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Firm size and gains from acquisitions in Nordic markets

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ABSTRACT:
Mergers and acquisitions (M&As) are a way for companies to achieve growth, expand into new markets, adapt to evolving regulatory environments, and realize synergy gains. However, acquisitions are complex processes. There is no universal guide for successful acquisitions, and various considerations must be taken into account. While M&As have been widely studied globally, there is a relatively small number of studies focusing exclusively on the Nordic markets, Finland, Sweden, Denmark, Norway, and Iceland. Moreover, the existence of a firm size effect is a debated topic in financial research. Given that the Nordic markets have a significant number of small companies, which makes the topic especially relevant. The purpose of this study is to examine whether the size effect exists in Nordic markets in the 2010s.

The study encompasses 824 Nordic M&As, of which 563 are large and 261 are small. The deals were made between 2014 and 2023. The regression analyses are conducted using cumulative abnormal returns (CARs) as the dependent variable and include common control variables related to firm and deal characteristics. Consistent with existing literature, acquisitions in this sample are highly profitable in the short term despite varying economic and market conditions throughout the study period.

The findings suggest that small firms tend to generate higher short-term CARs than large firms. The average CAR for small firms is 6,62% while large firms is 3,12%. However, in the longer term, large firms outperform small ones, which would be explained by the large firms' ability to allocate resources to the post-merger integration process, which is an essential component of acquisition success.

Although small firms achieve higher CARs and value-weighted CARs, large firms generate substantially greater absolute announcement returns (ECARs), on average €70,07 million around the announcement compared to €5,54 million for small firms. Over the period 2014-2023, the acquiring firms in this sample executed deals worth a total of €156 billion and created approximately €40,9 billion in aggregate value.

KEYWORDS: M&A, M&A Performance, Size effect, Nordic Markets, Nordic M&A, Event study, CAR, BHAR

Contents

Figures

Tables

1 Introduction

The global market for mergers and acquisitions (M&A) is valued at over one trillion dollars, with a record high exceeding five trillion (Nishant, 2021). M&As are complex processes that require multi-layered integration and coordination. They represent critical investment decisions for companies. Firms pursue these transactions to realize synergies in areas such as cost savings, improved distribution and supply chains, scalability, and other strategic advantages (Bauer & Friesl, 2022; Devos et al., 2009).

M&A activities can facilitate efficient growth when organic growth opportunities are limited or when companies aim to enter new markets. In addition, strict regulatory environments may compel companies to pool resources to adapt to regulatory changes and shocks, resulting in greater synergy benefits (Vishny & Shleifer, 2003; Rosen, 2006).

However, a significant number of M&A deals fail to create value and may even destroy it (Antoniou et al., 2007). Several factors contribute to this outcome. According to Junni and Teerikangas (2019), deal benefits are often overestimated, leading to poor performance, or the post-merger integration process is not executed effectively. Successful integration involves engaging key personnel, retaining essential customers, and aligning operational practices.

1.1 The purpose of the study

This thesis is inspired by the paper by Moeller et al. (2004), which investigates the relationship between firm size and acquisition performance in U.S. markets, finding a negative relationship between the two. The aim of this study is to examine the performance of M&As and explore whether the size of the acquiring firm affects M&A performance at the time of the announcement, and whether the results hold in the longer term. Specifically, it investigates whether smaller firms benefit more in terms of announcement returns and the buy-and-hold returns in the longer time period.

The “small firm anomaly” is a recognized concept in financial literature. In the context of M&A, smaller firms may have an advantage because deals involving them typically require fewer resources and are easier to execute and integrate successfully (Hitt et al., 2009). In contrast, larger deals may be more likely to attract regulatory scrutiny, especially if they result in excessive market concentration. Moeller et al. (2004) find a negative relationship between firm size and M&A performance; this thesis investigates whether this effect persists in the 2010s.

