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Domestic vs Cross-Border M&A in the Nordics

An empirical study of value creation, distribution, and the cross-border effect on shareholders wealth

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Abstract

This thesis investigates cross-border wealth effects in Nordic mergers and acquisitions (M&As), utilizing short-run event study methodology on a sample of 276 transactions from 2003 to 2023. This investigation is performed by measuring the cumulative abnormal returns (CAR) and combined total wealth effects to targets and bidders. To control for well-established determinants, we conduct a cross-sectional analysis. Ultimately, a correlation analysis is carried out to study motivations in order to further interpret our findings.

Our analysis unveils a significant difference in CAR for targets in cross-border transactions (24.66%) compared to domestic transactions (16.14%). As for bidders, our findings suggest that domestic bidders experience greater gains compared to their cross-border counterparts, though the difference is not statistically significant. Furthermore we find that specifically the industries *financial*, *industrials* and *high technology* substantially contribute to the cross-border differences in target returns. Upon analysing the combined wealth effects, our study identifies statistically significant combined returns for both domestic (3.72%) and cross-border transactions (1.95%), observing no significant difference in the combined returns between domestic and cross-border deals. These results suggest that, on average, value creation arises from M&A announcements in the Nordics.

When controlling for well-known deal and participant characteristics in our cross-sectional analysis, distinct influences on gains are revealed. Moreover, while the cross-border variable holds significance for target firms after controlling for determinants, the effect is ambiguous for bidder firms and no significance is observed.

Finally, our correlation analysis examining motivations indicates synergies to be an important motive in both domestic and cross-border transactions, and suggests a probable presence of hubris.

Keywords – Cross-Border, Nordics, M&A, Short-Run Event Study, NHH

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1 Introduction

Mergers and acquisitions (M&As) attract significant attention as defining corporate events that influence company transformation, development, and growth. They function as catalysts for transformation, facilitating the introduction of new approaches while displacing traditional methods (DePamphilis, 2019). Furthermore, there has been substantial growth in mergers and acquisitions in recent decades, and the domain has been extensively examined by financial scholars. A predominant portion of this research has concentrated on the wealth effects of M&As, with a geographical emphasis on the United States and the United Kingdom, primarily with a domestic focus (see e.g. Erel et al. (2012), Martynova and Renneboog (2006)).

In this dissertation, we seek to explore wealth creation in Nordic cross-border M&As. The existing body of research on the Nordic region is notably sparse. Coupled with the ambiguity and inconclusiveness prevalent in the existing literature regarding cross-border takeovers, our study is therefore intended to address what we perceive is a gap in the literature. To establish a comprehensive analysis and apprehend reasons behind potential differences between Nordic domestic and cross-border M&A wealth effects, we seek to investigate the fundamental motivations driving these transactions and identify influential value driving factors. We subsequently examine the distribution of gains between the target and bidder companies in the context of cross-border M&A in the Nordic region. Furthermore, this study compares the combined wealth effects stemming from domestic M&A transactions against those of cross-border transactions in the Nordics.

We examine and compare the short-term wealth impacts on bidders and targets (individually and collectively) in M&A involving listed targets within the Nordic countries. Initially, data on M&A transactions was obtained from the LSEG (previously Thomson Reuters) Eikon Refinitiv platform. After we rigorously filtered the data, excluding companies that failed to satisfy our predefined criteria, we obtained a data set that forms the foundation of our empirical analysis. This collection encompasses 276 transactions spanning two decades, from 2003 to 2023. The sample is further segmented into three categories: total, domestic and cross-border, which are used throughout our study.

In our analysis, we employ three primary methodologies: *short-term event study*, *cross-sectional analysis* and a *takeover motive correlation-analysis*. To investigate the wealth effects of M&A-transactions in the Nordics, we conduct *short-run event studies* to obtain *cumulative abnormal return* (CAR) for each individual target and bidder in the sample over four short event windows. We utilize the Fama-French five factor model to estimate expected returns. Furthermore we compute the *cumulative average abnormal return* (CAAR). Subsequently, in order to control for factors that are widely recognized and substantiated in literature, we conduct a *cross-sectional analysis* to investigate the impact on the CARs derived from the preceding exercise. For our *takeover motive correlation-analysis* we investigate the presence of, and attempt to distinguish between, three widely acknowledged motives: synergies, the hubris hypothesis and agency theory.

Our findings indicate that targets in cross-border transactions yield significantly higher gains compared to their domestic counterparts. In contrast, domestic bidders exhibit higher returns than cross-border bidders, though this difference is not statistically significant. These findings are consistent through both an immediate event window spanning $\pm$ 2 days from announcement, as well as an extended event window encompassing $\pm$ 5 days. Additionally, we observe that particularly the industries *financial*, *industrials* and *high technology*[1] exhibit large divergences in cross-border and domestic target returns.

Regarding combined wealth effects, we observe higher combined gains (market-capitalization weighted) to bidders and targets in domestic deals compared to cross-border transactions. This study establishes the presence of significant positive overall wealth creation associated with M&A announcements in both domestic and cross-border deals in the Nordics. Furthermore, our analysis reveals no significant difference in the magnitude of wealth creation between domestic and cross-border deals. We hypothesize that the observed higher combined wealth effects in domestic transactions is likely caused by the greater returns to bidders in domestic transactions compared to cross-border transactions. Additionally, the larger size of bidders undertaking cross-border acquisitions, relative to those involved in domestic acquisitions[2], may also play a role in this difference.

Our analysis reveals that relative deal size (to the acquirers market capitalization) plays a significant role in influencing returns, with a notably positive impact on both target

[1] SDC industry classification
[2] See Figure A2.3 and A2.4

and acquirer firms. Additionally, for target firms, transactions involving cash-only considerations and those structured as tender offers are associated with significantly positive returns. Conversely, the presence of toeholds and the relative size of the entities involved are found to have a significantly negative impact on target returns. For acquirer firms, beyond the positive implications of relative deal size, the analysis also reveals a notable negative impact stemming from the size-variable. This suggests that while larger deals relative to the acquirers size are beneficial, the absolute size of the deal may be detrimental to the bidders returns, potentially due to increased complexity, integration challenges, or market perceptions of the acquirers ability to manage larger scale acquisitions.

When it comes to the presence of motivations, our analysis, employing the renowned methodology established by Berkovitch and Narayanan (1993), reveals evidence supporting the pursuit of synergies as a primary motive in both cross-border and domestic acquisitions. Interestingly, the data suggests a more pronounced emphasis on synergistic benefits in domestic transactions, in contrast to cross-border transactions. Additionally, the analysis indicates a probable presence of hubris as a contributing factor in the decision-making processes for both domestic and cross-border acquisitions.

The remainder of this paper is structured as follows: Section Two provides a comprehensive review of the relevant literature, focusing on well-known determinants and motivations behind transactions, the wealth effects arising from mergers and acquisitions, and an examination of prior research concerning cross-border impacts. In Section Three, we describe our research methodology in depth. Section Four elaborates on the collection and processing of our dataset, as well as descriptive statistics and the unique attributes of the data. Section Five is dedicated to the presentation, analysis, and discussion of our results. Finally, the paper concludes with a summary of our key findings.

2 Literature

Mergers and acquisitions are significant areas within finance and financial theory, attracting considerable attention from financial scholars. There is a robust and expanding body of research in this field, highlighting the sustained interest in M&A as a key topic of study. At the heart of this research is a crucial question: do mergers and acquisitions create value for the parties involved, and what affects value creation? In this section we conduct a comprehensive review of existing relevant literature. Initially we concentrate on motivations behind M&A. This is succeeded by a detailed analysis of prior research on wealth creation and distribution. Furthermore we examine and discuss studies on the wealth effects from a cross-border perspective. We investigate recognized determinants to understand their implications on wealth effects. Lastly we define some concrete hypotheses to be investigated in subsequent parts of the thesis.

2.1 Motivations for M&A

In order to understand why M&A creates or destroys value, it is pertinent to examine the underlying motivations leading these transactions. The range of motives driving mergers and acquisitions is extensive. Berkovitch and Narayanan (1993) have identified and analysed some of the most frequently cited motives for takeovers in literature, including *synergies*, *hubris*, and *agency*. Additionally, investigations into international M&A have uncovered unique drivers for cross-border deals, such as tax considerations, shareholder protectionism, diversification, and fluctuations in exchange rates.

Synergies is often considered a central driving force behind M&A activity. DePamphilis (2019) define synergies as *"the value realized from the incremental cash flows generated by combining two businesses."* and further divides them into operating and financial synergies.

Operating synergies involve two key elements: economies of scale and economies of scope. Economies of scale refer to the reduction in per-unit costs achieved by increasing production levels, while economies of scope involve leveraging existing competencies or assets to produce a range of related products.

In a perfect Modigliani-Miller world without taxes, *financial synergies* alone would not exist (Leland, 2007). However, in a world with taxes and frictions, financial synergies is often mentioned as an important (even principal) motive for conducting M&A.

In academic literature, it is often emphasized that merger and acquisition activities can yield a multitude of benefits, one of which includes a potential decrease in the cost of capital. As an example, *debt coinsurance*, combining two businesses with cash flows that are not perfectly correlated can be a motivation to reduce cash flow risk, reduce expected bankruptcy costs, and may lead to lower cost of capital.

Leland (2007) however challenges the conventional wisdom that mergers universally generate positive financial synergies. He argues that these synergies are contingent on factors such as risk profiles, default costs, and the correlation of cash flows between merging entities. His model underscores that mergers might not always be beneficial and that the value creation through M&A is heavily influenced by the financial and operational characteristics of the involved firms. Leland however notes that financial synergies can be sizeable, and constructs a framework for identifying situations where the synergies can be positive and significant.

Beyond the clear strategic motives of M&As, it is also essential to consider the underlying managerial motivations that shape these decisions. *The hubris hypothesis*, proposed by Roll (1986), highlights the potential pitfalls of executive overconfidence. Such overconfidence can sometimes lead decision makers to see more value in a target than what might be realistic, leading them to pay a premium. Roll (1986) finds that the overconfidence (hubris) of decision makers can lead them to take on too much financial risk in M&A deals and consequently overestimate synergies leading to overspending. Such overspending can hinder gains from these deals, and thereby reduce shareholder value and be an explanation for negative returns to bidders.

The work of Jensen and Meckling (1976) marked a significant advancement in the field of corporate governance, highlighting the potential misalignment of interests between managers and shareholders. This *agency problem* arises from the scenario where managers, acting as agents for shareholders, may favor personal gains over the broader welfare of the firm. Rooted in the concept that a manager is a utility-maximizing agent, Jensen and Meckling argue that expecting managers to consistently make optimal decisions for

the owners without any cost is unrealistic. They acknowledge that, even with monitoring and bonding costs, a divergence remains between managerial decisions and the ideal utility-maximizing choices for the owners (Jensen and Meckling, 1976).

Building on this perspective, the empirical evidence provided by Mulherin and Boone (2000) further illustrates such agency problems in the context of empire-building. This is not necessarily driven by the pursuit of increasing shareholder value. Instead, it can be a quest for personal control, power, and prestige, even if it does not directly align with the firms financial- or strategic goals. Conyon and Murphy (2002) demonstrate that in the UK, management salary and bonuses are primarily influenced by firm size rather than performance. As larger companies tend to provide higher compensation, more power, and greater prestige to managers, it is reasonable to consider that some managers might prioritize company growth over shareholder gain. This trend might incentivize CEOs to engage in such empire-building activities, potentially leading to the completion of M&As that destroy value.

In international M&As, while many motivations mirror those in domestic transactions, additional factors distinct to international expansion are evident. Cross-border M&As have become the prevalent mode of foreign direct investments (FDI) in industrialized countries, accounting for over 80% of FDI, surpassing greenfield investments (Goergen and Renneboog, 2004).

Goergen and Renneboog (2004) identify several key motives for cross-border M&As. Market imperfections in international arenas enable firms to capture rents caused by non-competitive pricing. Variations in tax systems may impact the attractiveness of cross-border transactions. The taxation aspect of international M&A is in general commonly discussed (see Eckbo and Thorburn (2000), Erel et al. (2012), Erel et al. (2022)). Additionally, disparities in regulations and legislation across countries play a crucial role. Erel et al. (2012) points to corporate governance motives, particularly how increased shareholder protection post-acquisition can lead to value creation. Moreover, firms seeking international distribution for their specialized products may find cross-border acquisitions more strategic than establishing new operations due to complexities (Erel et al., 2022). Foreign exchange rates are another commonly mentioned factor, as noted by Goergen and Renneboog (2004). Relative fluctuations in targets and bidders local

currency may make the target company valuation appear cheap and lucrative (see Harris and Ravenscraft (1991) and Erel et al. (2012)). Lastly, diversification is another commonly discussed motivator (see e.g. DePamphilis (2019)), however, it is not without controversy, and most literature seems to be aligned on the notion that diversification is associated with lower financial returns. Investors are better suited to form diversified portfolios themselves. (see e.g. Berger and Ofek (1995), Goergen and Renneboog (2004)). This suggests that a focus on horizontal integration may be more beneficial, as found by Berger and Ofek (1995).

2.2 Wealth effects

Extensive research has been conducted on the topic of whether M&A generates wealth for shareholders. Cartwright and Schoenberg (2006) highlights that the research of financial scholars largely has centered on determining whether acquisitions result in either the creation or erosion of value for shareholders. Ever since the groundbreaking paper on event studies by Fama et al. (1969), there have been numerous such studies conducted for measuring the impact of events inducing market reactions. Most research on wealth effects employs short-term event study methodologies, predominantly focusing on domestic transactions, with a significant emphasis on the markets of the United States and the United Kingdom (Goergen and Renneboog, 2004). Renneboog and Vansteenkiste (2019) furthermore verifies this in their study reviewing literature (151 studies) going back to the 80s, showing a clear majority of short-term event studies. There are notably fewer long-term studies, likely caused by the difficulty to isolate effects (Renneboog and Vansteenkiste (2019), Kothari and Warner (2007)).

