 days, excluding the day -13, after the announcement.

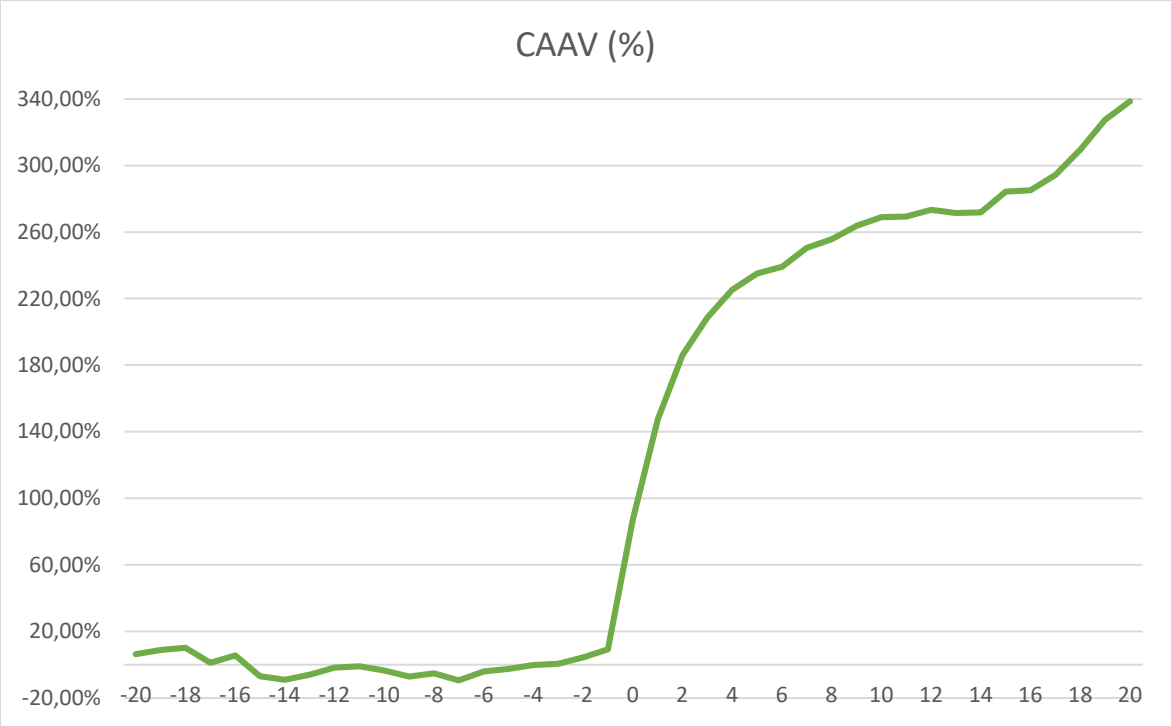

Figure 13. *Cumulative average abnormal trading volume (CAAVs) of the whole sample for the event periods -20 to +20 days.*

The CAAV, presented in table 6 and figure 13, continues a steady increase from -9,45 % on day – 7 to 9,06 % on day −1. It appears, therefore, that there may be informed trading taking place before the public announcement on day 0. AAVs cumulate for the whole event period after day -7 until day 20. Another promising finding was that for acquirers of public targets, the CAAVs were statistically significant from day -19 to day +20 at 99 % level, and day -20 at 95 % level. Also, the CAAVs started from 21,54 % on day -20 and ended in 975,85 % on day +20. There is no similar trend on CAAVs for acquirers of private targets. Table 7 presents the CAAVs for acquirers of public, private, and all targets.

Table 7. *Cumulative average abnormal trading volumes (CAAVs) for private, public, and all targets.*

	All targets		Public targets		Private targets	
Day	**CAAV (%)**	**p-value**	**CAAV (%)**	**p-value**	**CAAV (%)**	**p-value**
-20	6,19 %	0,1313	21,54 % **	0,0447	3,60 %	0,2772
-19	8,84 %	0,1291	46,73 % ***	0,0046	2,45 %	0,3881
-18	10,08 %	0,1461	79,90 % ***	0,0001	-1,72 %	0,4354
-17	1,09 %	0,4606	81,44 % ***	0,0007	-12,48 %	0,1529
-16	5,58 %	0,3257	94,69 % ***	0,0004	-9,47 %	0,2436
-15	-7,03 %	0,3017	88,95 % ***	0,0021	-23,24 % *	0,0597
-14	-9,06 %	0,2677	97,70 % ***	0,0018	-27,08 % **	0,0465
-13	-6,02 %	0,3502	105,26 % ***	0,0017	-24,80 % *	0,0751
-12	-1,77 %	0,4575	122,23 % ***	0,0007	-22,70 %	0,1071
-11	-0,97 %	0,4778	128,16 % ***	0,0007	-22,77 %	0,1187
-10	-3,55 %	0,4232	123,84 % ***	0,0016	-25,05 %	0,1075
-9	-7,16 %	0,3542	136,34 % ***	0,0010	-31,37 % *	0,0686
-8	-5,34 %	0,3944	162,75 % ***	0,0002	-33,70 % *	0,0625
-7	-9,45 %	0,3238	172,26 % ***	0,0001	-40,13 % **	0,0392
-6	-4,13 %	0,4235	194,01 % ***	0,0000	-37,59 % *	0,0556
-5	-2,63 %	0,4526	219,19 % ***	0,0000	-40,09 % *	0,0500
-4	-0,21 %	0,4964	234,22 % ***	0,0000	-39,80 % *	0,0565
-3	0,40 %	0,4932	235,88 % ***	0,0000	-39,37 % *	0,0639
-2	4,34 %	0,4284	258,69 % ***	0,0000	-38,61 % *	0,0730
-1	9,06 %	0,3570	282,83 % ***	0,0000	-37,17 % *	0,0863
0	87,24 % ***	0,0003	394,53 % ***	0,0000	35,33 %	0,1029
1	147,56 % ***	0,0000	496,77 % ***	0,0000	88,59 % ***	0,0010
2	186,08 % ***	0,0000	559,24 % ***	0,0000	123,07 % ***	0,0000
3	208,64 % ***	0,0000	594,46 % ***	0,0000	143,50 % ***	0,0000
4	225,21 % ***	0,0000	619,88 % ***	0,0000	158,58 % ***	0,0000
5	235,00 % ***	0,0000	640,12 % ***	0,0000	166,60 % ***	0,0000
6	239,14 % ***	0,0000	647,01 % ***	0,0000	170,27 % ***	0,0000
7	250,55 % ***	0,0000	664,33 % ***	0,0000	180,69 % ***	0,0000
8	255,76 % ***	0,0000	659,73 % ***	0,0000	187,55 % ***	0,0000
9	263,70 % ***	0,0000	682,78 % ***	0,0000	192,94 % ***	0,0000
10	269,05 % ***	0,0000	698,14 % ***	0,0000	196,61 % ***	0,0000
11	269,35 % ***	0,0000	703,17 % ***	0,0000	196,10 % ***	0,0000
12	273,42 % ***	0,0000	728,66 % ***	0,0000	196,56 % ***	0,0000
13	271,38 % ***	0,0000	740,53 % ***	0,0000	192,19 % ***	0,0000
14	271,81 % ***	0,0000	746,97 % ***	0,0000	191,61 % ***	0,0000
15	284,43 % ***	0,0000	791,07 % ***	0,0000	198,92 % ***	0,0000
16	285,10 % ***	0,0000	828,85 % ***	0,0000	193,33 % ***	0,0000
17	294,47 % ***	0,0000	869,74 % ***	0,0000	197,38 % ***	0,0000
18	309,60 % ***	0,0000	911,67 % ***	0,0000	207,97 % ***	0,0000
19	327,44 % ***	0,0000	936,07 % ***	0,0000	224,71 % ***	0,0000
20	338,75 % ***	0,0000	975,85 % ***	0,0000	231,23 % ***	0,0000