Research on M&As presents mixed evidence regarding the profitability of such transactions, with various explanations for success or failure. Given that companies frequently engage in M&As with the goal of improving performance, the lack of a clear understanding of what drives successful deals justifies further research on M&A outcomes (Hitt et al., 2009). This also supports the inclusion of firm size as a key variable in the study, particularly as Hitt et al. (2009) find that firm size is one of the most consistent factors in M&A research.

This thesis builds upon earlier research by focusing on the Nordic markets and adapting its methodology to align with available data and the unique characteristics of these markets. The Nordic countries are similar in many respects: they have stable political environments, high-quality educational systems, and strong technological capabilities (Mechitov & Moshkovich, 2021), which makes them well-suited for group-level analysis. The dataset includes M&A deals from Finland, Sweden, Norway, Denmark, and Iceland.

The study hypothesizes that M&As in the Nordic region may generate positive returns. This is based on findings by Humphery-Jenner and Powell (2014), who report that Nordic M&A deals produced an observation-weighted average abnormal return of 2,57%.

The contribution of this thesis lies in expanding the relatively limited body of research on M&As in Nordic stock markets by using a sample of 824 deals. The topic of firm size is particularly relevant in the Nordic context, as approximately 99% of European companies are classified as small or medium-sized (Bauer & Matzler, 2013), and the Nordic countries include some of the smallest economies in Europe.

Additionally, M&A announcements often increase interest in the companies involved. This increased attention and demand for the stock before the announcement and during the short window can be driven by media coverage (Reyes, 2018). As a result, there may be opportunities to benefit from abnormal movements in stock prices.

This thesis provides useful insights for investors, such as hedge fund managers and arbitrageurs, who are interested in exploiting short-term price inefficiencies around M&A announcements. It also offers practical guidance for managers on the key factors to consider when pursuing successful acquisitions.

1.2 Hypothesis development

Moeller et al. (2004) find evidence that smaller firms tend to make more profitable acquisitions compared to larger firms in both the short and long run. They attribute this result to potentially more favorable compensation programs for smaller firms. Moeller et al. (2004) explain the difference between large-firm and small-firm acquisitions by noting that private firm acquisitions are generally more profitable than public firm acquisitions due to differing risk profiles. Evidence suggests that smaller firms are more likely to acquire private companies rather than public ones.

Humphery-Jenner and Powell (2014) find similar results, showing that small acquirers perform better than large acquirers. Their findings provide depth to the examination of the thesis hypothesis, as they suggest that in states with poor governance (e.g., emerging countries), the size effect is offset. Nordic countries generally have strong governance, from which the thesis argues that the size effect may exist.

Asness et al. (2018) also find the size effect to exist when firm quality is assessed with different measures, and quality is controlled for in regressions, i.e., small, high-quality acquirers outperform large, high-quality acquirers.

Zhao et al. (2019) find that small firms generate higher returns at the announcement, whereas large firms outperform over a longer period, which is similar to the findings of Humphery-Jenner and Powell (2011). The rejection of the null hypothesis indicates that firm size has a negative effect on M&A performance, and the size effect exists in the short term. The hypothesis is stated as follows.

H: *Small firm size affects deal performance positively and generates higher cumulative abnormal returns than large firms in the short run*.

1.3 Limitations and the structure of the thesis

A notable limitation of this study is its focus on Nordic deals, given the smaller number of large firms and the fact that large firms in this region are significantly smaller compared to those in larger markets such as the United States. The relatively small sample size limits the ability to comprehensively examine the factors behind acquirer success, as the low number of public target acquisitions, for example, hinders meaningful premium and market value-based synergy calculations. Additionally, the dataset is heavily weighted towards Swedish acquirers, which may introduce bias and limit the generalizability of the findings across the broader Nordic M&A landscape.

The requirement that deals must be completed may also introduce survivorship bias, potentially skewing the results. For example, Lu and Savor (2009) find that acquirers who fail to complete their deals underperform successful acquirers in the post-announcement period.

In addition, there are numerous ways to conduct an event study and estimate the relevant parameters. This thesis follows the estimation methods and event windows used by Moeller et al. (2004) in its event study approach. For instance, Obadire and Omotesho (2024) conclude that the mixed evidence on short-term abnormal returns in M&A research can be partially attributed to differences in estimation methods.