2.2.1 Domestic M&A

There is consensus amongst existing literature and research that targets in M&A transactions generally receive significantly positive returns around announcements. This is supported by a vast amount of research that has been conducted on domestic transactions. For instance, Jensen and Ruback (1983) observed, in their review of the literature focusing on the US market for corporate control, clear evidence on financial gains for target companies. However, their findings indicated a different outcome for bidders. As for

bidders returns, they noted that bidders generally did not experience abnormal returns in the context of successful mergers.

The empirical evidence supporting gains for bidders, remains less definitive and displays mixed findings (Eckbo and Thorburn, 2000). Goergen and Renneboog (2004) note that roughly half of the research seems to find slightly positive or near-zero returns for bidders (see e.g. Franks and Harris (1989)), while the other half find slightly negative returns (see e.g. Mulherin and Boone (2000), Morck et al. (1990)). Malatesta (1983) similarly noted that previous studies reported mixed bidder returns, ranging from slightly negative to marginally positive, thereby complicating the process of drawing definitive conclusions.

2.2.2 Cross-border M&A

Research on international M&A present a more complex and varied picture. The bulk of research in this area has, in accordance with the studies on domestic M&A, predominantly focused on the US and UK markets, but is lacking in other areas. On that note, Erel et al. (2012) suggests that these findings may not comprehensively represent international M&A dynamics, particularly considering that the majority of firms involved in global M&As are not US-based, and many are privately held. Additionally, the discrepancy in the findings between US and UK-centric studies suggests that geographical factors play a significant role in influencing M&A outcomes.

In terms of bidder gains in international M&A, Eckbo and Thorburn (2000) in their study of cross-border M&As found that domestic bidders tend to realize higher positive abnormal returns than bidders involved in cross-border transactions. This observation is consistent with the findings of Moeller and Schlingemann (2005), who identified small but significantly higher gains for domestic acquirers compared to cross-border acquirers, suggesting a potential advantage for acquirers in domestic deals.

In contrast, the gains for targets in cross-border transactions appear to tell a different story. Harris and Ravenscraft (1991) observed that targets in cross-border M&As generally experienced greater gains than those in domestic deals, indicating a more favorable outcome for these entities in international transactions. Goergen and Renneboog (2004) however, did not observe significant differences between domestic and cross-border targets.

2.2.3 Combined wealth effect

The findings of Jensen and Ruback (1983), which highlight non-negative gains for bidders and positive gains for targets, suggest an implicit indication of overall positive wealth creation in M&A transactions. This notion is further reinforced by the observation of Goergen and Renneboog (2004), who imply that the aggregate returns could be slightly positive. However, when calculating the combined wealth effect, it is important to take the size factor into consideration. As demonstrated by Mulherin and Boone (2000), the average target company is only 42% the size of the average bidder, implying the need for value-weighted portfolios when calculating such returns.

Furthermore, the concept of combined wealth effect is explored by Moeller et al. (2004), who, by utilizing the methodology of Bradley et al. (1988), report positive significant mean portfolio returns of 1.35% for value-weighted combined entities. Similarly, Mulherin and Boone (2000) report a combined effect of 3.56%, which is notable for its statistical significance at the 0.1% level.

When comparing the overall wealth creation in cross-border versus domestic deals, the academic literature presents mixed views. On one hand, Goergen and Renneboog (2004) found that domestic M&As exhibited more significant short-term wealth effects compared to cross-border M&As during their analysis of the 1990s M&A boom. However, other studies suggest that combined gains are higher in cross-border deals (see e.g. Danbolt and Maciver (2012)), and some indicate no substantial difference between the two types (see e.g. Lowinski et al. (2004)).

2.2.4 Evidence from the Nordics

Recognizing the limited empirical evidence available due to the relatively sparse research on M&As in the Nordic region, the study by Rose et al. (2017) stands out as an important contribution. Their analysis, which focused on 111 bidding and 73 target companies in Nordic M&A transactions from 1995 to 2014, revealed notable patterns in shareholder returns. They observed weak evidence of positive returns for bidders, in contrast to consistent and strong returns for targets. This finding aligns with broader trends observed in other regions, highlighting similar dynamics in the Nordic M&A landscape.

2.2.5 Summary of previous literature

Table 2.1: Literature overview: Gains for targets, bidders, and combined wealth in M&A transactions

The table below comprises important findings from literature on wealth effects relevant to our study, encompassing target and bidder returns, international deal outcomes, and analyses of combined wealth effects.

Author	Title	Period	Focus	Findings
Harris and Ravenscraft (1991)	The Role of Acquisitions in Foreign Direct Investment: Evidence from the U.S. Stock Market	1970-1987	US	Targets in cross-border have significantly higher wealth gains compared to those in domestic transactions. Most likely driven by all-cash and multiple bids, in addition to exchange rate movements
Eckbo and Thorburn (2000)	Gains to Bidder Firms Revisited: Domestic and Foreign Acquisitions in Canada	1964-1983	Canada, US	Domestic bidders experience positive average returns. Returns of foreign (U.S.) bidders are essentially equivalent to zero
Jensen and Ruback (1983)	The market for corporate control: The scientific evidence	1927-1983	US	Acquisitions generate positive gains. Target shareholders benefits, and acquiring shareholders do not experience losses
Mulherin and Boone (2000)	Comparing acquisitions and divestitures	1990-1999	US	Both acquisitions and divestitures increased shareholder wealth. Wealth effects are directly related to the relative size of the event
Moeller et al. (2004)	Firm size and the gains from acquisitions	1980-2001	US	Smaller acquirers on average generate comparably higher announcement returns than larger acquirers
Moeller and Schlingemann (2005)	Global diversification and bidder gains: A comparison between cross-border and domestic acquisitions	1985-1995	US	Firms acquiring cross-border targets, as opposed to those acquiring domestic targets, typically experience notably lower announcement stock returns, approximately 1%, along with significantly reduced changes in operating performance
Goergen and Renneboog (2004)	Shareholder wealth effect of European domestic and cross-border takeover bids	1993-2000	Europe	Negative cross-border effect for acquirers (statistically significant), inconclusive results for target
Alexandridis et al. (2017)	Value creation from M&As: New evidence	1990-2015	US	Deals post 2009 create more value for acquirers, 'mega deals' drive the upturn. Improvement in acquirer quality of corp. governance seems explain the results
Morck et al. (1990)	Do Managerial Objectives Drive Bad Acquisitions?	1975-1987	US	Bidder returns in M&As are lower when; they diversify, buy a rapidly growing target, and when its managers performed poorly before the acquisitions
Lowinski et al. (2004)	The Effect of Cross-Border Acquisitions on Shareholder Wealth - Evidence from Switzerland	1990-2001	Switzerland	No difference in returns between domestic and cross-border M&A
Danbolt and Maciver (2012)	Cross-Border versus Domestic Acquisitions and the Impact on Shareholder Wealth	1980-2008	UK	Both targets and bidders gain more in cross-border acquisitions compared to domestic
Rose et al. (2017)	In Search of Value Drivers in Mergers and Acquisitions - the Nordic evidence	1995-2014	Nordics	Diversifying acquisitions generate higher bidder returns, bidder abnormal returns do not depend on method of payment, and low-valued bidders with excessive cash flows experience negative returns prior to announcement

2.3 Value drivers of M&A

Although there has been considerable research over several decades on the primary determinants of M&As, a definitive consensus on the critical factors driving these transactions remains elusive (DePamphilis, 2019). This section introduces and discusses some of the determinants frequently highlighted in literature, which will serve as the basis for the selection of explanatory variables in our cross-sectional analysis.

The composition of *consideration* is a fundamental value driver in wealth creation following M&A announcements, as extensively documented in M&A literature. Pioneering research by Huang & Walking (1987) highlighted notably higher target returns in scenarios where consideration was entirely in cash. This finding was corroborated by Eckbo and Langohr (1989), who noted a more pronounced positive reaction in target share prices to cash offers compared to other financing methods. The rationale behind this phenomenon has been a subject of frequent discussion. Travlos (1987) offered a plausible interpretation, suggesting that a firm's decision to use its own shares in a bid might indicate its belief in the shares being overvalued at that time. Consequently, all-cash bids are often perceived more favorably, potentially yielding higher returns as they are not influenced by similar market speculations.

Previous research also sheds light on the impact of *tender offers* on target and bidder returns. Such offers are seen in both friendly and hostile deals, however returns from hostile tender offers generally exceeds those from friendly ones (DePamphilis, 2019). In an analysis of 947 acquisitions between 1970 and 1989, Loughran and Vijh (1997) identified a significant positive outcome associated with transactions structured as tender offers. This was found for both the target and acquirer; however greater gains were observed for targets. Acquirers were generally observed to earn little to none from such deals. Jensen and Ruback (1983) pointed on evidence of small but significant returns to bidders in successful tenders, and furthermore found that both target and bidder firms are likely to experience negative abnormal returns following unsuccessful tender offers and mergers. This observation is consistent with the work of Asquith (1983), which documented a significant decline in abnormal returns for target firms upon the public disclosure of merger terminations.

Previous studies have also identified *firm size* as a determinant when it comes to the performance of M&As. Moeller et al. (2004) found, analysing a total of 12,023 transactions from 1980 to 2001, that smaller acquirers on average generate higher announcement returns. This trend was consistent regardless of whether the companies involved were private or public, and independent of the financing method used. The authors further observed that greater wealth losses often were observed in deals involving large firms. This observation aligns with the findings of Alexandridis et al. (2013), who found that deals involving at least one large company more often tend to decrease value for acquirers. They further noted that the losses often observed in large acquisitions are typically due to the complexities involved in such transactions.

Another potential factor affecting bidder and target returns is the presence of *toeholds*. A toehold describes a scenario where an acquirer purchases a minority stake in a target firm prior to proposing a full takeover bid. Bidders often aim to acquire these shares quietly in order to keep the purchase price below the future offer price, ensuring the average cost remains low (DePamphilis, 2019). For the bidder, toeholds may enhance strategic positioning, especially in scenarios with multiple bidders. According to Betton and Eckbo (2000), research regarding the influence of toeholds on bidder returns is limited, and the evidence on target returns exhibits variability. On one hand, Eckbo and Langohr (1989) found that target returns tend to decrease with toeholds. In contrast, Franks and Harris (1989) noted the opposite effect, underscoring the diversity of findings in the context of toeholds.

The nature of acquisition bids, whether hostile or friendly, can influence the returns experienced by both targets and bidders. Goergen and Renneboog (2004) highlights this impact, noting that *hostile takeovers* tend to incite more substantial short-term wealth effects compared to friendly M&As, particularly marked by pronounced price reactions. This observation aligns with other financial scholars, such as those by Loughran and Vijh (1997) and Lang et al. (1989), which collectively suggest that the announcement of hostile acquisitions yields higher returns for both the targets and acquirers compared to friendly M&As.

2.4 Hypothesis

In the following section, we discuss and state hypotheses that are grounded in the literature presented. They are intended to provide new insights to the field of wealth effects in M&A with respect to the Nordic countries.

Hypothesis 1.1: In Nordic M&A (both domestic and cross-border), target firms experience statistically significant positive abnormal returns around the announcement

It is a well-established phenomenon that targets in M&A transactions often experience substantial positive returns. This hypothesis is grounded in the prevailing consensus within the existing literature. Notably, studies such as Jensen and Ruback (1983) and Goergen and Renneboog (2004) have demonstrated that targets typically realize significant gains around the announcement of deals, with average returns ranging between 20 to 40%.

Hypothesis 1.2: In Nordic M&A (both domestic and cross-border), the abnormal returns for bidding firms around the announcement are not statistically significantly different from zero

This hypothesis is motivated by the fact that research, e.g. Goergen and Renneboog (2004), present mixed findings for bidder gains. While some studies suggest minimal influence on bidder stock prices upon acquisition announcement, others indicate slightly positive or near-zero returns, making a hypothesis of non-significant bidder returns around the announcement plausible.

Hypothesis 2.1: In Nordic M&A, target firms involved in cross-border transactions exhibit higher abnormal returns around the announcement compared to those engaged in domestic transactions

Although not unanimous, previous research, including Harris and Ravenscraft (1991) and Danbolt and Maciver (2012), gives indications that targets in cross-border transactions tend to realize greater gains compared to their domestic counterparts, potentially due to varying market dynamics and acquisition premiums in international markets.

Hypothesis 3.1: In Nordic M&A, the combined abnormal returns (combined wealth effect)

for targets and bidders surrounding the transaction announcement is positive and significant

Findings by Moeller et al. (2004) and Mulherin and Boone (2000) demonstrate significant positive combined returns for targets and bidders, supporting the hypothesis of a positive overall wealth effect in M&A transactions.

Hypothesis 4.1: All-cash consideration offers in Nordic M&A transactions lead to higher abnormal target returns around the announcement

Large amount of studies on the subject have identified all-cash considerations as positive for target returns. E.g. Huang and Walkling (1987) and Eckbo and Langohr (1989) have identified significantly higher target returns in transactions involving all-cash considerations, possibly due to reduced market speculation and perceived value stability.

3 Methodology

In this section, we outline our methodology for examining the short-term wealth effects arising from M&A announcements within the Nordic countries. Our empirical study employs the event study methodology to calculate Cumulative Abnormal Returns (CARs). Further, to assess combined wealth effects, we conduct the event studies pairwise for both the target, which must be listed, and bidder or the bidders ultimate parent - where at least one must be listed. Additionally, we outline our approach for a cross-sectional analysis, aimed at controlling for well-known factors. Subsequently, we describe our methodology for conducting a correlation analysis, exploring the potential presence of a set of motives, namely synergy, hubris, and agency.

3.1 Event study

We introduce our event study approach, adhering to the principles established by MacKinlay (1997), which forms the foundation of our empirical analysis. Event studies have been widely adopted ever since the groundbreaking paper by Fama et al. (1969), and is a cornerstone in empirical finance research. Under the assumption that the stock markets operate in accordance with the semi-strong form of market efficiency, all publicly available information should already be reflected in stock prices, and the prices should update to reflect new information immediately following announcements of new value-driving information. Based on this assumption, the reaction in stock prices of the companies should thus be reflective of the true wealth creation. We therefore conduct this analysis under the assumption that the stock markets operate in accordance with the semi-strong form of market efficiency. With this, we can measure the effects of M&A announcements.