***, Statistically significant at 99 % level

**, Statistically significant at 95 % level

*, Statistically significant at 90 % level

The results now provide evidence of information leakages or informed trading prior to the announcement of M&As in transactions where the target is a public company. Figure 14 illustrates the difference of the CAAVs between public, private, and all targets. The forms of the series are similar, but the slope of the public targets is higher. Also, the cumulation of AAVs starts immediately from day -20. Craninckx & Huyghebaert (2011) also reported evidence of information leakages in cases when both the acquirer and targets were public. Consistent with this study, the authors did not notice similar behavior for private targets. Furthermore, public companies are usually more widely owned and have a wider information environment than private companies, which will increase the disagreement among investors as well as the trading volume of public companies (Jansen, 2015). However, that point is not explaining the trading volumes before the announcement.

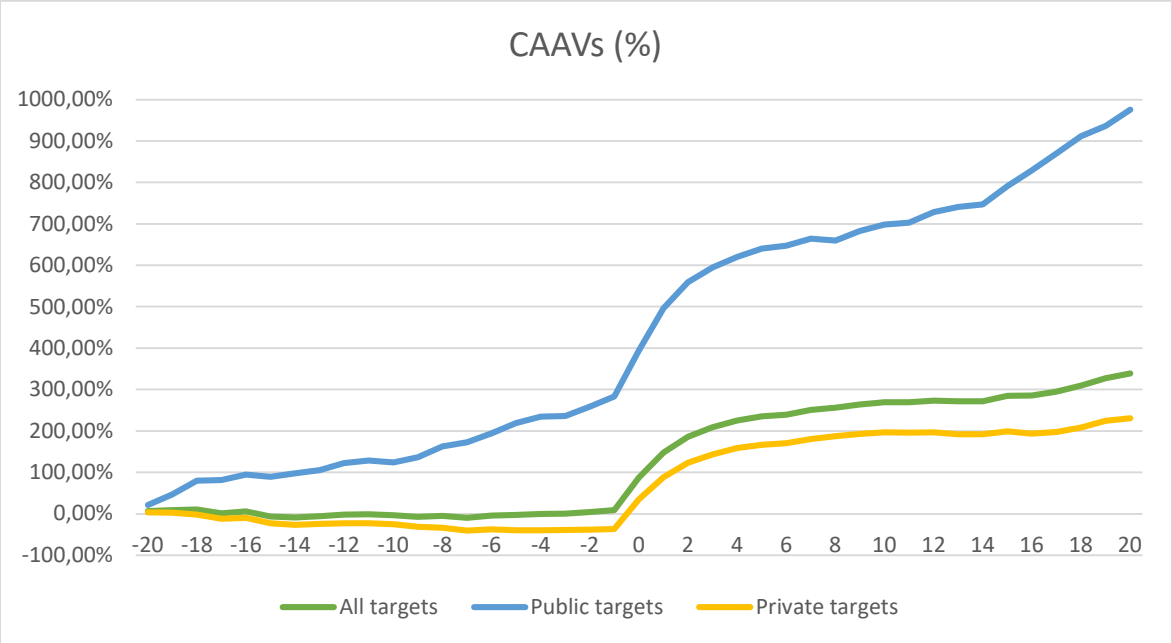

Figure 14. *Cumulative average abnormal trading volume (CAAVs) of acquirers for public, private, and all targets.*

Table 8 presents the CAAVs for different time windows around the announcements. Especially the time windows before the announcement are inspected to reveal the possible information leakages. It seems that the pre-event windows ending on day -1 confirm that

there are some informed trading before the announcement for the whole sample as the CAAVs are 9,06 %, 10,03 %, and 13,17 % in event windows (-20,-1), (-10,-1) and (-5,-1), respectively. However, these are not statistically significant results. In the event window (-3,3) the CAAV is 208,47 % and in the post-event window (4,20) the CAAV is 129,99 %. These CAAVs are statistically significant at the 99 % level.

Table 8. *Cumulative average abnormal trading volumes (CAAVs) of the whole sample for different time windows.*

Cumulative average abnormal trading volumes [CAAVs]				Probability test	
[t1,t2]	Average	Min	Max	J1 statistic	p-value
Pre [-20,-4]	-0,21 %	-2658,93 %	3661,66 %	-0,0093	0,4963
[-20,-1]	9,06 %	-2793,74 %	4304,56 %	0,3665	0,3570
[-10,-1]	10,03 %	-1685,20 %	2052,16 %	0,5743	0,2829
[-5,-1]	13,17 %	-900,25 %	1074,65 %	1,0663	0,1432
Event [-3,3]	208,47 % ***	-1049,31 %	1906,97 %	37,7295	0,0000
Post [4,20]	129,99 % ***	-3162,44 %	3872,97 %	5,7059	0,0000

***, Statistically significant at 99 % level

The ARs and CARs presented in sub-section 5.1 do not provide any additional evidence about informed trading or information leakages prior to the announcement of M&As as there are no clear peaks in ARs or cumulation of abnormal returns prior to the announcement of M&As, except day -1. The AR on day -1 is 0,181 % and CAAR on event (-20,-1) is 0,095 %, which are positive, but moderately low values and statistically insignificant.

Based on the presented abnormal trading volumes and abnormal returns of the sample companies prior to the announcement of M&As, the hypothesis H3 (*There is evidence of information leakages before the announcement date of M&As.)* is partially accepted, as there is no statistically significant evidence of information leakages before the announcement date for the whole sample of 208 transactions. However, there are insignificant signs of informed trading or information leakages for the whole sample. Especially for acquirers of public targets, there is statistically significant evidence of informed trading or information leakages

prior to the announcement of M&As. So, there is evidence of information leakages before the announcement date of M&As for acquirers of public targets in Nordic stock markets. The informed trading may not have been profitable as the CARs for acquirers of public targets are moderate compared to private targets and as Jegadeesh and Tang (2010) emphasized the institutional investors are the major shareholders of public companies and that the institutional trades around M&A announcements are not profitable regardless made before or after the announcement. Jegadeesh and Tang (2010) also revealed evidence of information leakage as the institutional fund, whose broker is also a target advisor in the M&A deals, bought the shares in the month before announcements and earned a significant profit (5 % ARs) in those trades.