The structure of the thesis is as follows: The first chapter introduces the study, the second chapter discusses various aspects of M&As, the third chapter outlines the theoretical framework, the fourth chapter reviews the relevant literature, the fifth chapter presents the data and methodology, the sixth chapter reports and explains the results, and the seventh chapter provides a summary and conclusions.

2 Overview of M&A activity

There is a difference between the concepts of mergers and acquisitions. A merger is a deal where two or more companies form a completely new entity, whereas an acquisition is a situation where the acquirer buys over 50% of the target company's shares or the voting power (Junni & Teerikangas, 2019). However, as Junni and Teerikangas (2019) note, the terms are usually used "interchangeably"; therefore, this thesis will not separate M&As, as they are considered equals.

M&As are a company's way to seek growth through acquiring other companies or their assets. The idea is to make a more efficient company by using complementary resources, such as supply channels or cutting overlapping management levels. Usually, larger firm size increases the power over suppliers, through which the M&A could increase the bargaining power of the companies involved (Devos et al., 2009). The goal is that the firms are worth more together than separately (Hitt & Schijven, 2012). M&A can strengthen the company's competitive position of both the acquirer and the target by outperforming rivals (Kedia et al., 2011).

Also, if the M&A deal proves to be value-destroying, it is important for the companies to cut losses early and streamline focus or divest companies that are not consistent with the long-term plan. The loss-cutting has an irrational behavioral aspect because it can be personally hard to interrupt the M&A process or divest an unsuccessful division for the management team who has committed a lot of time and effort (Hitt & Schijven, 2012).

2.1 What drives mergers?

There are also motives for M&As beyond operational effectiveness. A defensive merger occurs when managers, aiming to avoid their own firm becoming an acquisition target, initiate acquisitions to increase the firm's size and thereby reduce its attractiveness to potential acquirers (Gorton et al., 2009). In some cases, management teams are replaced following acquisitions, and this behavior can lead to unsuccessful deals if managers prioritize self-preservation over rational, profit-maximizing decision-making.

In contrast, positioning mergers refer to strategies where firms engage in M&As to enhance their appeal as acquisition targets for larger or more prominent companies. Such strategies may also be driven by managerial exit objectives.

2.2 Horizontal, vertical, and conglomerate mergers

There are several ways to engage in M&As, and the chosen approach affects the sources of value generated by the deal (Kedia et al., 2011). A horizontal merger is a type of M&A in which a company acquires another operating in the same or a related industry, such as a direct competitor (Allen et al., 2011). Horizontal mergers increase the market share of the acquiring firm, which can reduce industry competition and enhance the acquirer's market power (Levin, 1990).

According to Kenton et al. (2022), a vertical merger is executed by acquiring a company positioned either upstream or downstream in the supply chain. However, Kedia et al. (2011) note that vertical M&As are not always straightforward to classify. They find that vertical M&As tend to perform better in markets with lower competition and where the merging firms already hold strong market positions. Nonetheless, vertical mergers have, on average, destroyed value since the late 1990s (Kedia et al., 2011).

Conglomerate M&As, as defined by Kenton and Berry-Johnson (2021), involve the acquisition of a company from a different industry or one operating in distinct product categories or markets. It may be more effective to acquire an already successful company than to establish a new division from scratch. In this context, the acquisition serves as a tool to diversify risk across different business areas.

The literature generally finds that M&As tend to destroy shareholder value on average (Moeller et al., 2004; Capron & Shen, 2007). This is particularly the case for acquisitions involving public targets, whereas deals involving private companies are generally seen as more profitable.

2.3 Tender offer and Hostile takeover

Acquisitions can be executed by negotiating with the company's management team regarding the transaction, or alternatively, through a tender offer, which, according to Hayes et al. (2023), is a proposal to purchase another company's shares at a specific price within a defined period. The offer is directed to the existing shareholders rather than conducted through negotiations with the management team. A tender offer is only possible for publicly listed targets (Rosen, 2006). The advantage of a tender offer is that the transaction is more straightforward to execute because of the nature of the offer. However, the premiums may be higher in comparison with negotiated deals, which would yield less positive returns (Fowler & Schmidt, 1988).