In alignment with standard methodologies for such analyses, and drawing upon the framework established by MacKinlay (1997), we have defined a set of windows which will be utilized to determine presence of abnormal returns. First, we have an estimation window serving as the basis for estimating normal returns. Subsequently, we have a set of event windows, which will be the period in which we test for the presence of abnormal returns. It is imperative that the estimation of normal returns is conducted such that they provide realistic expected returns in the event period (MacKinlay, 1997). An important

criterion is that there cannot be overlap between the estimation period and the event period, to avoid capturing any event data in the estimation period.

Based on the nature of confidentiality surrounding announcements of M&A and the expected effect on announcements, we define the following event windows to explain the abnormal return phenomenon: 1) An extended event window, encompassing ± 5 days from announcement, noted as [-5, 5]. 2) An immediate event window [-2, 2] covering two days prior and two days after the event. 3) A period leading up to the event [-5, -1] (pre-performance), and lastly a period after the event [1, 5] (post-performance).

We define the duration of the estimation period to encompass roughly one year of trading days before the announcement [-250, -30]. This time frame is typical and conforms to the examples listed by MacKinlay (1997). The estimation window is ended some time before the beginning of our event windows. This is done to minimize the risk of spillover and information leakage affecting estimation of expected return.

To calculate CAR for the targets and bidders involved in the transactions, we estimate normal returns using the Fama-French five factor model, which is an extension of the market model. We chose this model, as the renowned factor models developed by Fama and French represent important advancements in the asset pricing literature (Kothari and Warner, 2007). Furthermore we opted for the five-factor model as it is typically shown to outperform the three-factor model in Europe (Fama and French, 2017). The daily returns for the European five-factor portfolio were obtained from Kenneth R. French's website to serve as inputs for the model.

The five-factor model can be written as:

$$R_{it} - R_{ft} = \alpha_i + \beta_{im}(R_{mt} - R_{ft}) + \beta_{is}SMB_t + \beta_{ih}HML_t + \beta_{ir}RMW_t + \beta_{ic}CMA_t + \epsilon_{it} \quad (3.1)$$

Thus the normal returns NR that we will utilize to later compute CAR can be denoted as follows:

$$NR_{it} = R_{ft} + \hat{\alpha}_i + \hat{\beta_{im}}(R_{mt} - R_{ft}) + \hat{\beta_{is}}SMB_t + \hat{\beta_{ih}}HML_t + \hat{\beta_{ir}}RMW_t + \hat{\beta_{ic}}CMA_t \quad (3.2)$$

The abnormal return AR for company i at time t can be denoted as the difference in

actual return R_{it} and normal return NR_{it}, and therefore equals the error term ϵ_{it} not captured in the estimates, shown as follows:

$$AR_{it} = R_{it} - NR_{it} \implies AR_{it} = \epsilon_{it} \tag{3.3}$$

The CAR is computed by accumulation through the event window defined as $L_2 = T_2 - (T_1 + 1)$. Computing the CAR between a period T_1 through T_2 for company i thus simply simply becomes:

$$CAR_i(T_1 + 1, T_2) = \sum_{t=T_1+1}^{T_2} AR_{it} \tag{3.4}$$

For each company involved in each transaction, CARs are calculated across the designated event windows and are subsequently attributed to the respective deal. This methodology facilitates efficient filtering and segmentation, enabling the computation of $CAAR$s in the following manner:

$$CAAR = \frac{1}{N} \sum_{i=1}^{N} CAR_i \tag{3.5}$$

Following computation of abnormal returns, we conduct parametric statistical tests. These tests help determine whether the observed abnormal returns are significantly different from zero. This process is further outlined in Appendix A1.1.

3.2 Combined wealth effects

Given that bidders are typically much larger relative to their targets (Mulherin and Boone, 2000), it is crucial to consider not only the returns of the targets but also those of the bidders when assessing the total wealth creation arising from M&A announcements. To incorporate size considerations, we adjust the target and bidder returns by weighting them according to their respective market capitalizations.

Therefore, we define the wealth effects for each pair of acquirer and target as the combined $CAAR$, or $CAAR^{Total}$, as:

$$CAAR^{Total} = \frac{CAAR^{Acquirer} * MV^{Acquirer} + CAAR^{Target} * MV^{Target}}{MV^{Acquirer} + MV^{Target}} \tag{3.6}$$

Where MV denotes Market Value obtained from Refinitiv four weeks prior to announcement to prevent the event influencing the metric. This implementation is equivalent to the one conducted by Goergen and Renneboog (2004).

We assess the statistical significance of the difference in means by employing a two-sample T-statistic derived from Welch's T-test, as elaborated in A1.1.

3.3 Cross-sectional analysis

In order to control for and identify the influence of well-known factors affecting announcement returns, we conduct Ordinary Least Squares (OLS) regressions on the obtained CARs for both targets and acquirers. Our models incorporates fixed effects for time, industry, and region. These are included to control for unique events specific to particular years, various industry-specific characteristics, and unique factors affecting individual countries, thereby mitigating the risk of omitted variable bias. Utilizing fixed effects is commonly preferred for measuring *ceteris paribus* effects, as we seek (Wooldridge et al., 2016). These controls are key in isolating the true impact of our explanatory variables on the CARs. The robustness of our model is further enhanced by employing heteroskedasticity-robust standard errors. This approach adjusts for potential inconsistencies in the variance of data. Such robust standard errors allow us to maintain the integrity of our statistical tests, even in the presence of heteroskedasticity, ensuring

that our confidence in the outcomes is well-founded.

To ensure the reliability of our model, we performed a Durbin-Watson test to check for autocorrelation in the residuals. The test yielded a score of 1.96, which is very close to the ideal value of 2, suggesting minimal autocorrelation in the residuals. This indicates that our model is well-specified and the residuals are largely random. Furthermore, to address multicollinearity, we calculated the variance inflation factors (VIF) for each explanatory variable (Wooldridge et al., 2016). Variables with a high VIF (typically ≥ 10) were removed to mitigate this issue.

By taking these steps, we aim to present a regression analysis that is both accurate and reliable, providing meaningful insights into the factors influencing the CARs. Additionally, our model demonstrates strong statistical significance, as indicated by an F-statistic of 16.72, with a corresponding p-value that is indistinguishable from zero.

The analysis is structured around four distinct models, categorically divided to focus separately on the target and acquirer CARs. For each category, we conduct two separate regressions to analyse the effects both with and without the inclusion of the cross-border variable. First, we run baseline regressions (Models 1 and 3) which includes a set of control variables. Subsequently, we conduct the second set of regressions (Models 2 and 4), including the cross-border variable. This approach allows us to assess the specific influence of cross-border transactions on CARs while controlling for other factors, thereby offering a clearer picture of the potential cross-border impact.

3.4 Correlation analysis

To test for and attempt to differentiate between managerial motives, we implement the well-known and widely adopted empirical correlation analysis of Berkovitch and Narayanan (1993), also used by Goergen and Renneboog (2004). This method is widely adopted for investigating the presence of, and distinguishing between, motives of synergy, agency, and hubris. It is particularly relevant because synergies, although perhaps the most inherently important motive, are almost always communicated as primary motivation by acquirers management, potentially obscuring managements hubris or agency motives.

The methodology established by Berkovitch and Narayanan (1993) involves analysing the expected signs (positive or negative) of correlations among different returns (target, bidder, and combined) associated with the deals, in order to identify the presence of the various underlying motives.

In order to determine presence of synergies, we can assume that the management on both target and bidder side seek to maximize value. Consequently, we infer that the combined returns should be positive, with the gains divided between the target and the acquirer (Goergen and Renneboog, 2004). If the target possesses any bargaining power, its gain increases with the total gain (Berkovitch and Narayanan, 1993). Therefore, we expect positive correlations between target and total gain, as well as between target and acquirer gain.

Moreover, we consider the hubris of acquiring company management. The underlying theory suggests that managerial hubris might lead to overvaluing and consequently overpaying for a target, thereby diminishing or eliminating the anticipated synergies. In scenarios where managers are equally likely to overestimate or underestimate the expected synergies from mergers and acquisitions, there is a risk that those acting on an overestimation (they would not engage in the case of underestimation) may pay more than the target's real worth (Goergen and Renneboog, 2004). This often results in a wealth transfer from the acquiring company to the target company, leading to a net wealth shift without an increase in overall wealth (Berkovitch and Narayanan, 1993). Therefore, we can expect negative correlation between target and bidder (transfer) and zero correlation between target and total wealth change.

Finally, we assess the presence of agency motives. According to agency theory, acquirer management may pursue value-destructive acquisitions for self-enrichment or 'empire building', seeking private benefits. Such decisions could also be aimed at making the combined entity more reliant on their expertise. This tendency could diminish the value for both the combined company and the acquirer (Goergen and Renneboog, 2004), leading to negative correlations between target and total gain, as well as between target and acquirer gain.

The expected correlations can therefore be summarized as follows:

Table 3.1: Expected correlations - analysis of motives

Expected correlations (signs)		
	ρ Target and total gain	ρ Target and acquirer gain
Synergy	+	+
Hubris	0	-
Agency	-	-

Source: Berkovitch and Narayanan (1993), Goergen and Renneboog (2004)

In order to implement this we therefore conduct the correlation analysis accordingly on our data. The findings are presented in Table 5.7, and we furthermore discuss our findings in the analysis section.

4 Data

The following section presents a detailed overview of our methodologies for data collection, processing and data enrichment. The latter we have given significant attention, in order to strengthen our data set as much as possible. This is particularly important due to the limited number of observations available within the scope of our study. Additionally, this chapter provides detailed descriptions of the data. The dataset encompasses comprehensive information on the M&A transactions, including daily stock prices of both targets and acquirers involved. Additionally, it incorporates characteristics of the transactions and the participating firms, which are acknowledged for their influence on market reactions.

4.1 Acquisitions data sample

Data pertaining to the sample of mergers and acquisitions for this study have primarily been sourced from LSEG (formerly Thomson Reuters) Refinitiv Workspaces comprehensive M&A screening tool. The database is extensive and contains a substantial volume of historical transaction data as well as a wide range of variables and properties for the transactions.

During the early stages of the sample period, a notable portion of transactions within the Refinitiv dataset were observed to have incomplete data, including absent parameters, particularly at the commencement of the sample period. To mitigate this issue and reduce the need to exclude a substantial number of observations, Bloomberg was utilized as an additional data source to supplement these deficiencies.

4.2 Collection of stock data

Daily stock return data was acquired from the LSEG Refinitiv API (Application Programming Interface) and the Refinitiv / LSEG terminal. As with other transactions, participants and financial characteristics, Bloomberg was used as a source of supplementary price data where historical data was unavailable in Refinitiv.

To facilitate the retrieval of historical stock prices for delisted companies, we developed a suite of tools and scripts. These tools were essential for addressing the challenge posed

by the lack of a standardized format for identifiers used by some of the companies in the sample, a challenge that was particularly pronounced for companies delisted early in the sample period. This enhancement was largely made possible thanks to LSEGs comprehensive PermID (Permanent Identifier) database and API, allowing us to reverse-lookup historical company identifiers using a wide range of inputs and prevent exclusion of transactions that would otherwise have been filtered out.

For the event study, expected returns are estimated using the Fama French five-factor model with European portfolios. The data points for the daily European portfolios have been obtained from the website of Kenneth R. French (2023).

4.3 Transaction sample filtering and specification

This thesis examines the wealth effects of public M&A announcements in the Nordics between 1st of January 2003, to 1st of January 2023, comparing the performance of domestic versus cross-border transactions. The deal universe initially encompasses all deals announced within this time frame.

In order to align with the Nordic scope of the thesis, the study includes only those deals where the target company is based in a Nordic country. Acquirers from outside the Nordic region are also considered, providing an opportunity to investigate differences between cross-border transactions with both Nordic and non-Nordic acquirers. The data is filtered based on the transaction size and the public listing status of the firms involved. Consistent with common practice in similar research, a minimum transaction size of 10 million USD is set as a threshold (see e.g. Malatesta (1983)). Both the target and acquiring firms, or the latter's ultimate parent company, are required to be publicly traded entities. The availability of observable daily historical stock prices for both parties involved in the transaction is crucial. This data is necessary for conducting our event study. It allows for the analysis of the impact on both bidders and targets independently, as well as on the combined wealth effect. Furthermore, to ensure a comprehensive analysis of the announcement effect in the context of prior returns, we have established an additional criterion: both the target and acquiring firms must have observable stock prices for a minimum of 250 days prior to the announcement date.

In addition, we chose to exclude any spin-offs, self-tenders and repurchases, as well as

any exchange offers and acquisitions of partial- and remaining interest. In this thesis, we exclusively analyse M&As where the bidder secures a majority stake in the target, defined as the transaction resulting in at least 50% ownership stake in the target company post transaction. This is motivated by the concept of change of control often discussed as an important factor for returns following announcement. Findings by Betton et al. (2008) support the assumption that the dollar value of synergies only exceeds zero when there is a target change of control.

The process employed to satisfy these criteria, as well as the specific count of transactions recorded at each phase of the selection process, is illustrated in Table 4.1.

Table 4.1: Data cleaning

The table details the criteria used to refine the dataset and the number of transactions that met each specific requirement. It shows the step-by-step reduction in the dataset, including both cross-border and domestic transactions with Nordic targets.

Requirements	No. transactions
Deals with target from the Nordics	56 410
Date announced between 01.01.2003 - 01.01.2023	37 494
Deal size $\geq$ 10 million USD	6 344
Acquirer/Acquirer ultimate parent is public	3 757
Target is public	1 061
Excluding Spinoffs, Self-tenders & Repurchases	641
Exclude Exchange offer, Acquisition of Partial- and Remaining interest	406
Exclude deals with missing price-data	276

The dataset is throughout the study organized into different subgroups to facilitate a detailed examination of the main research question, focusing on the impact of cross-border transactions in the Nordics. To achieve this, we have divided the dataset into two key subsets: cross-border deals and domestic deals.