6. CONCLUSIONS

This study aimed to provide information about the abnormal returns and to find evidence of possible information leakages around the mergers and acquisitions announcement in Nordic stock markets. The final sample consisted of 208 M&A transactions. The sample was limited so that the announcement date of the deal was between 2010-2019, the deal size was greater than 50 M$ and the acquirer was a public company from Finland, Sweden, or Denmark. The short-term abnormal returns and abnormal trading volumes were examined with the event study method. The study focused on the acquiring companies since the targets are mainly privately-held companies and it is already shown in the previous literature that shareholders of targets gain in M&As (Campa & Hernando, 2004; Jensen & Ruback, 1983). The study aimed to answer the following research propositions from the viewpoint of the acquirers:

1. How do Nordic stock markets react to the announcement of M&As in the short term?
2. How do the Nordic stock markets react to M&As with different characteristics of the company or the deal?
3. Are there signs of information leakages before the announcement dates of M&As in Nordic stock markets?

Based on the research propositions, hypotheses H1-H3 were formed and tested to answer the research questions. The hypotheses, conclusions, and evidence are summarized in table 9.

Table 9. *Summary of hypotheses, conclusions, and evidence.*

Hypothesis	Conclusion	Evidence
H1: *There are abnormal returns associated with an M&A announcement for the acquiring company.*	Fully accepted	The reported, statistically significant, abnormal returns around the announcement of M&As confirms the hypothesis H1. Overall, the results indicate that announcements of M&As in the Nordic stock markets are perceived positively by the shareholders of the acquiring company.
H2a: *The payment method of the M&A has an impact on short-term abnormal returns of the acquiring company.*	Fully accepted	Based on the results of the regression analyses, statistically significant and positive correlation coefficient of all-equity and all-cash transactions confirms that the payment method of the M&A has an impact on short term abnormal returns.
H2b: *The internationality of the M&A has an impact on abnormal returns of the acquiring company.*	Partly rejected	There are no statistically significant evidence that the internationality has an impact on abnormal returns of the acquiring company. The correlation coefficients of internationality are negative, indicating that cross-border M&As yield lower CARs compared to domestic transactions.
H2c: *Acquiring private companies generate higher abnormal returns than acquiring public companies.*	Fully accepted	In the regression analyses the correlation coefficients of owner are negative and statistically significant at 99 % level, which supports the conclusion that the public targets generate lower CARs compared to privately held targets.
H2d: *As the relative size of the M&A deal increases, the abnormal returns increase.*	Partially accepted	As the relative size of the deal increase the abnormal returns increase, based on the negative and statistically significant values of correlation coefficients in regression analyses 10-12. However, regressions 13-15 did not provide statistically significant support to this finding
H3: *There is evidence of information leakages before the announcement date of M&As.*	Partially accepted	Based on the presented abnormal trading volumes and abnormal returns of the sample companies prior to the announcement of M&As there is not statistically significant evidence of information leakages before the announcement date for the whole sample. However, for acquirers of public targets, there are statistically significant evidence of informed trading or information leakages prior the announcement of M&As. In addition, there are unsignificant signs of informed trading or information leakages for the whole sample.

For the first research question *"How do Nordic stock markets react to the announcement of M&As in the short term?"*, the answer is that the statistically significant results of this study indicate that the announcement of M&As in Nordic stock markets is perceived positively in the short-term by the shareholders of the acquiring company. Even though, the previous literature on the short-term abnormal returns of the acquirer is less consistent as studies have reported gains for the acquiring company (Mateev, 2017; Draper & Paudyal) as well as losses (Sudarsanam & Mahate, 2003; Andrade, et al., 2001), the results of this study provide clear support for the studies that have reported gains for acquiring company in short-term for example Justice (2019), Bhabra and Huang (2013), Ma, et al. (2009). The results of this study are inconsistent with the studies that have reported losses or zero abnormal returns around the announcement of M&As for example with Bradley et al. (2012), Kiymaz and Baker (2008).

In this study, the raise of CAARs lasted for about 11 days (0,11) after the announcement of M&As, and after that, the CAARs decreased or remained approximately constant till the end of the inspection period (11,20). So, based on the results of this study, in Nordic stock markets, the reaction to a public announcement of M&A does not last long. However, the market efficiency is not in strong form as there are possibilities to gain excess profits also after the announcement day. There are no markable, statistically significant, results of AARs or AAVs for the whole sample prior to the announcement of M&As showing abnormal activity which would indicate information leakages or informed trading. However, for public companies, there is statistically significant evidence of information leakage or informed trading based on the abnormal trading volumes prior to the public announcement of M&As.

The second research question *"How do the Nordic stock markets react to M&As with different characteristics of the company or the deal?"* was approached through the hypothesis H2a-d, and based on the results, it is obvious that the payment method of the deal and target ownership have prominent effects on the abnormal returns and abnormal trading volumes of acquirers. The payment method as a deal characteristic influenced the abnormal returns around the announcement of M&As, as both all-equity and all-cash transactions generate higher abnormal returns than hybrid transactions, in which the payment is made

with a combination of cash and equity. When comparing the all-equity and the all-cash transactions, the all-equity bids generate the highest abnormal returns in Nordic stock markets.

These findings are consistent with Mateev's (2017) results, who reported that all-equity bids generated the highest CARs, but contradicts with the results of Martynova and Renneboog (2008) and Draper and Paudyal (2006) who reported that all-cash bids generate higher CARs around the announcement of M&As than the all-equity bids. However, the hybrid bids are the most common payment method in M&As, but in this study in only 10 out of the known 80 transactions payment was made with the mix of cash and equity. The trend in the all-equity bids is positively correlated with the stock market index, and when equity is used as a payment method, it should be adjusted to the peak of a stock market cycle or rising markets (Martynova & Renneboog, 2008). In the sample period of this study, there have been rising markets for most of the time.

In general, cash reserves are high, and debt is more easily available during the economic boom compared to recession (Ali-Yrkkö, 2002), so this might be the reason why the all-cash payment was the most popular option in sample's transactions. There is also the discussion about corporate control when deciding the payment method of M&A transaction and as Faccio and Masulis (2005) suggested that acquirers will offer all-cash deals to avoid corporate control threats when the voting power is on an intermediate level before the M&A.