The market reaction to M&A announcements varies depending on the deal attitude, whether friendly or hostile. Hostile transactions refer to bids that are considered "takeovers" or non-friendly and can be difficult to classify. For example, different databases may have varying assessments of the deal attitudes. Generally, transactions can be characterized as hostile if the offer is rejected by the target's management or if the acquirer places the bid to exert pressure on the target's management through the existing shareholders (Schwert, 2000). Schwert (2000) finds that hostile offers, as defined by SDC, generate lower abnormal returns than friendly ones. Target companies may also have mechanisms to prevent hostile takeovers, such as poison pills, golden parachutes, or white knights (Hitt & Schijven, 2012). Stronger defense mechanisms can lead to better negotiation power for the target firm, which may explain the underperformance of hostile transactions, although the effect is minor (Subramanian, 2005).

3 Theoretical framework

3.1 The efficient markets hypothesis

The Efficient Markets Hypothesis (EMH) is a relevant theory for examining M&A announcement returns. According to Moeller et al. (2004) and Rosen (2006), if the stock market correctly evaluates the value of an M&A transaction, the market reaction should accurately reflect the true value of the merger for the company's shareholders and the price effect of the announcement should not reverse over a longer time period. According to Fama (1970), the EMH relies on the assumptions of perfect capital markets, such as no transaction costs, homogeneous investor expectations, and rational behavior. However, the theory does not argue that all investors are always rational but rather that the markets as a whole are rational (Ritter, 2003). These assumptions do not hold perfectly in the real world due to factors such as tax considerations, legislative restrictions on institutions, or different holding periods of investors.

Introduced by Fama (1970), EMH posits that stock markets are efficient and that stocks are always correctly priced. There are three levels of market efficiency. In strongly efficient markets, all available and latent information is reflected in prices. While random mispricing may occur, they are quickly exploited and corrected by arbitrageurs, making it impossible to consistently achieve abnormal returns at the same risk level. This implies that attempting to time the market is irrational, which contrasts with real-world behaviors in corporate acquisitions and other investment decisions (Fung et al., 2009; Gorton et al., 2009). In some cases, it can be difficult or costly to perform arbitrage due to regulations and restrictions, for example, the short selling of certain companies. This creates a barrier to perfect price formation because stock prices move according to supply and demand, as Moeller et al. (2004) note. The semi-strong form implies that publicly available information is incorporated into stock prices. The weak form implies that stock prices only reflect historical price information (Fama, 1970).

Around M&A announcements, the stock prices of both the acquirer and the target often experience significant fluctuations. However, the announcement effect may adjust over time if the evaluation is considered inaccurate, as the literature suggests (Hitt et al., 2009). Harp et al. (2021) argue that information inefficiency, such as lower analyst coverage of small firms, can affect short-term price formation in M&A announcements. Zhang et al. (2023) find that overvalued equity acquisitions of highly short-sold acquirers yield smaller M&A announcement returns. A high amount of insider trading around the M&A announcement also leads to higher abnormal returns. These results indicate the level of efficiency in price formation.

3.2 Behavioral finance

Behavioral Finance (BF) poses competing theories towards EMH. The theory has looser assumptions about investor behavior than EMH (Ritter, 2003). It provides explanations for the non-rational behavior of investors and the managers who engage in deals due to emotions, such as investor sentiment, assumptions, and the effects of heuristics on behavior. Behavioral finance explains that investors are boundedly rational, which implies that decisions are influenced by conditions, environment, and the need to make decisions as quickly as possible (Hitt & Schijven, 2012).

One behavioral bias that is highly relevant in the stock markets is overconfidence. According to Daniel et al. (1998), investors tend to overestimate their capabilities, for example, in interview skills in management meetings. They tend to emphasize privately acquired information and give less weight to public information. This behavior leads to distorted evaluations of investment opportunities. Daniel et al. (1998) also argue that investors tend to underestimate the possibility of being wrong.