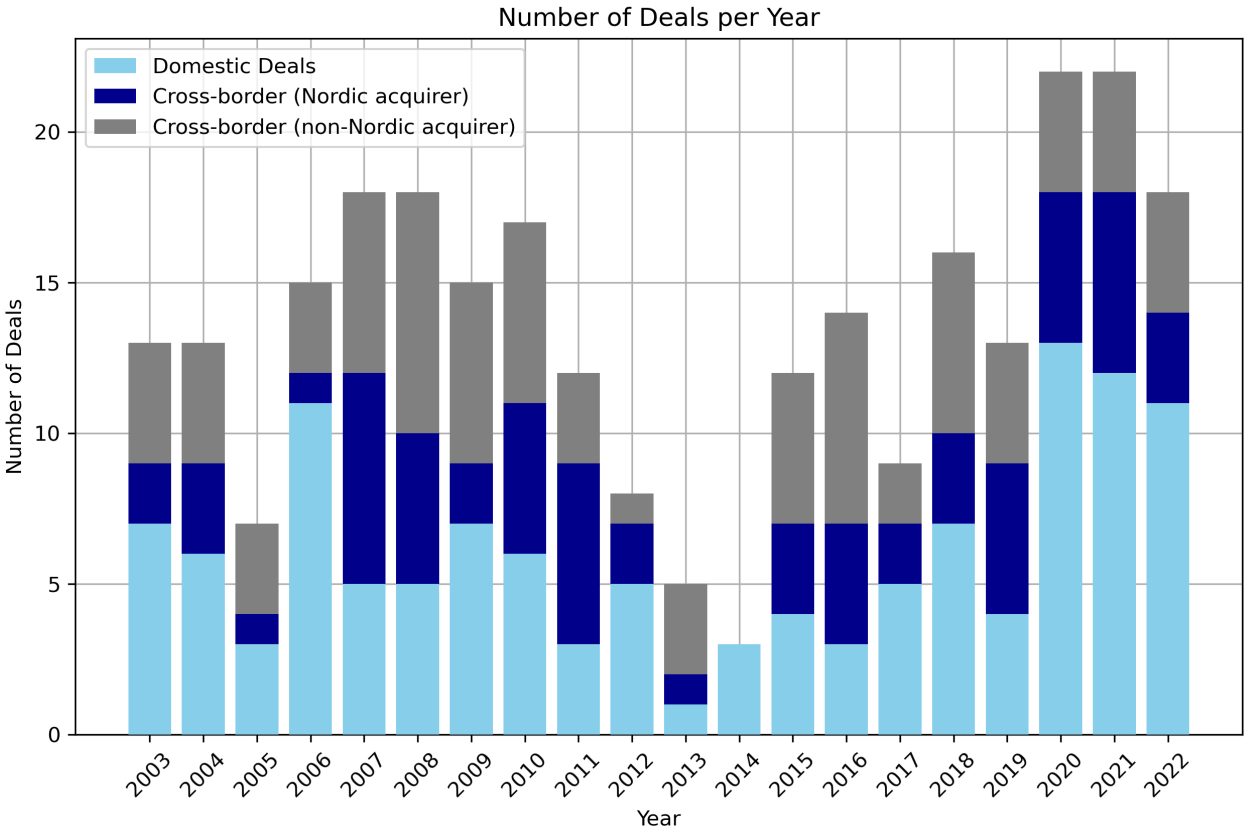

Figure 4.1: Number of M&A transactions per year in sample per type

This figure includes all M&A-transactions in our sample from 2003 to 2023 with Nordic listed targets. The bars display the number of domestic deals (light blue), the number of cross-border deals with a Nordic listed target and a Nordic listed acquirer (dark blue), the number of cross-border deals with a Nordic listed target and a non-Nordic acquirer (grey). We make this distinction to clearly visualize the activity in the market.

Figure 4.1 provides a graphical representation of market activity (indicated by number of transactions) in the Nordic region during the sample period, including the breakdown of domestic and cross-border transactions. Cross-border transactions with a non-Nordic acquirer represents a significant portion of the deal volumes. From the visual data, it is evident that market activity peaked during the financial crisis and again in the years 2020-2022. Notably, the years 2013 and 2014 experienced significantly reduced levels of market activity, with 2014 observing an absence of eligible cross-border transactions.

Table 4.2: M&A Transactions: Domestic vs cross-border in the Nordics

This table provides a year-by-year breakdown of M&A transactions in the Nordics from 2003 to 2023. It differentiates between domestic and cross-border transactions, showcasing the number of transactions and average deal size (in million USD) for each category. The 'Total' column aggregates the data from both domestic and cross-border transactions.

	Domestic Transactions		Cross-Border Transactions		Total	
Year	No. transactions	Avg. deal size (USDm)	No. transactions	Avg. deal size (USDm)	No. transactions	Avg. deal size (USDm)
2003	7	2053	6	205	13	1201
2004	6	578	7	479	13	525
2005	3	222	4	218	7	220
2006	11	3482	4	702	15	2741
2007	5	407	13	545	18	507
2008	5	165	13	3561	18	2618
2009	7	156	8	485	15	332
2010	6	362	11	400	17	387
2011	3	362	9	1075	12	897
2012	5	207	3	360	8	265
2013	1	82	4	817	5	671
2014	3	150	6	1703	9	1186
2015	4	141	8	450	12	348
2016	3	114	11	888	14	723
2017	4	277	4	235	8	257
2018	7	607	9	1149	16	912
2019	5	677	9	740	14	718
2020	12	619	9	1408	21	958
2021	13	632	10	1041	23	810
2022	11	1087	7	2188	18	1515

As illustrated in Figure 4.1 and Table 4.2, M&A activity hit a high point around the financial crisis (2008), evident in both the volume of transactions and the average size of deals. This observation aligns with the findings of Grave et al. (2012), who identified a consistent escalation in M&A activities leading up to the crisis. Subsequent to the crisis, a noticeable downturn in deal volume was observed. However, in our data, we observe that the number of transactions did not necessarily plummet, but instead began a gradual decline post-crisis. This trend might be attributed to the fact the Nordic countries largely fared relatively better in comparison to regions such as the United States during the financial crisis. The period from 2012 to 2014 marked the lowest point in deal frequency, possibly influenced by the aftermath of the European debt crisis and the oil price plunge in 2014. After this, the Nordic M&A market began to recover,

showing a notable increase in activities by 2020.

In examining the yearly average deal sizes within our dataset, significant variances were noted. These variances are largely influenced by a few exceptionally large transactions that increase the mean. Notably, three deals stand out due to their high values. In 2022, the largest deal in the Tobacco industry was Philip Morris's acquisition of Swedish Match, valued at $13,837 million. In 2008, a significant deal in the Telecommunications sector saw France Telecom acquiring TeliaSonera AB for $42,279 million. Likewise, the 2006 deal between Norsk Hydro ASA and Statoil ASA had a value of $30,805 million.

These large transactions significantly affect the average deal size, particularly in the years 2006, 2008, and 2022. To understand the impact of these outliers, we performed an analysis where we excluded them. However, for our primary analysis, we chose to include these transactions. This decision was based on providing a complete overview of the Nordic market, acknowledging that such substantial deals, though rare, play an important role in the market and should be considered in our study.

Table 4.3: Cross-border transactions: Nordic vs. non-Nordic acquirers

The table compares cross-border M&A transactions involving Nordic versus non-Nordic acquirers from 2003 to 2023. It lists the number of transactions and the average size (in million USD) for each group annually, alongside the most frequently acquiring industry for that year.

Year	Nordic acquirer	Avg. deal size (USDm)	non-Nordic acquirer	Avg. deal size (USDm)	Most frequently observed acquirer industry
2003	9	1626	4	245	High Technology
2004	10	675	3	24	Financials
2005	4	205	3	242	High Technology
2006	12	3213	3	852	High Technology
2007	13	505	5	513	High Technology
2008	10	212	8	5626	Industrial
2009	9	133	6	631	Industrials
2010	11	331	6	490	Financials
2011	9	1153	3	129	Financials
2012	6	294	2	177	Financials
2013	2	1394	3	189	Financials
2014	3	150	6	1703	Industrial
2015	6	154	6	541	Financials
2016	7	256	7	1190	Financials
2017	6	222	2	362	Industrial
2018	10	533	6	1544	Financials
2019	10	911	4	237	Financials
2020	17	1068	4	490	Financials
2021	19	751	4	1091	Real Estate
2022	14	892	4	3699	Financials

Note: The table presents the public to public transactions

Upon categorizing cross-border transactions based on whether the acquirers resided in the Nordic or not, as detailed in Table 4.3, several key observations emerge. Both categories of acquirers experienced their peak of average deal size around the time of the 2008 financial crisis. Specifically, Nordic acquirers reached their peak in 2006, while non-Nordic acquirers did so in 2008. A subsequent downturn in transaction numbers for both groups was noted, with the lowest point for Nordic acquirers occurring in 2013 and for non-Nordic acquirers in 2012.

More recent trends exhibit distinct differences between the two groups. By 2020, Nordic acquirers showed a marked increase in transaction frequency, in contrast to non-Nordic acquirers, who demonstrated a steadier and lower frequency of deals. This recent divergence might be partially attributable to factors like the Covid-19 pandemic, which

could have imposed additional challenges in completing transactions across wider geographical distances. However, this hypothesis necessitates further exploration to ascertain its validity.

The analysis reveals a notable trend: the Financials sector consistently ranks as the predominant industry among acquirers. However, it is important to note that in most years, the top three industries in terms of acquisition activity, namely Financials, High Technology, and Industrials, exhibit a relatively similar frequency of transactions. In instances where the most active acquirer industry was not distinct, we identified the leading industry based on the highest average deal value for that specific year. For a detailed breakdown of the total number of transactions per industry, see Table A2.2.

Table 4.4: Sample overview, attitude and payment method

This table provides a summary of both domestic and cross-border M&A transactions. It categorizes deals based on deal attitudes: friendly, hostile, or tender offers—and the method of consideration, including all-cash, all-equity, and mixed offers. Additionally, the table distinguishes transactions involving non-Nordic acquirers in cross-border M&As.

	Domestic M&As	**Cross-border M&As**
Total sample	121	155
Friendly	114	142
Hostile	7	13
Multiple bidders	13	22
Tender Offer	49	84
All-cash bid	42	128
All-equity bid	7	1
Cash/equity bid	78	30
non-Nordic acquirer	-	87

Source: Own calculations

In Table 4.4, we categorize the data sample based on characteristics commonly recognized in prior studies as significant determinants of M&A-transactions. The categorization separates domestic (121) from cross-border transactions (155). A vast majority of the transactions, both domestic (94%) and cross-border (92%), were friendly. Hostile takeovers were less frequent, with domestic M&As seeing a smaller proportion (6%) compared to cross-border (8%). In terms of bidding structure, multiple bidders were involved in 11% of domestic cases and 14% of cross-border cases. Tender offers were more common in cross-border transactions, constituting 54% as opposed to 40% in domestic M&As. For the cross-border M&As, we observed that 56% of the transactions were made by non-Nordic acquirers. Payment methods varied, with all-cash bids being the most prevalent in cross-border transactions (83%). Conversely, domestic transactions exhibited a considerable proportion of deals structured with a combination of cash and equity (64%).

Since we include non-Nordic acquirers in our data sample, we find it of interest to shed light on this relative proportion as some of the determinants previously discussed may have different effects on this subset. Additionally, supplementary graphical representations of the transaction and participant characteristics are available in the Appendix A2.

5 Analysis

This section outlines the findings from our analysis, detailing the short-term wealth effects of M&A announcements in the Nordic region. We initiate our analysis by evaluating the CAARs for acquirers and targets during a set of event windows surrounding the day of transaction announcement. This analysis is conducted for the entire sample and, separately, for both domestic and cross-border transactions. We continue by comparing these returns, aiming to explore the presence of any difference in performance between domestic and cross-border transactions. Additionally, we categorize CAAR by both nation and industry to investigate patterns, such as regional variances or whether certain sectors see more pronounced financial benefits from M&A activities.

We then proceed to an integrated analysis of the returns for acquirers and targets, weighted according to their market capitalizations, to analyse the overall impact on shareholder wealth. This combined analysis will help us establish whether the combined value creation is greater in cross-border or domestic transactions.

We perform a cross-sectional regression analysis to account for established determinants affecting the CAR of both target and acquirer companies. This analysis is conducted with the inclusion and exclusion of a cross-border dummy variable, enabling us to distinctly assess the impact of cross-border transactions.

Lastly, we conduct a correlation analysis to explore the presence of motives for the transactions in our sample.

Table 5.1: CAARs for targets and bidder firms (entire sample)

The table displays the CAARs for target and acquiring firms in the entire sample. The data is presented in two distinct panels: Panel A focuses on target firms, while Panel B is dedicated to acquiring firms. Each panel displays respective CAARs for each event window, along with the corresponding t-values.

	Entire sample	
	CAAR (%)	t-value
Panel A: Target firms		
[-2, 2]	20.92%	12.07
[-5, -1]	-0.81%	-1.21
[-1, 5]	0.66%	1.00
[-5, 5]	20.93%	11.64
Observations	276	
Panel B: Acquiring firms		
[-2, 2]	0.57%	1.24
[-5, -1]	0.55%	1.59
[-1, 5]	-0.86%	-2.92
[-5, 5]	0.29%	0.42
Observations	276	

Source: Own calculations

Our examination of returns for the target and bidder firms involved in Nordic M&As reveals distinct market reactions. As detailed in Table 5.1, the target firms experienced a notable and significant CAAR of 20.92% within the immediate event window [-2, 2]. Additionally, findings from the extended event window [-5, 5] similarly shows an almost identical and statistically significant CAAR of 20.93%. The significantly high target returns are not a surprising find, as it aligns with consensus from previous research (see e.g. Jensen and Ruback (1983), Goergen and Renneboog (2004)). Further, these findings are in line with and support our hypothesis 1.1, namely that target returns are positive and significant around the announcement date.

For acquiring firms, the picture is more varied. We largely see low and insignificant returns. The immediate event window [-2, 2] reveals a marginal CAAR of 0.57%, not significant. This supports our hypothesis 1.2, positing that bidder returns are not significantly different from zero in the period surrounding the announcement of M&As. Further, we observe a statistically significant CAAR of -0.86% for acquirers post-announcement [-1, 5]. Considering these results, it appears that the market overreacts to the announcement,

but then corrects itself over the following days, as seen in Figure A3.1.