The ownership of the target company plays a crucial role in M&As as the available information of public companies is more comprehensive compared to privately held companies, and as Draper & Paudyal (2006) stated, the takeovers of private companies represent over 80 % of all takeovers. In the sample of this study, the proportion of private targets was 85,5 %. Prior literature shows that acquiring private targets generates higher abnormal returns in the short term than acquiring public targets (Mateev, 2017; Roosenboom, et al., 2014; Draper & Paudyal, 2006). Likewise, Nordic stock markets showed similar behavior in this study, as was observed in prior studies in Europe. The CAAR for acquirers of privately held companies was over 3 % in the event period (-20,20), whereas

for acquirers of public companies the CAAR for the same event period was -1,27 %. The results of this study support the prior literature concerning the effect of target ownership in M&A transactions. The reasons to explain the differences in wealth effect between acquiring a private company and a public company may be 1) managerial motives, 2) liquidity, 3) negotiation power, and 4) information asymmetry.

This study did not reveal statistically significant results about differences in cross-border versus domestic M&As. However, insignificant results from the study suggest that in Nordic stock markets the cross-border M&As yield lower CARs compared to domestic transactions. In the literature, others have shown that acquirers in cross-border acquisitions gain negative short-term abnormal returns (Aybar & Ficici, 2009; Campa & Hernando, 2004) whereas the others reported positive short-term abnormal returns (Ladkani & Banerjee,2018; Mateev 2017; Tao, et al., 2016; Martynova & Renneboog, 2006). The literature is inconsistent about the effects of internationality of M&As on the shareholder wealth effects and this study is not providing statistically significant evidence on this matter.

The relative size of the deal influenced the abnormal returns of the sample companies, the increase in the relative size of the deal size increased the abnormal returns of acquiring company. The results were statistically significant for the whole sample (N=208), but not in regressions where the effects of the payment method were examined also (N=80). The correlation coefficients obtained from the regression analyses were rather low. However, the multiplier of the coefficient varies between 0,08 and 3780, which amplifies the effect of the correlation coefficient. This finding is broadly in line with the previous studies (Ladkani & Banerjee, 2018; Aybar & Ficici, 2009; Draper & Paudyal, 2006).

The third research question *"Are there signs of information leakages before the announcement dates of M&As in Nordic stock markets?"* was approached by examining the AAVs and AARs prior to the announcement of M&A deals. The examination revealed some insignificant evidence of information leakages or informed trading prior to the public announcement. Most of the recent studies were investigating the abnormal returns and as Simões, et al.'s (2012) stated the positive and significant cumulative abnormal returns

(CARs) which are not linked to the event date, will indicate information leakage concerning the specific event. However, in this study the ARs prior to the announcement were insignificant and the values of ARs were moderately low, not revealing clear evidence of information dissemination. So, there in this study, I did not find that the abnormal returns were generated before the public announcement due to information leaks as was suggested by Panayides and Gong (2002).

The abnormal trading volumes were also investigated in addition to abnormal returns, as in Jansen (2015) study, to examine the information leakages. For the acquirers of public targets, there is statistically significant evidence of informed trading or information leakages prior to the announcement of M&As in Nordic stock markets. This finding is in line with Jansen (2015) and Aktas, et al. (2007). Public companies are usually more widely owned and have a wider information environment than private companies, which will increase the disagreement among investors as well as the trading volume of public companies (Jansen, 2015). This point will explain the trading volumes after the public announcement of M&A, but not the informed trading before the announcement. Even though there has been informed trading, the informed trading may not have been profitable as the CARs for acquirers of public targets are moderate compared to private targets and as Jegadeesh and Tang (2010) emphasized the institutional investors are the major shareholders of public companies and that the institutional trades around M&A announcements are not profitable regardless made before or after the announcement.

Insider information and information leakages decrease the information efficiency of stock prices in long term, thus reducing risk-sharing and allocation efficiency (Brunnermeier, 2005). All in all, insider trading is prohibited, and legal penalties are expected for insider trading. There is also the procedure for public companies to follow if information leakage is noticed, which was presented in figure 4. As was mentioned in section 2, based on the Market Abuse Regulation (MAR) the acquisition or disposal of a financial instrument is prohibited if a person has received inside information about the instrument. In addition to that, advising other people to acquire or dispose of the instrument is also prohibited.

6.1 Discussion of the findings

The findings of this study lead to the overall conclusion that the Nordic stock markets react to the announcements of M&As similarly as reported from larger markets in the U.S., Asia, and Europe (Justice, 2019; Mateev, 2017; Ma, et al., 2009). However, there are some inconsistencies, for example about the effects of deal internationality, but this might be due to the fact the world becomes increasingly globalized (Simões, et al., 2012), and has already become more globalized compared to the studies conducted a decade or two ago. The Nordic stock markets have their characteristics as they are border markets and smaller in size and liquidity in contrast to for example the U.S. markets.

Importantly, my results provide evidence for information leakages or informed trading for acquirers of public companies. The evidence of disseminated information should be investigated by market regulators to retain the credibility and efficiency of markets. Also, the financial regulator should examine the possible information leakages and the actions taken by the listed companies around the possible leakages when setting the new policies to improve the fairness of capital markets. Especially, for the growing number of small investors (Finanssiala Ry, 2021), the transparency of the operation of public companies is essential to gain and remain trust in the stock markets.

In a wider perspective, the results of this study suggest that investors may gain excess profits in short term by investing in companies that publicly announce about M&As. Based on the results, the investment should be done on the announcement day or on the following day to obtain possible abnormal returns. However, the effects of different deal characteristics and stock market trends will have their impacts on the stock price movements, so it is impossible to forecast the actual stock price movements.

6.2 Limitations and future research

My research can be improved in a number of ways. First, analyzing more M&A transactions could have decreased the biases in results, especially for sub-samples like all-equity acquirers and acquirers of public companies. With the same countries inspected and using the same delimitations, the duration of the inspection period should have been increased to obtain more M&A transactions, and in that case, the time of financial crisis should have been included in the sample. However, the financial crisis may have biased the results. Another option would have been to add the M&As conducted by a Norwegian acquirer, but Norway is not a member of the European Union, and the stock exchange in Norway is not fully owned by OMX AB, which would have complicated the examination of information leakages and the rules of insider trading as well as public disclosure. Second, the number of unknown or other payment methods limited the number of observations in regression analyses investigating the effects of the payment method.

More generally, the previous literature has been inconsistent about the effects of M&A announcements as well as the effect of different deals characteristics on the abnormal returns of the acquirer around the announcement of M&As. The significant results of this study provide support to the prior research with consistent results. However, the number of transactions is still limited, and all the acquirers are from Finland, Sweden, or Denmark, so the results cannot be generalized to apply to all markets around the world, but it gives clear sight about the effects of the M&A announcement on frontier markets in the Nordics.

Regardless, future research could continue to explore the factors affecting the abnormal returns around the announcement of M&As in Nordic countries. In addition to Nordic countries, the larger markets could be investigated as well, which would provide applicable results in general, not just results applicable in Nordic frontier markets. The amount of deal and company characteristics could be increased, for example, to examine the effect of industry relatedness and previous experience of the acquirer in the M&As. In addition, the impacts of the strategic objectives of the deal on the abnormal returns could be analyzed.