CEOs can also be overconfident, which, according to Malmendier and Tate (2008), can lead to increased M&A activity compared to non-overconfident CEOs. On average, overconfident CEOs engage in value-destroying acquisitions. Malmendier and Tate (2008) argue that acquisitions tend to be worse if the company has substantial internal resources, i.e., cash, and overconfident CEOs are less likely to pursue deals that require external financing. Roll (1986) argues that managerial hubris is one of the reasons for value-destroying M&As, because managers overpay for targets. This occurs when their own valuation implies that the target's value is lower than its market value, yet they believe they can create excess value. Roll (1986) states that the hubris theory is consistent with the strong form of market efficiency.

In the M&A context, market reactions to M&A announcements can include overreactions or underreactions regarding the gains of the deal for the acquirer or target, as noted by Danbolt et al. (2015). The share prices of acquirers and targets tend to rise even a few days before the acquisition announcement and continue to increase shortly thereafter, which can lead to overvaluation (Reyes, 2018). The magnitude of the post-announcement price reaction depends particularly on retail investor attention, which increases with media coverage. On the other hand, increased attention improves efficient price formation (Reyes, 2018).

Hitt and Schijven (2012) argue that due to information asymmetry between managers and investors, investors are prone to anchor their evaluations of M&As to management estimates and place significant weight on the premiums paid in their investment decisions. Hitt and Schijven (2012) note that the premiums can be high because of the managers' own goals, which may conflict with those of shareholders, rather than reflecting the perception of deal synergies. However, according to Hitt and Schijven (2012), investors still seek information to validate these management evaluations and do not "*blindly follow the management's perception*".

3.3 Agency theory

M&As are closely related to the agency problem, as the increased size of a company may lead to higher compensation or increased power for its management. According to Chapter 1, Section 5 of the Finnish Companies Act, the primary purpose of a limited liability company is to generate profits for its shareholders, unless an alternative objective is specified in the corporate charter. Additionally, managers have a fiduciary duty to act in the best interests of shareholders (Rhodes-Kropf & Viswanathan, 2005).

Companies are managed by executives, and agency theory posits that these managers (agents) may have objectives that conflict with the interests of shareholders. Managers may seek to maximize their own earnings through decisions that benefit themselves at the expense of shareholders. For instance, they may focus on maximizing short-term profits to secure larger bonuses rather than prioritizing sustainable long-term value creation. Common motivations for such behavior include managerial hubris, overconfidence, and empire-building ambitions (Moeller et al., 2004).

According to Jensen (1986), compensation tends to increase as company size increases, which may incentivize managers to pursue M&As. Fu et al. (2013) expand on this argument by suggesting that CEO compensation can be a motivating factor behind overvalued equity acquisitions. Agency problems can be mitigated through mechanisms such as aligning executive compensation with share ownership and linking rewards to long-term company performance (Morck et al., 1990). However, empirical evidence from Bo et al. (2021) suggests that stock-based compensation programs do not significantly influence acquisition decisions. Agency problems are more prevalent in large firms than in small firms due to managerial overconfidence and perceived capabilities (Moeller et al., 2004; Zhao et al., 2019).

3.4 Payout policy, the free cashflow hypothesis, and the signaling hypothesis

The payout policy theory introduced by Modigliani and Miller (1961) can be seen as the foundation of Jensen's (1986) free cash flow hypothesis. The payout policy theory suggests that if a company lacks sufficiently profitable investment opportunities, those that could generate greater wealth than shareholders could achieve independently, the company should distribute profits to shareholders in the form of dividends, either as cash or through share repurchases.

When considering payout policy in light of the free cash flow hypothesis proposed by Jensen (1986), the hypothesis posits that managers are more inclined to invest excess cash in acquiring other companies rather than distributing it to shareholders, even when such investments may not be optimal for the company. Jensen (1986) defines excess cash as the amount remaining after a company has invested in all projects with a positive net present value.