Past research has largely reported mixed results concerning bidder returns, with a general trend ranging from slightly positive to slightly negative (see e.g. Franks and Harris (1989), Mulherin and Boone (2000), Morck et al. (1990)). This pattern suggests that near-zero returns for bidders are a common empirical outcome, which is consistent with our observations.

Table 5.2: CAARs for targets and bidder firms in domestic and cross-border transactions

The table displays the CAARs for target and acquiring firms in both domestic and cross-border transactions. It is divided into two panels: Panel A for target firms and Panel B for acquiring firms. Each panel details CAARs over different event windows with corresponding t-values. Additionally, it presents differences in CAARs between cross-border and domestic M&As, along with their statistical significance. This difference is calculated by subtracting the domestic CAAR from the cross-border CAAR.

	Domestic		Cross-border		Diff	
	CAAR (%)	t-value	CAAR (%)	t-value	Diff	t-value
Panel A: Target firms						
[-2, 2]	16.14%	7.86	24.66%	9.47	8.53%	2.46
[-5, -1]	-0.06%	-0.076	-1.39%	-1.40	-1.33%	-0.98
[-1, 5]	-0.75%	-0.69	1.7%	2.16	2.51%	1.88
[-5, 5]	16.2%	7.59	24.61%	9.11	8.41%	2.34
Observations	121		155			
Panel B: Acquiring firms						
[-2, 2]	1.25%	1.24	0.05%	0.10	-1.2%	-1.15
[-5, -1]	1.21%	1.59	0.04%	0.08	-1.17%	-1.34
[-1, 5]	-1.89%	-2.92	0.06%	-0.15	1.82%	2.45
[-5, 5]	0.56%	0.42	0.08%	0.11	-0.48%	-0.35
Observations	121		155			

Source: Own calculations

When dividing the sample into domestic and cross-border transactions as shown in Table 5.2, distinct patterns emerge. In the immediate event window [-2, 2], we find that target firms in domestic transactions experience a significant CAAR of 16.14%, while cross-border targets obtain an even higher CAAR of 24.66%. This indicates a more favorable market reaction to targets in cross-border acquisitions. The difference between these returns is notable and significant at 8.53%. Furthermore, in the extended event window [-5, 5], we find relatively similar findings as for the immediate event window. We find that the CAAR for domestic targets stands at 16.2%, marginally lower than the CAAR of 24.61%

for cross-border targets. Similarly, the observed difference is substantial and statistically significant, amounting to 8.41%.

Acquiring firms in domestic M&As exhibit a CAAR of 1.25% in the immediate event window, contrasting with a negligible 0.05% for cross-border acquirers. These findings point to a slightly positive market reaction for bidders in domestic acquisitions, although with a non-significant difference between the groups. Furthermore, in the extended event window, the CAAR for domestic acquirers is 0.56% and 0.08% for cross-border acquirers. These findings indicate relatively muted response from the market for bidders in both groups.

Reflecting on the CAARs observed, we infer that market reactions for targets are substantial and significantly positive in both domestic and cross-border Nordic M&As, with cross-border targets receiving a more pronounced positive reaction compared to their domestic counterparts. The validity of these results is underscored by the significant difference between the groups in both the immediate and extended event windows. These findings align with *hypothesis 2.1*, stating that cross-border transactions are associated with higher target gains compared to domestic transactions surrounding announcement.

The observation of favorable returns for targets in cross-border deals also corroborates the prevailing body of research in this field. In addition, we generally observe a small and positive reaction for acquirers, though non-significant. This is in line with e.g. Erel et al. (2022). Furthermore, similarly to Eckbo and Thorburn (2000), we observe greater gains to domestic bidders than cross-border bidders.

Table 5.3: CAARs for targets and bidder firms across geographies

The table displays CAARs for targets and bidders (based on the extended event window [-5, 5]), per target country, divided into groups of Nordic- and non-Nordic acquirers. For each segment, CAARs and t-values for domestic and cross-border transactions are displayed. Panel A reflects intra-Nordic M&A activity, while Panel B indicates deals with international non-Nordic acquirers.

	Domestic					Cross-border				
		Target		Bidder			Target		Bidder	
	N	CAAR (%)	t-value	CAAR (%)	t-value	N	CAAR (%)	t-value	CAAR (%)	t-value
Panel A: Pure-nordic M&As										
Nordics										
Norway	25	14.5%	2.97	-1.40%	-0.35	25	15.83%	3.71	-0.30%	-0.17
Sweden	66	17.57%	6.55	0.43%	0.31	25	26.52%	4.30	1.57%	1.48
Denmark	15	10.43%	1.12	-5.27%	1.08	7	29.35%	2.02	2.76%	0.93
Finland	13	18.16%	5.50	1.50%	0.60	11	24.29%	3.87	-0.33%	-0.18
Iceland	-	-	-	-	-	-	-	-	-	-
Observations	119					68				
Panel B: M&As w/ non-Nordic acquirer										
Nordics										
Norway	-	-	-	-	-	36	19.10%	3.26	0.17%	0.09
Sweden	-	-	-	-	-	31	25.11%	4.44	-2.15%	-1.91
Denmark	-	-	-	-	-	6	42.04%	1.64	1.22%	0.60
Finland	-	-	-	-	-	14	40.40%	3.38	1.24%	0.43
Iceland	-	-	-	-	-	-	-	-	-	-
Observations	-					87				

Source: Own calculations

Upon analysing Table 5.3, it becomes evident that the Nordic targets in cross-border M&As exhibit a significant announcement premium, as demonstrated by the consistently higher CAARs compared to domestic transactions. This trend is especially noticeable in international transactions with non-Nordic acquirers, where each Nordic country reflected in the sample shows a substantial increase in cross-border target CAARs compared to their domestic counterparts.

In *Panel A*, which focuses on pure-Nordic M&As (defined as transactions where both target and acquirer is Nordic), Norwegian targets in cross-border deals outperform their domestic counterparts by 1.33%, while the Finnish, Swedish and Danish targets show even more substantial premiums of 6.12%, 8.95% and 18.92% respectively. These results suggests that announcement of cross-border transactions within the Nordic region typically lead to a substantial market premium for targets. There are some otherwise notable observations in Panel A. Firstly, Danish domestic target returns are the lowest observed, and the only target returns not significant (even at 10% level) in the pure-Nordic sample, for both domestic and cross-border transactions. Furthermore, Danish domestic bidder returns are substantially negative at -5.27% compared to the other observations. Interestingly, Danish cross-border targets achieve the highest returns (significant) amongst Nordic cross-border targets, and the cross-border bidders in Danish transactions also have relatively high returns. However, it is important to note the low number of observations in Danish transactions, which could potentially skew the results.

Panel B presents a clear difference for deals involving non-Nordic acquirers. Here, all listed Nordic countries, except Sweden, experience an even more pronounced cross-border effect for targets when the acquirer is non-Nordic. Especially prominent is the returns for Danish and Finnish targets, which yields CAARs greater than 40%. However, it is essential to note that for these groups, Denmark and Finland have significantly fewer observations than Norway and Sweden.

On the acquirer side, there are generally fewer observable differences within the sample, and the data mostly do not reveal any significant cross-border premiums or discounts. An exception is that non-Nordic bidders in Swedish transactions seem to achieve significant negative returns while Nordic bidders seem to achieve almost significant positive returns of the same scale.

Table 5.4: CAARs for targets and bidder firms across industries

This table presents CAARs for target and bidder firms categorized by industry, divided into domestic and cross-border transactions. It details the CAARs and corresponding t-values for each industry, and highlights the number of observations within the extended event window [-5, 5]

	Domestic					Cross-border				
		Target		Bidder			Target		Bidder	
	N	CAAR (%)	t-value	CAAR (%)	t-value	N	CAAR (%)	t-value	CAAR (%)	t-value
Consumer Products & Services	7	22.41%	2.99	0.59%	0.14	6	13.75%	1.48	-1.55%	-0.54
Consumer Staples	11	24.39%	2.86	-0.2%	-0.07	5	19.02%	4.25	5.83%	2.28
Energy and Power	3	13.10%	1.98	-7.84%	-0.20	9	19.12%	1.42	1.97%	1.05
Financials	19	11.19%	1.59	4.81%	1.24	11	37.44%	3.44	2.40%	1.41
Healthcare	10	23.71%	6.37	-2.49%	-0.67	19	26.61%	2.42	-2.53%	-1.57
High Technology	19	20.56%	3.39	0.30%	0.12	37	25.88%	4.38	-0.65%	-0.60
Industrials	20	14.16%	2.86	1.23%	0.39	29	32.03%	4.98	-0.15%	-0.06
Materials	5	0.91%	0.15	-0.91%	-0.31	11	19.06%	2.40	-0.12%	-0.06
Media and Entertainment	3	19.64%	3.97	-0.29%	-0.07	8	20.20%	3.47	0.89%	0.56
Real Estate	12	9.32%	1.43	-0.68%	-0.39	9	13.83%	3.30	1.31%	0.49
Retail	5	24.90%	9.27	1.23%	0.33	2	21.44%	1.40	-2.1%	-3.32
Telecommunications	7	10.46%	1.06	-0.0%	-0.017	9	13.63%	1.48	1.19%	0.63
Observations	121					155				

Source: Own calculations

Table 5.4 outlines the industry-specific CAARs analysed over the extended event window [-5, 5]. Our analysis reveals distinct industry-specific patterns. By dividing the sample into cross-border and domestic deals, we can delve deeper into which industries contribute most significantly to the potential cross-border effect.

By examining the table, we uncover notable trends regarding target returns, particularly within the three most frequently observed target industries. For instance, the financial industry displays the largest differential, with cross-border deals showing a target CAAR of 37.44%, significantly higher than the 11.19% found in domestic deals. The industrials industry similarly exhibits a substantial positive effect from cross-border transactions (32.03% for cross-border targets vs. 14.16% for domestic targets), as does the high technology industry, although to a lesser extent, with a 5.32% increase (25.88% for cross-border targets vs. 20.56% for domestic targets). In contrast, when looking at acquirer returns amongst these industries, the CAARs interestingly underperform compared to their domestic counterparts.

Further, for target returns, most sectors receive a positive cross-border premium. The only exceptions are consumer staples, retail, and consumer products & services, which display relatively weaker target CAAR for cross-border deals. However, we note that the retail sample has very few observations.

In terms of returns for acquirers, we do not observe a consistent pattern akin to that of targets. While certain industries, such as consumer staples, appear to exhibit higher bidder returns in cross-border deals, others do not demonstrate a similar positive response. In fact, some industries experience a decline in acquirer CAARs in the context of cross-border transactions. Our findings indicate that, while there are variations in acquirer returns across industries, the more distinct and consistent differences are evident in the targets CAARs.

5.1 Combined wealth effects

Table 5.5: Combined wealth effect

This table exhibits the combined wealth effect (within the extended event window [-5, 5]), segmented into three panels: intra-Nordic transactions (with both Nordic target and bidder), transactions with non-Nordic acquirers, and the entire sample. It provides the mean percentage change in wealth, the t-values, and respective p-values. Additionally, it presents the difference between the two groups.

	Mean (%)	t-value	p-value	N	Diff	t_{diff}
Panel A: intra-Nordic transactions						
Domestic	3.91%	3.75	0.000	119		
Cross-border	2.76%	3.46	0.001	68	1.15%	0.874
All	3.47%	4.79	0.000	187		
Panel B: non-Nordic acquirer						
Domestic	-	-	-	-		
Cross-border	1.11%	1.25	0.216	89		
All	1.11%	1.25	0.216	89		
Panel C: Entire sample						
Domestic	3.72%	3.59	0.000	121		
Cross-border	1.95%	3.17	0.002	155	1.77%	1.534
All	2.73%	4.78	0.000	276		

Source: Own calculations

Table 5.5 summarizes the quantified results of the combined (market-capitalization weighted) wealth effect of mergers and acquisitions announcements within the Nordic region. For purely intra-Nordic transactions (shown in *Panel A*), domestic M&As exhibit a higher mean wealth effect of 3.91% compared to 2.76% for cross-border transactions, with both categories showing statistically significant returns. We observe 1.15% higher returns for domestic transactions compared to cross-border transactions, however the difference is not significant. Overall, intra-Nordic transactions experiences on average a significant positive effect of 3.47%. When considering transactions with international non-Nordic acquirers (*Panel B*), we find that cross-border M&As present a mean wealth effect of 1.11%, however it is not statistically significant, possibly indicating a different market perception when compared to Nordic acquirers. Taking the entire sample into account (*Panel C*), domestic M&As show a significant mean wealth effect of 3.72%, while cross-border transactions show a lower but also significant effect at 1.95%. Overall, the entire sample yields a statistically significant combined average wealth effect of 2.73%.

Our results suggest that combined wealth effects stemming from M&A announcements in the Nordics is positive (2.73%) and significant (at 0.1% significance level). This validates our hypothesis 3.1, which posits that the combined wealth effect is significantly positive. Furthermore, the findings are in line with empirical research. The findings of Jensen and Ruback (1983), showing positive target returns and non-negative bidder returns, implies that overall wealth creation should be positive. Further, DePamphilis (2019) highlights that on average, the sum of target and bidder gains around announcement is positive and significant.

When examining differences in combined wealth effects, we observe a more favorable response to domestic transactions within the same Nordic country, suggesting a market preference for domestic over cross-border transactions. However, the difference in combined wealth effects between domestic and cross-border transactions is not statistically significant, neither in the intra-Nordic context nor in the broader sample. It is important to note, though, that this significance gap narrows when the sample is expanded to include non-Nordic acquirers, bringing the difference close to statistical significance at the 10% level. This trend suggests that factors unique to non-Nordic acquirers may be influencing the overall wealth creation observed in our sample. Such factors could include challenges associated with post-merger integration, which arise from complexities related to geographical and cultural distances, as discussed by Erel et al. (2022).