Future studies could also explore the business logic of investment companies by gathering empirical evidence of the deal and company characteristics in Nordic stock markets. Investment companies are usually well experienced in the field of M&A as they have undergone plenty of transactions and their business is based on acquiring the most potential targets in the viewpoint of value creation (Katramo, et al., 2013). The issue is on the deal sizes as they should be high enough to be significant for the company and have possible effects on the market value of the company. However, the public investment companies in the Nordic stock market are rather small and the deal size limitation of 50 M$ in this study, eliminated most of the deals made by investment companies. To name a few investment companies operating in the Nordic stock markets: Sievi Capital Oyj (Finland), Boreo Oyj (Finland), Investor AB (Sweden), Indutrade AB (Sweden), and Strategic Investments A/S (Denmark).

Furthermore, the long-term effects of M&As on the shareholders' wealth are interesting because the M&A deals are usually executed due to long-term strategic plans (Panayides & Gong, 2002), not in a short-term perspective. On the other hand, it may be a complex task to determine the normal level and evaluate the long-term effect of specific M&As as not only the underlying market and economic trends will change, but also there may be other M&A transactions during the inspection period.

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Appendix 1.

Announcement Date	Acquirer Name	Acquirer Nation	Deal Size (M USD)	Target Name	Target Nation
19/12/2019	Getinge AB	Sweden	89	Applikon Biotechnology BV	Netherlands
19/12/2019	John Mattson Fastighets AB	Sweden	81	Sollentuna Stadshus AB-Residential Property Portfolio(29)	Sweden
09/12/2019	Nederman Holding AB	Sweden	62	Gasmet Technologies Oy	Finland
22/10/2019	Zealand Pharma A/S	Denmark	61	Encycle Therapeutics Inc	Canada
16/09/2019	Scandinavian Tobacco Group A/S	Denmark	233	Agio Beheer BV	Netherlands
23/07/2019	Midsona AB	Sweden	64	Alimentation Sante SAS	France
10/07/2019	Torslanda Property Investment AB	Sweden	243	Soderport Holding AB-Property Portfolio(6)	Sweden
04/07/2019	Peab AB	Sweden	316	YIT Oyj-Nordic Paving & Mineral Aggregates Businesses	Finland
03/07/2019	Heimstaden AB	Sweden	110	Patrizia Immobilien AG-Residential Units Portfolio(772)	Netherlands
21/06/2019	Karo Pharma AB	Sweden	361	Trimb Holding AB	Sweden
18/06/2019	Pandox AB	Sweden	116	HRG Hotels GmbH-Hotels(3)	Germany
18/06/2019	Tieto Oyj	Finland	2 183	EVRY ASA	Norway
10/06/2019	Elisa Oyj	Finland	85	Polystar Osix AB	Sweden
06/06/2019	SimCorp A/S	Denmark	67	AIM Holding SCA	Luxembourg
03/06/2019	Bufab AB	Sweden	63	HT BENDIX A/S	Denmark
03/06/2019	Stillfront Group AB	Sweden	120	KIXEYE Inc	United States
12/04/2019	Wihlborgs Fastigheter AB	Sweden	135	Alecta Pensionsforsakring Omsesidigt-Tretornfabriken	Sweden
06/03/2019	ASSA ABLOY AB	Sweden	477	agta record ag	Switzerland
26/02/2019	Valmet Oyj	Finland	129	GL&V USA Inc	United States
19/02/2019	GN Store Nord A/S	Denmark	125	Altia Systems Inc	United States
08/02/2019	Fabege AB	Sweden	136	Vasakronan AB-office properties(2)	Sweden
28/01/2019	Humana AB	Sweden	81	Coronaria Hoiva Oy	Finland
25/01/2019	Glaston Oyj Abp	Finland	77	Bystronic Lenhardt GmbH	Germany
16/01/2019	Dsv As	Denmark	4 739	Panalpina Welttransport (Holding) AG	Switzerland
14/12/2018	Intrum AB	Sweden	341	Solvia Servicios Inmobiliarios SL	Spain
11/12/2018	Sanoma Oyj	Finland	315	Iddink Groep BV	Netherlands
10/12/2018	AF AB	Sweden	736	Poyry Oyj	Finland
29/11/2018	Hoist Finance AB	Sweden	86	Alpha Bank SA-Non Peforming Loans Portfolio	Greece
27/11/2018	BillerudKorsnas AB	Sweden	706	Bergvik Skog Ost AB	Sweden
13/11/2018	Swedish Orphan Biovitrum AB	Sweden	1 945	AstraZeneca PLC-Synagis US Rights	United States
16/10/2018	Ambea AB	Sweden	290	Aleris AB-Care Operations	Norway
15/10/2018	Fagerhult AB	Sweden	440	Iguzzini Illuminazione SpA	Italy
28/09/2018	HEXPOL AB	Sweden	196	MESGO SpA	Italy
13/09/2018	NP3 Fastigheter AB	Sweden	131	Sveavalvet AB (Publ)	Sweden
17/08/2018	Novo Nordisk A/S	Denmark	800	Ziylo Ltd	United Kingdom
13/07/2018	Nobia AB	Sweden	76	Bribus Holding BV	Netherlands
06/07/2018	Mekonomen AB	Sweden	462	FTZ Autodele & Vaerktoj A/S	Denmark
04/07/2018	Dustin Group AB	Sweden	76	Vincere Group BV	Netherlands
02/07/2018	Nordea Bank AB	Sweden	676	Gjensidige Bank ASA	Norway
29/06/2018	Castellum AB	Sweden	94	Skandia Fastigheter AB-office building	Finland
14/06/2018	Nobina AB	Sweden	52	Samtrans Skol- & Handikapptransporter AB	Sweden
12/06/2018	Fastighets AB Balder	Sweden	68	Hotel Portfolio,Germany(7)	Germany
11/06/2018	Amasten Fastighets AB	Sweden	77	Tvattbjornen Forvaltning AB-residential rental houses(21)	Sweden
04/06/2018	Loomis AB	Sweden	98	CPoR Devises SA	France
18/04/2018	Ringkjobing Landbobank A/S	Denmark	604	Nordjyske Bank A/S	Denmark
12/04/2018	DFDS A/S	Denmark	1 175	UN Ro-Ro Isletmeleri AS	Turkey
16/03/2018	H Lundbeck A/S	Denmark	1 114	Prexton Therapeutics BV	Netherlands
14/03/2018	Beijer Ref AB	Sweden	55	Heatcraft Australia Pty Ltd	Australia
26/02/2018	Enea AB	Sweden	90	Openwave Mobility Inc	United States
31/01/2018	Scandinavian Tobacco Group A/S	Denmark	62	Thompson & Co of Tampa Inc	United States
10/01/2018	Tele2 AB	Sweden	4 402	Com Hem Holding AB	Sweden
14/12/2017	H+H International A/S	Denmark	130	HeidelbergCement AG-German & Swiss CSU business	Germany
01/12/2017	Tryg A/S	Denmark	1 310	Alka Forsikring	Denmark
22/11/2017	Dometic Group AB	Sweden	875	SeaStar Solutions	United States
25/10/2017	Ambu A/S	Denmark	265	invendo medical GmbH	Germany
25/10/2017	Nederman Holding AB	Sweden	50	Neo Monitors AS	Norway
13/10/2017	Jeudan A/S	Denmark	106	8 Properties Copenhagen	Denmark
21/06/2017	Scandic Hotels Group AB	Sweden	128	Restel Oy-Hotel Portfolio(43)	Finland
20/06/2017	Lassila & Tikanoja Oyj	Finland	74	Veolia FM AB	Sweden
20/06/2017	Modern Times Group MTG AB	Sweden	55	Kongregate Inc	United States
19/06/2017	YIT Oyj	Finland	903	Lemminkainen Oyj	Finland
31/03/2017	HEXPOL AB	Sweden	69	Trelleborg Material & Mixing Lesina sro	Czech Republic
24/03/2017	Atrium Ljungberg AB	Sweden	147	Undisclosed Property,Gothenburg	Sweden
17/02/2017	Cloetta AB	Sweden	57	Candyking Holding AB	Sweden
02/02/2017	Hexagon AB	Sweden	834	MSC Software Corp	United States
01/02/2017	Fingerprint Cards AB	Sweden	120	Delta ID Inc	United States
13/01/2017	Duroc AB	Sweden	51	International Fibres Group AB	Sweden
19/12/2016	Svenska Cellulosa AB SCA	Sweden	2 864	BSN medical Luxembourg Group Holding Sarl	Germany
15/12/2016	Axfood AB	Sweden	60	Matse Holding AB	Sweden