Signaling theory is based on the information asymmetry between company managers and shareholders. The theory suggests that the market reacts to any information disclosed about the company, and such information is reflected in the stock price. Accordingly, the investors' reaction to M&A announcements depends on the motive behind the deal, due to differing risk levels across acquisition purposes, for example, revenue expansion may be less risky to carry out versus penetration into a new market, which is riskier (Aalbers et al., 2021). Hitt and Schijven (2012) also argue that investors seek to interpret signals about the potential benefits of M&A transactions through the premiums paid. Furthermore, Hitt and Schijven (2012) contend that stock-based payment in M&As signals management's perception of higher risk and uncertainty regarding synergy realization, as it transfers part of the risk to the shareholders of the target company.

3.5 The overvaluation hypothesis

The overvaluation hypothesis in the M&A context suggests that companies acquire relatively undervalued firms using their overvalued equity. This is a type of arbitrage in which rational managers exploit the inefficient pricing of irrational markets. The exploitation of irrational pricing of the stock yields positive returns for the acquirer in the short run, but in the longer term, such deals tend to result in negative outcomes

(Schleifer & Vishny, 2003). However, Dong et al. (2006) present contrasting evidence and find that this strategy can result in poor M&A performance. Fu et al. (2013) explain that the relative overvaluation advantage may dissipate if the exchange ratio of the stock swap is not fixed, as stock prices for both the target and the acquirer often fluctuate between the M&A announcement and the deal completion date. Such fluctuations can lead to overpayment, nullifying the benefits of overvaluation of the equity. Consistent with Dong et al. (2006), Fu et al. (2013) report negative post-merger operating performance and stock performance for overpaying acquirers.

In contrast, Savor and Lu (2009) find that, in the long term, firms that acquire companies using overvalued equity can generate positive shareholder value for the acquirer, albeit at the expense of the target's shareholders. Zhang et al. (2023) also find that overvalued equity acquisitions yield higher premiums and positive returns, but only in the short term. However, Vermaelen and Xu (2014) highlight the ambiguity surrounding why target managers accept payments in overvalued equity. This behavior may partially be explained by agency theory, as Dong et al. (2006) argue that target managers are more likely to accept such offers if they believe their own company is also overvalued, in order to capture personal benefits. Rhodes-Kropf and Viswanathan (2005) also explain this irrational decision by the target through synergy overestimation when markets are highly valued.

Lu and Savor’s (2009) findings are intuitive from the acquirer’s perspective, as overvalued equity is less costly to use than cash, which would be the alternative payment method. However, Vermaelen and Xu (2014) note that the choice of payment method depends not only on valuation but also on other factors, such as the bidder's capital structure. For instance, highly leveraged companies may prefer to pay with equity rather than debt to avoid future capital constraints (Dong et al., 2006).

3.6 The small firm effect

The small firm anomaly is a well-documented pattern in which stocks of smaller firms tend to outperform those of larger firms, even on a risk-adjusted basis. In this context, firm size is defined by market capitalization, which may pose challenges in bubble market environments. The anomaly has been attributed to factors such as liquidity issues or premiums, greater growth opportunities, and the higher risk associated with smaller firms. However, the literature provides mixed evidence regarding the persistence of the size effect (van Dijk, 2011; Amel-Zadeh, 2011). Amel-Zadeh (2011) finds that the size effect holds conditionally, depending on the momentum of the stock.

In terms of practical implications, Asness et al. (2018) argue that firm size, as a research topic, has several applications. It can be used to evaluate market efficiency, for instance, by examining how institutional investors face accessibility challenges with smaller firms. These accessibility challenges may contribute to price inefficiencies in small firm acquisitions, which can explain why the small firm acquisition announcements have been more profitable. Furthermore, Asness et al. (2018) note that firm size is a significant factor in asset pricing models. In practice, mutual funds and other investment strategies often focus on exploiting the size effect.