To summarize, the tables presented shows clear patterns in market reactions to M&A transactions in the Nordics. For acquirers, the impact of going cross-border does generally not seem to affect their returns. Across the board, whether we are looking at domestic or cross-border M&As, the CAARs for acquirers remain relatively stable and generally slightly positive. Targets, however, tell a different story. We find repeated evidence indicating that they generally benefit from being involved in cross-border transactions. This is evident from Table 5.2, where we see a consistent difference in CAARs for targets in cross-border transactions compared to those in domestic deals. Table 5.3 deepens this insight, showing that when Nordic firms are targeted by companies from outside the Nordics, the targets CAARs are on average even higher. Table 5.4 adds an industry layer to this picture, where sectors like Financials and Industrials particularly stand out with higher target CAARs in cross-border M&As, substantially contributing to the average

cross-border target premium. Table 5.5 provides a holistic view demonstrating that the combined wealth effect is positive and significant. It also provides indications of slightly higher combined wealth effects in domestic transactions, likely caused by our findings of higher domestic bidder returns.

So far, the analyses have not accounted for important deal- and participant characteristics, which could potentially influence these outcomes. Moving forward, the intention is to conduct a cross-sectional analysis to control for well-established determinants of M&A performance. This will facilitate our understanding of whether the higher returns for targets in cross-border M&A transactions are attributable to the cross-border aspect per se, or if they stem from other underlying factors. Additionally, we aim to identify and examine the specific variables that influence the CARs for both targets and acquirers.

5.2 Regression analysis

This section further examines the abnormal returns to targets and acquirers, taking into account established determinants to minimize the risk of omitted variable bias. The analysis employs four Ordinary Least Squares (OLS) models, with CAR as the dependent variable. The study separately considers the effects for the target and the acquirer, both including and excluding the cross-border factor, with the aim of investigating the effect of the cross-border variable *ceteris paribus*.

Table 5.6: Regression for cross-border effect

The table comprises four OLS models controlling for a set of deal- and participant characteristics. Model 1 & 2 regresses target CAR with and without cross-border flag. Model 3 & 4 regresses acquirer CAR with and without cross-border flag. The regression results shown below display the coefficients for each independent variable along with their respective t-stat, computed with robust standard errors. The regressions use the CAR (computed from the immediate event window ± 2 days) of the target and acquirer as the dependent variable. Each model accounts for Fixed Effects by Country, Industry and Year. For an in-depth description of the variables incorporated into the regression analysis, please refer to Table A2.8 in the appendix.

	Target CAR		Acquirer CAR	
	(1)	(2)	(3)	(4)
Intercept	0.0884	0.0848	0.0564	0.0565
	(1.341)	(1.298)	(1.542)	(1.535)
Cross-Border		0.0539 *		-0.0009
		(1.703)		(-0.086)
Cash Only	0.0944 ***	0.0728 **	0.0131	0.0135
	(3.023)	(2.272)	(1.114)	(1.099)
Tender	0.0804 **	0.0778 **	0.0065	0.0065
	(2.297)	(2.246)	(0.692)	(0.699)
Toehold	-0.0764 **	-0.0786 **	-0.0076	-0.0075
	(-2.234)	(-2.290)	(-0.644)	(-0.644)
Hostile	-0.0739 *	-0.0769 *	-0.0046	-0.0045
	(-1.880)	(-1.925)	(-0.302)	(-0.295)
Size	0.0109	0.0084	-0.0090 **	-0.0089 **
	(1.272)	(0.976)	(-2.334)	(-2.401)
Relative Deal Size	0.0325 ***	0.0330 ***	0.0053 ***	0.0052 ***
	(12.275)	(12.679)	(4.877)	(4.880)
Relative Size	-0.0683 ***	-0.0658 ***	0.0023	0.0022
	(-4.278)	(-4.233)	(0.276)	(0.268)
Market to Book	-0.0003	-0.0004	-0.0002	-0.0002
	(-0.415)	(-0.598)	(-0.834)	(-0.810)
Same Industry	0.0513	0.0495	-0.0077	-0.0077
	(1.263)	(1.216)	(-0.655)	(-0.654)
FE Year	Yes	Yes	Yes	Yes
FE Industry	Yes	Yes	Yes	Yes
Observations	276	276	276	276
R^2	0.214	0.220	0.108	0.108
Adjusted R^2	0.140	0.142	0.023	0.019

Note: *p<0.1; **p<0.05; ***p<0.01

From the model outputs presented in Table 5.6, we first analyse well known determinants through the baseline models *(1, CAR_{target})* and *(3, $CAR_{acquirer}$)*. Subsequently, we discuss the impact of introducing the cross-border variable in models *(2, CAR_{target})* and

(4, $CAR_{acquirer}$), and examine the resulting changes.

In regression (1), prior to including the cross-border variable in our regression, *all cash payment* is found to have the largest significant effect on target returns (0.0944). The variable for all cash payment is also observed to have a positive effect (0.0131) on acquirer returns in model (3), however the coefficients for acquirer returns are not significant. The positive effect is sustained upon introduction of the cross-border variable for both target and acquirer. The findings of positive coefficients for the all-cash variable is expected and commonly evidenced in literature, and is consistent with the findings of Betton et al. (2014), Harris and Ravenscraft (1991)) and Eckbo and Thorburn (2000). Furthermore, this validates our hypothesis 4.1, that all-cash offers are associated with higher target returns.

Furthermore, for *tender offers*, we see a significantly positive reaction on target returns. This result is quite unsurprising, as the premium offered in tender offers is typically above the current share price, reflecting the acquirers desire to rapidly gain a controlling interest in the company (DePamphilis, 2019). In similarity, positive returns for targets in tender offers have been frequently observed in past research (see e.g. Loughran and Vijh (1997), Jarrell and Poulsen (1989))

The negative coefficient for *toehold* positions, as seen for both target and acquirer, indicates that when acquirers already have a stake in the target, the additional market reaction to the takeover is comparably weaker. We find the presence of toeholds to have a significantly negative effect on target returns. More precisely, it implies that when the acquirer has a toehold prior to the announcement, the targets CAR decreases by 7.64% on average, holding all other variables constant. These results align with the findings reported by Eckbo and Langohr (1989), who noted that toeholds had a negative effect on target returns.

We find negative and significant effects of -0.0739 for targets involved in *hostile transactions* in our sample. The effect persists when introducing the cross-border variable. These findings are surprising, as hostile transactions are usually associated with higher returns (DePamphilis (2019)). For acquirers we do not find significant effects for hostile transactions.

For acquirer returns, we find that *size* has a significantly negative effect. Our regression indicates that as the size (deal value) of an acquisition increases, the acquirer's abnormal returns within the immediate event window tend to decrease. This phenomenon implies that larger transactions, quantified in absolute dollar terms, potentially generate less value for the acquirer. These findings are aligned with the findings of Moeller et al. (2005), who reported that larger deals often lead to greater losses. Additionally Moeller et al. (2004) observed a comparable pattern in the context of larger firms. Given the negative influence of size on bidders, and recognizing that cross-border transactions generally exceed domestic deals in terms of size, as depicted in Figure A2.1, this phenomenon may partially account for the relatively superior performance of domestic bidders compared to their cross-border counterparts.

In the context of *relative deal size*, defined as the ratio of the total deal value to the acquirers market capitalization, we identified significant positive impacts on both target and acquirer returns at the 1% significance level. Notably, targets experienced more pronounced gains (0.033 versus 0.005) per unit increase. This finding indicates that deals of greater relative magnitude to the acquirers market value are associated with enhanced returns for both involved entities.

Inclusion of the cross-border variable

The introduction of the cross-border variable in regression (2) and (4) for targets and acquirers, respectively, is a key aspect of our analysis. We observe the introduced cross-border variable holds significance at the 10% level for the targets CAR, suggesting that, *ceteris paribus*, cross-border acquisitions in the Nordics may command a 5.39% cross-border premium (for targets). In addition, we see a slight increase in *Adjusted* R^2 in regression (2), this is noteworthy since *Adjusted* R^2 adjusts for the number of explanatory variables in the model, imposing a penalty for each added variable. Thus, an increase suggests that the cross-border variable contribute meaningful explanatory power to the model. These findings give support to hypothesis 2.1 that targets in cross-border transactions achieve positive and significant returns relative to their domestic counterparts.

For acquirers, the introduction of the cross-border variable in regression (4) yields a near zero coefficient for the introduced variable, which is not statistically significant. This is in line with expectations, and conforms to our previous findings.

Moreover, the persistence of the significance of variables from the baseline model in the extended models, which incorporate the cross-border flag, underscores their continued relevance. Furthermore, in Table A2.7, we analyse the target CAR for domestic and cross-border groups individually. When combined with the main regression (Table 5.6) and Figure A2.1, this suggests that factors like size might partially explain the higher returns in cross-border transactions, although this is not definitive.

5.3 Correlation analysis

In order to test for and differentiate between agency, synergies and hubris, we implement the correlation analysis as per Berkovitch and Narayanan (1993) and described in Chapter 3 Methodology. We use the CAR computed for the immediate event window [-2, 2], and the market capitalization weighted computed return for total gain. We furthermore divide the sample into a domestic and cross-border sample to compare findings.

Table 5.7: Correlation analysis between target, acquirer, and total combined returns

The table is comprised of three panels. Panel A includes the expected signs of correlation between target and total gain, and target and acquirer gain, for the three motives we are testing for. Panel B includes the computed correlation values as described for our cross-border sample. Panel C includes equivalent figures as Panel B but for our domestic sample.

Panel A: Expected correlations (signs)		
	ρ Target and total gain	ρ Target and acquirer gain
Synergy	+	+
Hubris	0	-
Agency	-	-
Panel B: Correlations Cross-border Sample		
	ρ Target and total gain	ρ Target and acquirer gain
Total sample (138)	0.25***	0.06
Positive sample (95)	0.16	-0.13
Neg. sample (43)	0.33**	0.12
Panel C: Correlations Domestic Sample		
	ρ Target and total gain	ρ Target and acquirer gain
Total sample (106)	0.48***	0.06
Positive sample (71)	0.44***	-0.02
Neg. sample (35)	0.16	-0.40**

Note: *p<0.1; **p<0.05; ***p<0.01

Source: Own calculations

Cross-border

The results indicate a positive correlation between target and total gains ($\rho = 0.25$) for the total sample in cross-border acquisitions, which suggests that synergy is the primary motive, as this correlation should be positive if synergy drives the takeover. However, the correlation is not significant between target and acquirer gain, which could imply the presence of hubris, where the acquirers over-payment is offset by the target's gain. We furthermore see some indications of hubris in the positive sub-sample, although not significant.

Domestic

A stronger positive correlation is observed between target and total gains ($\rho = 0.48$) for domestic acquisitions, reinforcing the synergy motive. For negative samples, there is a significant negative correlation (ρ = -0.40) between target and acquirer gain, in conjunction with non-significant low correlation between target and total gain, indicating the presence of hubris. For our domestic sample we interestingly find strikingly similar results as Berkovitch and Narayanan (1993). It is difficult to determine whether hubris is present or not, but due to the negative correlation between target and acquirer in the positive sample, there is reason to suspect presence of hubris in many cases.

Summary

The analysis suggests that for the total sample, both cross-border and domestic acquisitions are primarily driven by synergy, and more so in domestic than in cross-border transactions. These findings of synergy as primary motive are consistent with the observations presented in Goergen and Renneboog (2004) and Berkovitch and Narayanan (1993). Furthermore the gain was positive in approximately 69% of the cross-border cases and 67% of domestic cases, suggesting that about two thirds of the cases are motivated by synergies across both groups, and the remainder one third motivated by agency and/or hubris. These ratios are in alignment with the findings of Goergen and Renneboog (2004) and Berkovitch and Narayanan (1993).

6 Conclusion

This thesis investigates a sample of 276 mergers and acquisitions announced between 2003 and 2023 in the Nordic region. Our approach involves applying recognized methodologies from prior M&A research to assess the impact on shareholder wealth stemming from announcements of M&A. Our study advances the understanding of wealth effects from mergers and acquisitions in the Nordic region. Furthermore, the findings of this study offer insights for firms looking to engage in M&A activities, and contributes to a better understanding of the market dynamics in the region.

The findings presented in this thesis suggest eight primary relations: (1) The stylized fact of significant target gains following M&A announcements remains true for the Nordics. (2) Nordic cross-border targets tend to receive a significant premium compared to their domestic counterparts. (3) The bidders gains surrounding Nordic M&A announcements are ambiguous, but our findings suggest positive figures. (4) Overall wealth creation in the context of Nordic M&A announcements is positive and significant, and greater for domestic transactions than cross-border transactions. (5) Target gains seem to be driven by cash-only payments, tender offers, and the relative deal size. (6) Bidder gains seem to be mainly driven by the relative size of the deal. (7) After controlling for well-known characteristics, we find the cross-border variable for targets remains significant. (8) Our correlation analysis reveals that synergies seem to be a predominant motive for both domestic and cross-border transactions (present in approximately two thirds of our sample). Furthermore, our analysis indicates potential instances of hubris in decision-making, although this inference is less definitive compared to the identified synergistic effects

Ultimately, in the course of our analysis, we have found empirical evidence substantiating each of the five hypotheses delineated in Section 2.4. This outcome aligns with expectations, considering the empirical foundations of the hypotheses.

We conclude by suggesting that a cross-border wealth effect is indeed evident for targets in Nordic transactions. The existence of a similar effect for bidders remains inconclusive, but our findings suggest slightly higher returns to domestic bidders. The contradictory findings of target and bidder returns in cross-border and domestic transactions seem to

offset each other when comparing combined wealth effects, marginalizing the potential cross-border difference for combined wealth effects.

6.1 Further research

This thesis offers a comprehensive analysis of the short-term shareholder wealth effects induced by Nordic M&A announcements, yet it also opens avenues for further exploration in this domain. One particularly intriguing area for future research is the long-term implications of the cross-border effect in Nordic M&As. Understanding how these effects evolve over time could provide deeper insights into the dynamics of cross-border transactions.

Additionally, while this study has focused on transactions involving public targets and acquirers, there lies a significant area of interest in exploring M&As with private targets. Private transactions may exhibit different dynamics and outcomes compared to public transactions, and understanding these differences could be crucial for a more comprehensive view of the M&A landscape. Moreover, examining the role of experience in cross-border M&As presents an opportunity to discern how familiarity with international mergers might influence outcomes. Investigating whether and how the experience of acquirers in cross-border settings impacts the efficiency and success of these transactions could offer valuable insights, especially when contrasting experienced acquirers with their inexperienced counterparts.