Announcement Date	Acquirer Name	Acquirer Nation	Deal Size (M USD)	Target Name	Target Nation
21/11/2016	Mycronic AB	Sweden	62	Automation Engineering Inc	United States
11/11/2016	VBG Group AB	Sweden	198	Mobile Climate Control Group Holding AB	Sweden
10/11/2016	Electrolux AB	Sweden	237	Kwikot Ltd	South Africa
07/11/2016	Telia Co AB	Sweden	282	Phonero AS	Norway
02/11/2016	Medivir AB	Sweden	165	TetraLogic Pharmaceuticals Corp-SMAC,HDAC, SHAPE	United States
01/11/2016	Karo Pharma AB	Sweden	101	BioPhausia AB	Sweden
28/10/2016	Alimak Group AB	Sweden	91	Facade Access Investment Holdings Pty Ltd	Australia
24/10/2016	Enea AB	Sweden	57	Qosmos SA	France
21/10/2016	Platzer Fastigheter Holding AB	Sweden	180	Volvo AB-Undisclosed Property Portfolio,Gothenburg	Sweden
27/09/2016	Ratos AB	Sweden	148	Plantasjen AS	Norway
21/09/2016	Pandox AB	Sweden	61	HILTON BRUSSELS GRAND PLACE	Belgium
01/08/2016	AB Sagax	Sweden	79	Real Estate Portfolio,Finland	Finland
05/07/2016	Midsona AB	Sweden	96	Internatural AB	Sweden
21/06/2016	Tele2 AB	Sweden	352	TDC Sverige AB	Sweden
17/06/2016	Elanders AB	Sweden	289	LGI Logistics Group International GmbH	Germany
13/06/2016	Granges AB	Sweden	324	Noranda Aluminum Holding Corp-Downstream Flat-Rolled Products Business	United States
30/05/2016	Elisa Oyj	Finland	119	Anvia Telecom Oy	Finland
19/05/2016	Huhtamaki Oyj	Finland	116	Delta Print & Packaging Ltd	Ireland
16/05/2016	Konecranes Abp	Finland	1 278	Terex Corp-Material Handling & Port Solutions Business	United States
13/05/2016	Fortum Oyj	Finland	526	Ekokem Oyj	Finland
11/05/2016	NIBE Industrier AB	Sweden	364	The Climate Control Group Inc	United States
10/03/2016	Boliden AB	Sweden	712	First Quantum Minerals Ltd- Kevitsa Mine	Finland
20/01/2016	Vestas Wind Systems As	Denmark	96	Availon GmbH	Germany
13/01/2016	Chr Hansen Holding A/S	Denmark	185	Nutrition Physiology Corp	United States
12/01/2016	Kesko Oyj	Finland	384	Onninen Oy	Finland
21/12/2015	Wihlborgs Fastigheter AB	Sweden	117	Properties, Copenhagen(2)	Denmark
20/11/2015	Atlas Copco AB	Sweden	522	Oerlikon Leybold Vacuum GmbH	Germany
09/11/2015	Trelleborg AB	Sweden	1 249	CGS Holding AS	Czech Republic
04/11/2015	Byggmax Group AB	Sweden	100	Skanska Byggvaror AB	Sweden
25/10/2015	Securitas AB	Sweden	350	Diebold Inc-North American Electronic Security Business	United States
20/10/2015	Catena AB	Sweden	529	Tribona AB	Sweden
13/10/2015	Svenska Cellulosa AB SCA	Sweden	681	Wausau Paper Corp	United States
09/10/2015	Dsv As	Denmark	1 323	UTi Worldwide Inc	United States
29/09/2015	Alma Media Oyj	Finland	51	Talentum Oyj	Finland
01/07/2015	Modern Times Group MTG AB	Sweden	86	Turtle Entertainment GmbH	Germany
25/06/2015	Tieto Oyj	Finland	78	Software Innovation AS	Norway
12/06/2015	Atrium Ljungberg AB	Sweden	110	Alvstranden Utveckling AB-Office Properties,Gothenburg(3)	Sweden
01/06/2015	Sweco AB	Sweden	424	Grontmij NV	Netherlands
25/05/2015	Citycon Oyj	Finland	1 611	Sektor Gruppen AS	Norway
25/05/2015	Scanfil Oyj	Finland	84	PartnerTech AB	Sweden
11/05/2015	Fiskars Oyj Abp	Finland	433	WWRD Holdings Ltd	United Kingdom
14/04/2015	Nokia Oyj	Finland	13 780	Alcatel Lucent SA	France
17/02/2015	Demant A/S	Denmark	105	Audika SA	France
15/01/2015	Valmet Oyj	Finland	395	Metso Oyj-Process Automation System Business	Finland
22/12/2014	HEXPOL AB	Sweden	112	Rhetech Inc	United States
12/12/2014	Taaleritehdas Oyj	Finland	75	Vakuutusosakeyhtio Garantia	Finland
09/12/2014	Nobia AB	Sweden	53	Rixonway Kitchens Ltd	United Kingdom
21/11/2014	Ratos AB	Sweden	62	Ledil Oy	Finland
19/11/2014	Raisio Oyj	Finland	111	Cilag GmbH International - Benecol Business	United Kingdom
12/11/2014	ICA Gruppen AB	Sweden	767	Apotek Hjartat AB	Sweden
05/11/2014	Vitrolife AB	Sweden	65	Unisense FertiliTech A/S	Denmark
12/09/2014	Telefonaktiebolaget LM Ericsson	Sweden	95	Fabrix Systems	Israel
08/07/2014	Huhtamaki Oyj	Finland	336	Positive Packaging Industries Ltd	India
08/07/2014	Kemira Oyj	Finland	208	Akzo Nobel NV-Paper Chemicals Business	Netherlands
23/06/2014	NIBE Industrier AB	Sweden	323	WaterFurnace Renewable Energy Inc	United States
23/06/2014	Stora Enso Oyj	Finland	62	Virdia Inc	United States
21/05/2014	Spar Nord Bank A/S	Denmark	51	FIH Erhvervsbank A/S-Customer Portfolio	Denmark
08/05/2014	H Lundbeck A/S	Denmark	611	Chelsea Therapeutics International Ltd	United States
14/04/2014	Saab AB	Sweden	50	ThyssenKrupp Marine Systems AB	Sweden
07/04/2014	Alfa Laval AB	Sweden	2 171	Frank Mohn AS	Norway
04/04/2014	Loomis AB	Sweden	224	Via Mat Management AG	Switzerland
24/02/2014	Jyske Bank A/S	Denmark	1 345	BRFkredit A/S	Denmark
14/02/2014	Swedbank AB	Sweden	264	Sparbanken Oresund AB	Sweden
22/01/2014	SSAB AB	Sweden	2 480	Rautaruukki Oyj	Finland
17/01/2014	AB Sagax	Sweden	88	Sanoma Oyj- Real Estate Properties	Finland
07/01/2014	Sandvik AB	Sweden	740	Varel International Energy Services Inc	United States
09/12/2013	Cloetta AB	Sweden	63	Alrifai Nutisal AB	Sweden
03/12/2013	Skanska AB	Sweden	95	Skanska AB-Laboratory & Office Property	United States
11/11/2013	Sydbank A/S	Denmark	83	Diba Bank A/S	Denmark
06/09/2013	ASSA ABLOY AB	Sweden	68	Mercor HD SKA	Poland
05/09/2013	SKF AB	Sweden	1 243	Kaydon Corp	United States
19/08/2013	Atlas Copco AB	Sweden	1 606	Edwards Group Ltd	United Kingdom