Furthermore, a methodological approach similar to Malatesta (1983), focusing on the accumulated abnormal dollar return measured over extended periods, could be employed to gain a more nuanced understanding of wealth creation in the context of Nordic M&A announcements.

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Appendix

A1 Methodology

A1.1 Parametric tests

In order to test the significance of $CAAR$, we test whether the value is statistically significant from zero: $H_0 : E(CAAR = 0)$. We do this using a standard T-test.

The t-statistic associated with the Cumulative Abnormal Return (CAR) is determined through the following methodology:

$$t_{CAAR_{0,t}} = \frac{CAAR_{0,t}}{\hat{S}_{CAAR,0}}, \tag{.1}$$

Where the variance of the CAR is denoted as:

$$\hat{S}^2_{CAAR} = \frac{1}{N-k}\sum_{i=1}^{N}(CAR_i - CAAR)^2 \tag{.2}$$

Difference in means

We test significance of difference in means by using a two-sample T-statistic obtained from Welch's T-test. Student's t-test assumes that the variance across two independent groups are equal, and more reliable when the sample sizes of the two groups are equal or approximately equal. Welch's t-test may be more robust in cases where this is violated. We furthermore confirm presence of unequal variances by conducting an F-test on the applicable samples.

This test statistic aids in determining whether the population means of the two groups are alike or exhibit significant deviations.

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \tag{.3}$$

A high t-value indicates a significant difference in means. $\bar{X}_1$ and $\bar{X}_2$ are the sample means of group 1 and 2, respectively. s_1^2 and s_2^2 are the variances of the two samples, and

n_1 and n_2 are the sample sizes.

The degrees of freedom for the Welch t-test are calculated using the Welch–Satterthwaite equation, which adjusts for the different sample sizes and variances.

In our R-implementation, we implement the Welch-test by setting `VAR.EQUAL=False` when calling `t.test`.

A2 Tables and figures

Table A2.1: Acquirer details on domestic M&A

Acquirer Macro Industry	Deals	Avg. volume (USDm)
Financials	31	573
High Technology	19	74
Industrials	18	1036
Real Estate	15	552
Consumer Staples	8	522
Energy and Power	6	5405
Healthcare	6	1638
Consumer Products and Services	6	347
Telecommunications	5	823
Media and Entertainment	3	728
Retail	2	541
Materials	2	456

Table A2.2: Acquirer details on cross-border M&A

Acquirer Macro Industry	Deals	Avg. volume (USDm)
Financials	38	807
Industrials	28	592
High Technology	26	496
Healthcare	11	894
Materials	11	768
Telecommunications	9	5157
Energy and Power	8	1104
Consumer Staples	6	2584
Real Estate	6	1956
Media and Entertainment	6	186
Consumer Products and Services	4	158
Retail	2	648

Table A2.3: Cross-border deals by region

Acquirer Region	Deals	Avg. volume (USDm)
Nordic	68	739
Europe (non-Nordic)	51	1781
North America	26	696
Asia	7	562
Other	3	270

Table A2.4: Acquirer details on all M&A deals

Acquirer Macro Industry	Deals	Avg. volume (USDm)
Financials	69	702
Industrials	46	766
High Technology	45	318
Real Estate	21	953
Healthcare	17	1156
Telecommunications	14	3610
Energy and Power	14	2947
Consumer Staples	14	1405
Materials	13	720
Consumer Products and Services	10	271
Media and Entertainment	9	367
Retail	4	595

Table A2.5: Target details on all M&A deals

Target Macro Industry	Deals	Avg. volume (USDm)
High Technology	56	280
Industrials	49	729
Financials	30	367
Healthcare	29	834
Real Estate	21	986
Telecommunications	16	3756
Materials	16	2521
Consumer Staples	16	2309
Consumer Products and Services	13	316
Energy and Power	12	847
Media and Entertainment	11	448
Retail	7	424

Table A2.6: Merger type: Horizontal vs. vertical

Merger Type	Sample Size	CAAR Target	CAAR Acquirer
Horizontal	102	21.70% (6.207)	0.176% (0.125)
Vertical	174	20.48% (10.291)	0.59% (0.495)

Note: Using Mid-Industry to assign Merger Types

Table A2.7: Regression - target returns for domestic and cross-border

The regression results shown below display the coefficients for each independent variable along with their respective t-stat, computed with robust standard errors. Target CAAR (computed from the immediate event window ± 2 days) of the domestic and cross-border sample is the dependent variable. Each model accounts for Fixed Effects by Industry and Year. For an in-depth description of the variables incorporated into the regression analysis, please refer to A2.8 in the appendix.

	Dependent variable	
	CAR.T(Domestic)	CAR.T(Cross-border)
	(1)	(2)
Intercept	0.1733***	0.157
	(2.741)	(1.312)
Cash Only	0.0461	-0.0087
	(1.188)	(-0.149)
Tender	0.0668	0.0992 *
	(1.609)	(1.852)
Toehold	-0.0704*	-0.0787
	(-1.767)	(-1.320)
Hostile	-0.0195	-0.1204*
	(-0.419)	(-1.705)
Size	-0.0032	0.0134
	(-0.380)	(0.880)
Relative Deal Size	0.0326 ***	0.1478
	(12.533)	(0.795)
Relative Size	-0.0573 ***	-0.3110
	(-4.261)	(-1.630)
Market to Book	0.0111**	-0.0007
	(2.447)	(-0.726)
Same industry	0.0087	0.0643
	(0.208)	(0.925)
FE Year	Yes	Yes
FE Industry	Yes	Yes
Observations	106	138
R^2	0.306	0.216
Adjusted R^2	0.142	0.081
Note:	*p<0.1; **p<0.05; ***p<0.01	

Table A2.8: Variable definitions for regression analysis

Variable Name	**Variable Definition**
Cross-Border (D)	Equals one if Target HQ is located in another country than Acquirer HQ, and zero otherwise.
Cash Only (D)	Equals one if payment is done solely with cash, and zero otherwise.
Tender (D)	Equals one if a tender offer has been made, and zero otherwise.
Toehold (D)	Equals one if the Acquirer owns equity in the target firm before the bid announcement.
Hostile (D)	Equals one if deal is categorized as hostile.
Same Industry (D)	Equals one if Target Mid Industry = Acquirer Mid Industry, and zero otherwise.
Size	Natural logarithm of deal value.
Relative Deal Size	Deal value / Acquirer's market capitalization four weeks prior to the bid announcement.
Relative Size	Target's market capitalization / Acquirer's market capitalization. Values obtained four weeks prior to the bid announcement.
Market to Book	Ratio of market capitalization to book value of equity, obtained four weeks prior to the bid announcement.

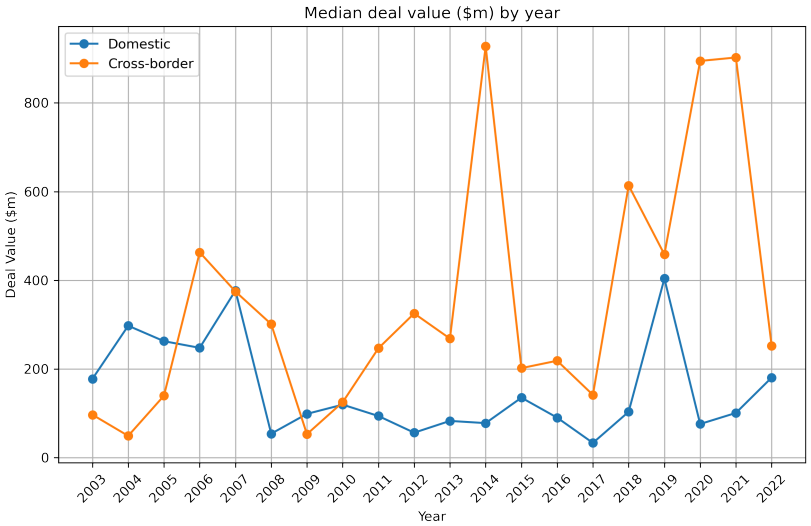
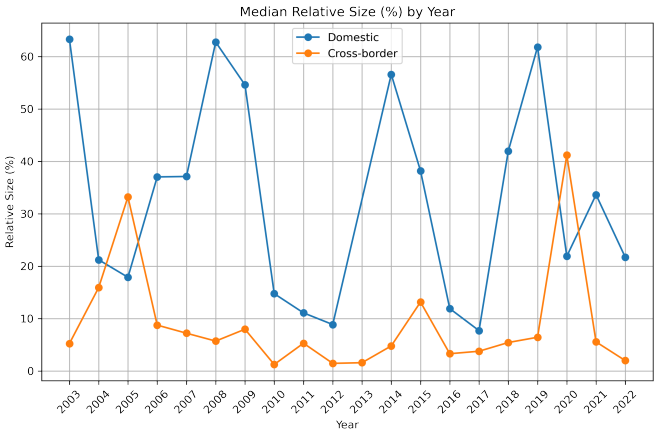
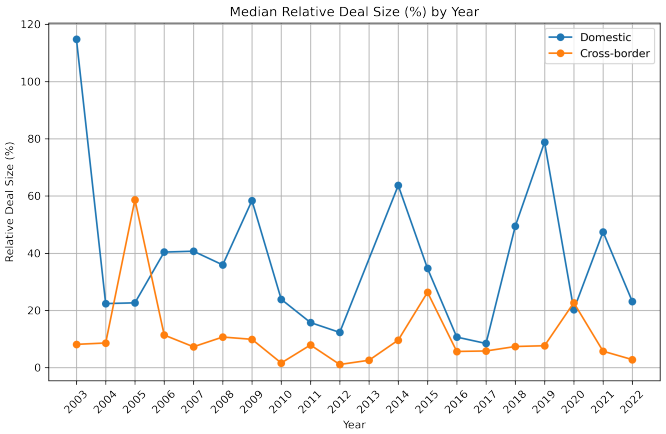


Figure A2.1: Median deal value ($m) by year



(a) Median relative size (%) by year



(b) Median relative deal size (%) by year

Figure A2.2: Relative size and relative deal size by year

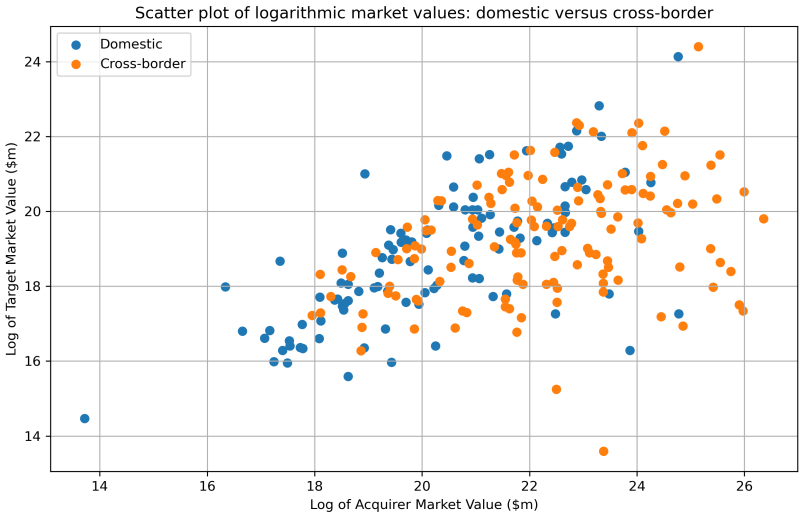


Figure A2.3: Comparative scatter plot of logarithmic market values: domestic versus cross-border acquisitions in the Nordics

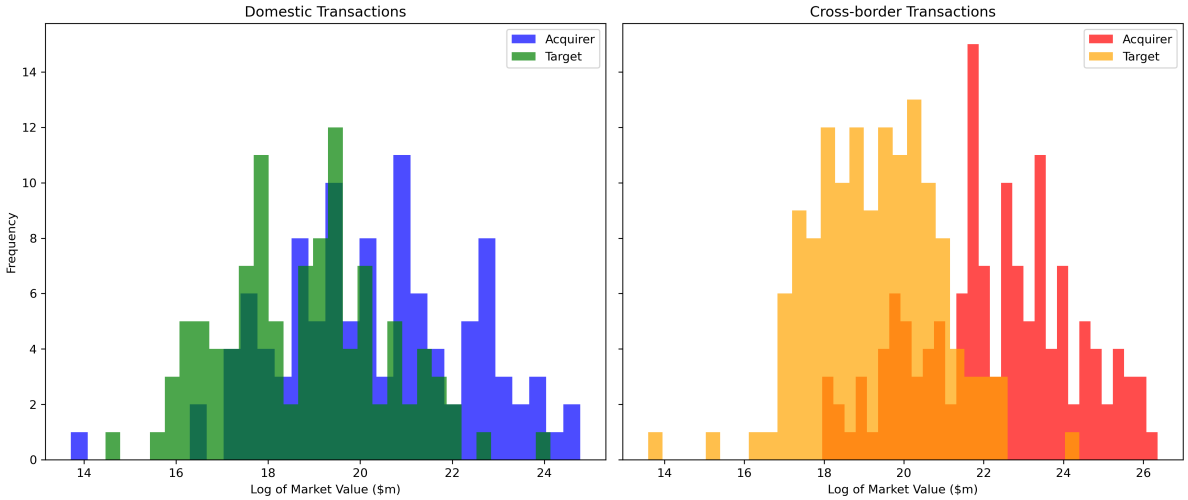


Figure A2.4: Distribution of logarithmic market values for acquirers and targets in Nordic domestic and cross-border deals

A3 Empirical results

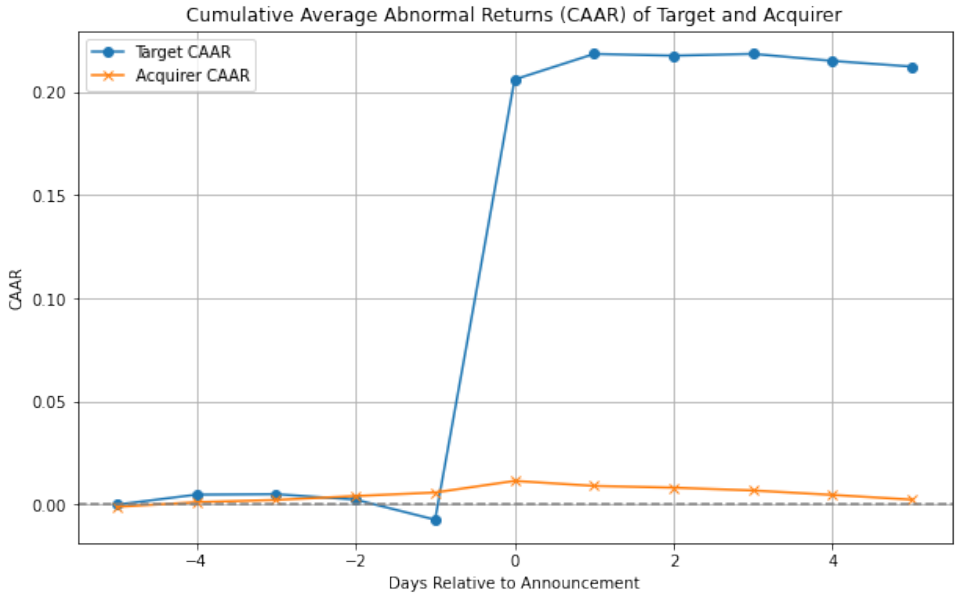


Figure A3.1: CAAR of target and acquirer for the entire sample

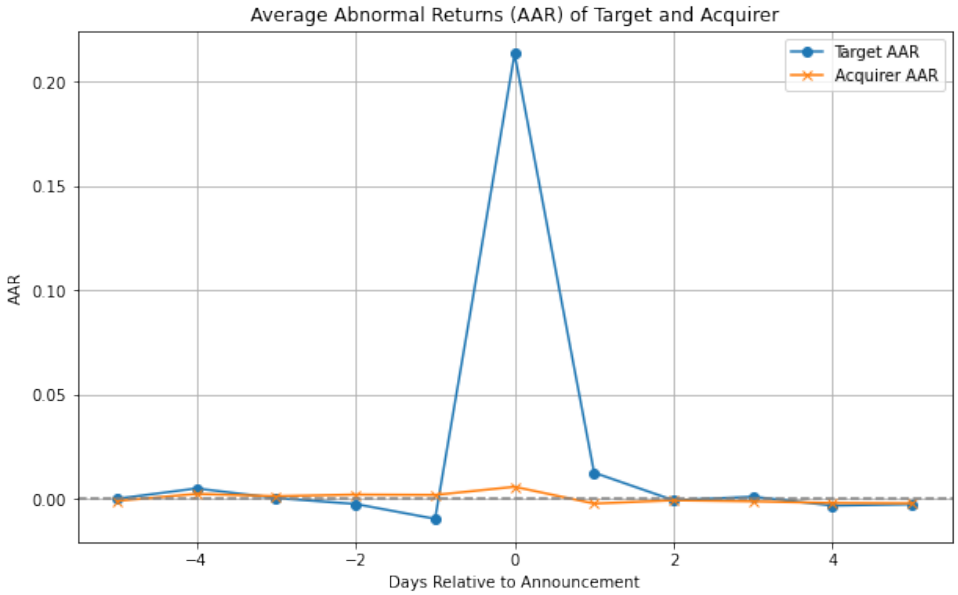


Figure A3.2: AAR of target and acquirer for the entire sample

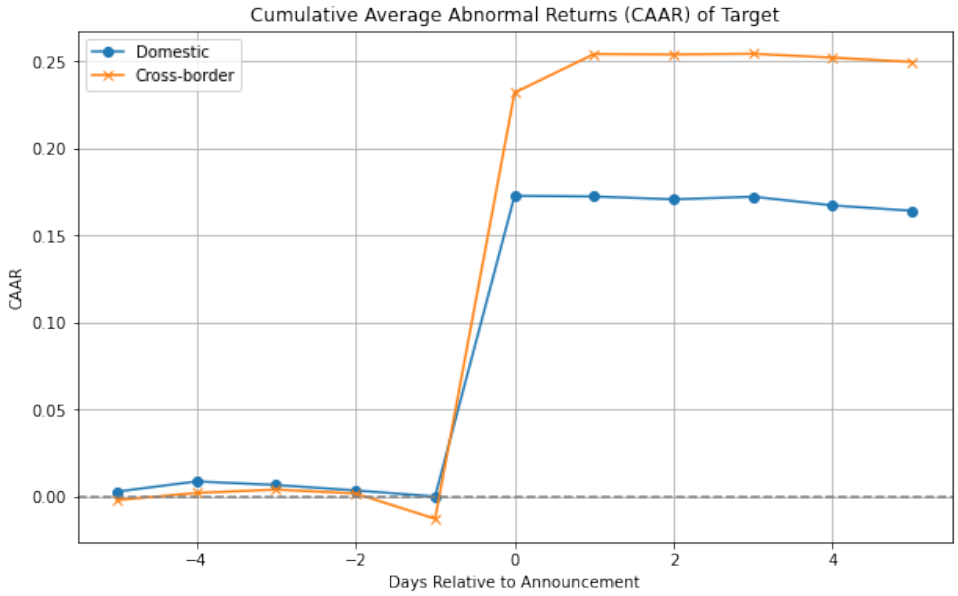


Figure A3.3: CAAR of target for cross-border and domestic sample

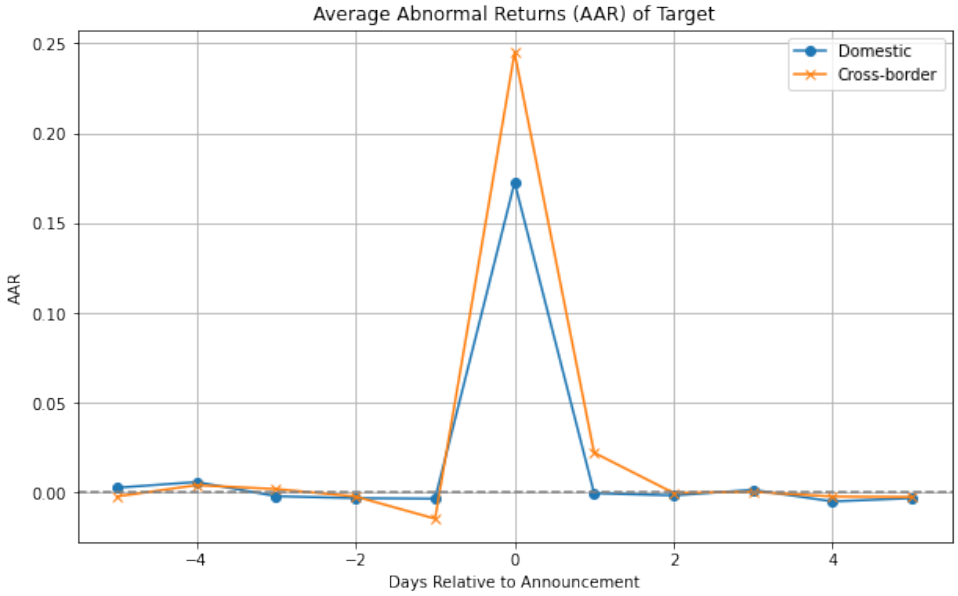


Figure A3.4: AAR of target for cross-border and domestic sample

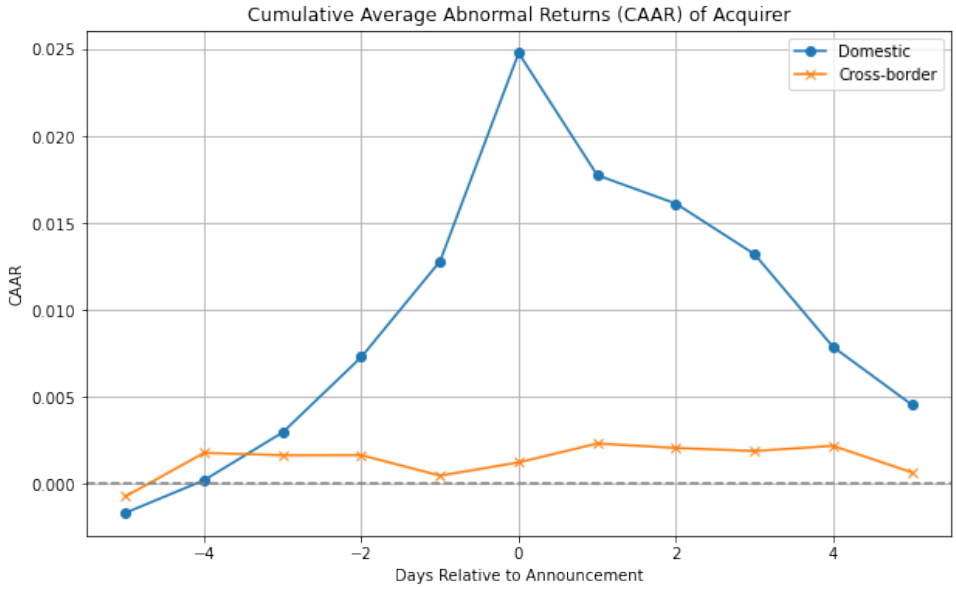


Figure A3.5: CAAR of acquirer for cross-border and domestic sample

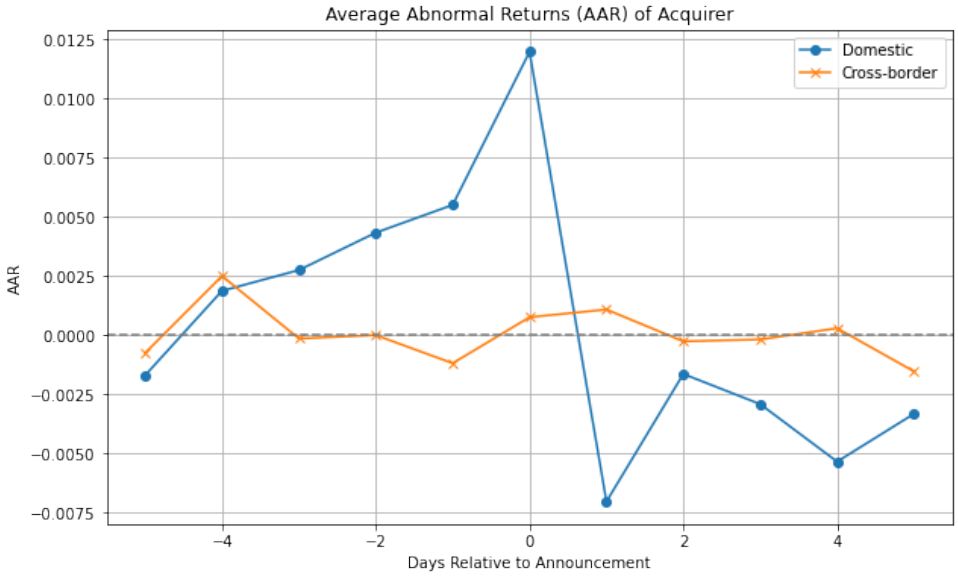


Figure A3.6: AAR of acquirer for cross-border and domestic sample

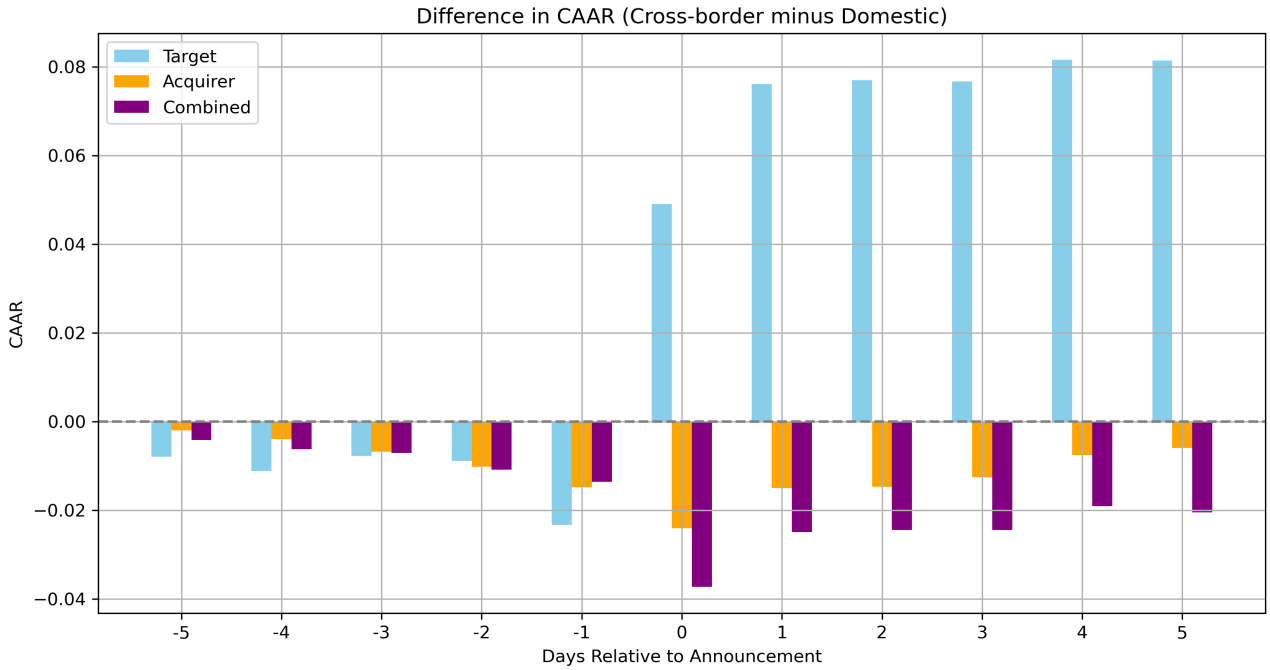


Figure A3.7: Difference in gains between cross-border and domestic transactions

This figure displays the development of the difference between Cross-border and Domestic gains (Domestic subtracted from Cross border) for target, acquirer and total (market capitalization weighted) gains over time relative to the deal announcement. The positive values for target visualize the higher gains for cross-border targets, whereas the bidder and combined gains are negative, indicating higher gains for domestic.