Announcement Date	Acquirer Name	Acquirer Nation	Deal Size (M USD)	Target Name	Target Nation
19/08/2013	Rockwool International A/S	Denmark	140	Chicago Metallic Corp	United States
16/07/2013	Cargotec Oyj	Finland	211	Hatlapa Uetersener Maschinenfabrik GmbH & Co KG	Germany
11/07/2013	Royal Unibrew A/S	Denmark	492	Oy Hartwall Ab	Finland
17/06/2013	Sweco AB	Sweden	143	Vectura Consulting AB	Sweden
12/06/2013	Jeudan A/S	Denmark	146	Properties Portfolio	Denmark
17/05/2013	Fastighets AB Balder	Sweden	122	Fabege AB-Properties(2)	Sweden
27/03/2013	Investor AB	Sweden	844	Permobil AB	Sweden
25/03/2013	Ratos AB	Sweden	71	Nebula Oy	Finland
01/02/2013	Electrolux AB	Sweden	182	Niam AB-Office Property, Stockholm	Sweden
31/01/2013	Novozymes A/S	Denmark	80	Iogen Bio-Products Corp	Canada
20/12/2012	Ambu A/S	Denmark	170	King Systems Inc	United States
13/12/2012	XANO Industri AB	Sweden	70	AGES Industrier i Unnaryd AB	Sweden
12/12/2012	Fiskars Oyj Abp	Finland	86	Royal Copenhagen A/S	Denmark
18/09/2012	Spar Nord Bank A/S	Denmark	56	Sparbank A/S	Denmark
07/09/2012	AF AB	Sweden	52	Advansia AS	Norway
15/08/2012	Getinge AB	Sweden	275	Kinetic Concepts Inc- Therapeutic Support Systems Bus	United States
04/07/2012	Wallenstam AB	Sweden	59	Vasakronan AB-real estate properties(5)	Sweden
19/06/2012	Billerud AB	Sweden	1 473	Korsnas AB	Sweden
18/04/2012	Betsson AB	Sweden	85	Nordic Gaming Group Ltd	Malta
22/03/2012	Huhtamaki Oyj	Finland	88	Josco(Holdings)Ltd	Hong Kong
13/02/2012	SKF AB	Sweden	125	General Bearing Corp	United States
31/01/2012	Outokumpu Oyj	Finland	3 735	Inoxum AG	Germany
13/01/2012	Intrum Justitia AB	Sweden	51	Buckaroo BV	Netherlands
03/01/2012	Fastighets AB Balder	Sweden	189	Residential Block Oesterfaelled,Copenhagen	Denmark
22/12/2011	HEXPOL AB	Sweden	51	Horst Mueller Kunststoffe GmbH	Germany
21/12/2011	Alma Media Oyj	Finland	51	LMC sro	Czech Republic
19/12/2011	Sweco AB	Sweden	85	Finnmap Consulting Oy	Finland
16/12/2011	Cloetta AB	Sweden	968	Leaf International BV	Netherlands
07/12/2011	NCC AB	Sweden	62	Morgan Stanley P2 Value-RE properties Startboxen 1 & Sadelplatsen 2	Sweden
17/11/2011	Wartsila Oyj Abp	Finland	445	Hamworthy PLC	United Kingdom
01/09/2011	Svenska Cellulosa AB SCA	Sweden	70	Pro Descart Industria e Comercio Ltda	Brazil
04/08/2011	Suominen Oyj	Finland	240	Ahlstrom Oyj-Home & Personal Business	Finland
29/06/2011	Saab AB	Sweden	195	Sensis Corp	United States
21/06/2011	Elekta AB	Sweden	526	Nucletron BV	Netherlands
11/04/2011	Medivir AB	Sweden	101	BioPhausia AB	Sweden
11/04/2011	NIBE Industrier AB	Sweden	479	Schulthess Group AG	Switzerland
31/03/2011	Loomis AB	Sweden	100	Pendum LLC-Cash Handling Business	United States
17/03/2011	Citycon Oyj	Finland	147	Kristiine Kaubanduskeskus AS	Estonia
17/03/2011	Investment AB Latour	Sweden	547	Sakl AB	Sweden
31/01/2011	Cargotec Oyj	Finland	190	Navis LLC	United States
27/01/2011	Mekonomen AB	Sweden	106	AS Sorensen og Balchen	Norway
26/01/2011	Wallenstam AB	Sweden	184	NIAM AB-Real Estate Property Portfolio,Gothenburg(7)	Sweden
13/01/2011	Jeudan A/S	Denmark	82	M Goldschmidt Ejendomme A/S- Property Portfolio, Denmark(9)	Denmark
21/12/2010	Alfa Laval AB	Sweden	730	Aalborg Industries Holding A/S	Denmark
20/12/2010	Novozymes A/S	Denmark	275	EMD/Merck Crop BioScience Inc	United States
03/11/2010	Intrum Justitia AB	Sweden	65	Aktiv Kapital ASA-Credit Management Operations	Norway
22/10/2010	Fagerhult AB	Sweden	85	LTS Licht & Leuchten GmbH	Germany
19/10/2010	SKF AB	Sweden	1 000	Lincoln Industrial Corp	United States
18/10/2010	Hexpol AB	Sweden	213	Excel Polymers LLC	United States
11/10/2010	ASSA ABLOY AB	Sweden	76	ActivIdentity Inc	United States
11/10/2010	Electrolux AB	Sweden	249	Olympic Group for Financial Investments SAE	Egypt
30/09/2010	Securitas AB	Sweden	68	Reliance Security Services Ltd	United Kingdom
28/09/2010	UPM-Kymmene Oyj	Finland	1 128	Myllykoski Oy	Finland
25/09/2010	Telefonaktiebolaget LM Ericsson	Sweden	63	Nortel Networks Corp-Multi Service Switch Business	Canada
13/09/2010	Demant A/S	Denmark	62	Otix Global Inc	United States
09/09/2010	Bong Ljungdahl AB	Sweden	89	Papeteries Hamelin SAS- Envelope operations	France
16/07/2010	Tele2 AB	Sweden	65	BBned NV	Netherlands
08/07/2010	Ratos AB	Sweden	187	Stofa A/S	Denmark
07/07/2010	Dios Fastigheter AB	Sweden	50	Stella Polaris Invest AB- Properties,Skelleftea(8)	Sweden
06/07/2010	Hexagon AB	Sweden	2 125	Intergraph Corp	United States
06/07/2010	Rockwool International A/S	Denmark	109	CSR Ltd-Insulation, Panels& Trading Businesses	China (Mainland)
02/07/2010	AB Sagax	Sweden	54	Nordic Real Estate Partners ApS-Industrial Properties, Helsinki(10)	Finland
02/07/2010	Investor AB	Sweden	578	Aleris Holding AB	Sweden
23/06/2010	YIT Oyj	Finland	90	caverion GmbH	Germany
08/06/2010	Investment AB Oresund	Sweden	106	HQ Fonder Sverige AB	Sweden
12/04/2010	Wihlborgs Fastigheter AB	Sweden	68	Nordic Land Terminalen AB	Sweden
26/03/2010	Nederman Holding AB	Sweden	50	Dantherm Filtration Holding A/S	Denmark

Appendix 2.

	All targets			Private targets			Public targets	
Day	CAAR (%)		p-value	CAAR (%)		p-value	CAAR (%)	p-value
-20	-0,099 %		0,1952	-0,085 %		0,2504	-0,179 %	0,2510
-19	-0,019 %		0,4541	0,040 %		0,4114	-0,369 %	0,1643
-18	0,144 %		0,2350	0,244 %		0,1330	-0,451 %	0,1647
-17	0,048 %		0,4174	0,110 %		0,3330	-0,317 %	0,2763
-16	0,011 %		0,4831	0,033 %		0,4540	-0,119 %	0,4212
-15	-0,001 %		0,4986	0,049 %		0,4372	-0,298 %	0,3240
-14	-0,001 %		0,4990	0,011 %		0,4871	-0,070 %	0,4607
-13	0,060 %		0,4273	0,088 %		0,4030	-0,109 %	0,4427
-12	-0,183 %		0,2983	-0,188 %		0,3103	-0,150 %	0,4256
-11	-0,011 %		0,4880	-0,012 %		0,4878	-0,003 %	0,4985
-10	-0,019 %		0,4803	-0,007 %		0,4935	-0,090 %	0,4594
-9	-0,185 %		0,3216	-0,183 %		0,3386	-0,196 %	0,4159
-8	-0,101 %		0,4037	-0,103 %		0,4107	-0,089 %	0,4632
-7	-0,188 %		0,3310	-0,191 %		0,3439	-0,175 %	0,4305
-6	0,050 %		0,4553	0,006 %		0,4948	0,310 %	0,3823
-5	-0,020 %		0,4829	-0,054 %		0,4579	0,181 %	0,4327
-4	0,105 %		0,4124	0,107 %		0,4189	0,094 %	0,4660
-3	0,117 %		0,4054	0,100 %		0,4263	0,217 %	0,4239
-2	-0,086 %		0,4317	-0,115 %		0,4180	0,081 %	0,4724
-1	0,095 %		0,4272	0,083 %		0,4421	0,165 %	0,4449
0	2,205 %	***	0,0000	2,360 %	***	0,0000	1,287 %	0,1462
1	2,852 %	***	0,0000	3,126 %	***	0,0000	1,225 %	0,1637
2	2,826 %	***	0,0000	3,112 %	***	0,0000	1,129 %	0,1887
3	2,947 %	***	0,0000	3,293 %	***	0,0000	0,895 %	0,2468
4	2,950 %	***	0,0000	3,335 %	***	0,0000	0,662 %	0,3100
5	2,934 %	***	0,0000	3,317 %	***	0,0000	0,660 %	0,3139
6	2,960 %	***	0,0000	3,334 %	***	0,0000	0,744 %	0,2959
7	3,035 %	***	0,0000	3,448 %	***	0,0000	0,588 %	0,3386
8	3,127 %	***	0,0000	3,567 %	***	0,0000	0,514 %	0,3602
9	3,072 %	***	0,0000	3,593 %	***	0,0000	-0,021 %	0,4943
10	3,179 %	***	0,0000	3,722 %	***	0,0000	-0,046 %	0,4877
11	3,197 %	***	0,0000	3,708 %	***	0,0000	0,167 %	0,4560
12	2,966 %	***	0,0000	3,557 %	***	0,0000	-0,544 %	0,3613
13	2,602 %	***	0,0001	3,209 %	***	0,0000	-0,997 %	0,2609
14	2,581 %	***	0,0001	3,201 %	***	0,0000	-1,098 %	0,2434
15	2,606 %	***	0,0001	3,248 %	***	0,0000	-1,207 %	0,2254
16	2,697 %	***	0,0001	3,315 %	***	0,0000	-0,974 %	0,2741
17	2,714 %	***	0,0001	3,321 %	***	0,0000	-0,888 %	0,2946
18	2,661 %	***	0,0001	3,276 %	***	0,0000	-0,984 %	0,2774
19	2,525 %	***	0,0003	3,205 %	***	0,0000	-1,509 %	0,1857
20	2,470 %	***	0,0004	3,102 %	***	0,0001	-1,276 %	0,2275

***, Statistically significant at 99 % level

**, Statistically significant at 95 % level

*, Statistically significant at 90 % level