In the M&A context, Asness et al. (2018) suggest that smaller firms' higher capital costs can be a driving factor behind M&A activity. Although evidence about the size effect remains mixed, Hitt et al. (2009) note in their literature review that the firm size factor consistently exhibits a negative relationship with M&A performance across various studies, compared to other common explanatory variables. However, Hitt et al. (2009) also refer to King et al. (2008), who argue that the target firm's size is a critical factor in M&A returns. They emphasize that the acquired firm should be large enough to have a meaningful impact on the acquirer's performance.

4 Literature review

4.1 The firm size effect on the M&A performance

This thesis is based on Moeller et al. (2004), who investigate how firm size impacts acquisition performance in the U.S. market. Their findings show that abnormal announcement returns are 1,1 %, but the aggregate dollar-level loss is -25,2 million on average, which suggests that small firms tend to make more profitable acquisitions than larger firms, both in percentage and dollar terms. They note that large firms tend to disclose more adverse information than small firms. The results hold even when they control for different deal- and firm-specific characteristics. The size effect does not reverse over time, as measured by a calendar-time portfolio approach to evaluate post-announcement abnormal returns.

Gorton et al. (2009) study defensive and “positioning” mergers. They argue that these proactive (defensive and positioning) mergers lead to increasing merger activity within the industry. They find that small firms usually make more profitable acquisitions than larger firms because large firms have more resources and therefore tend to overpay for target firms. Högholm (2016) studies the size effect on M&A returns in the Finnish stock markets. He also finds a negative correlation between firm size and abnormal returns, but no statistically significant effect of the acquisition on benefiting shareholders. However, the results of Högholm (2016) should be interpreted with caution due to the small sample size of acquisitions (51) and because it considers only one acquirer.

Humphery-Jenner and Powell (2011) study the Australian stock market and find that the size effect exists in the short run, but in the longer term, large firms perform better. The same authors, Humphery-Jenner and Powell (2014), study the size effect in 45 different countries and find similar results that small firms make better acquisitions in countries with strong governance, but the effect is opposite in countries with weak governance. They find that large acquirer deals in weak governance countries are easier to implement and that the positive effect of larger firm acquisitions is greater when political connections are more important. This opposite effect is explained by market power and the easier approval of such deals. Zhao et al. (2019) also test whether political connections diminish the size effect, as found by Humphery-Jenner and Powell (2014), but they find no evidence of this in China.

Zhao et al. (2019) find consistent evidence that smaller acquirers create more shareholder value in announcement situations, also in the Chinese stock markets. However, their findings suggest that large acquirers can perform better in the long term because their business models are more scalable. Harp et al. (2021) find similar results: announcement returns for small firms are larger, but over a longer period, large firms tend to outperform significantly. They explain the performance difference by overly optimistic expectations about M&As, which adjust over time as additional information becomes available. As Moeller et al. (2004) note that large firms tend to publish more unfavorable information than small firms, Harp et al. (2021) similarly argue that small firms disclose less information. Notably, the long-term performance differences do not straightforwardly contradict the findings of Moeller et al. (2004), because while Moeller et al. (2004) measure performance based on stock performance, Zhao et al. (2019) assess performance through post-merger financial indicators. However, Harp et al. (2021) find long-term returns to be negative at both the operating and stock performance levels.

4.2 Premiums and payments' effect

It is typical that acquirers pay a premium to existing shareholders to entice them to sell their shares (Hitt et al., 2009). The acquisition is profitable if the price paid for the target is lower than the expected gains from the acquisition (Zhang et al., 2023). Antoniou et al. (2007) study how premiums paid affect the M&A performance in UK companies. Their results suggest that even when the acquirer pays high premiums for the company, it does not have a negative effect on M&A performance in the short or long run. They find a positive relationship between the bidding price and cumulative abnormal returns. The findings of Antoniou et al. (2007) are contradictory to those of Fung et al. (2009), where large acquisitions or large deal premiums are considered a reason for the underperformance of large firms relative to smaller firms.

On the other hand, Alexandridis et al. (2013) study M&As in the U.S. markets. They examine the relationship between target firm size and the premiums paid. Alexandridis et al. (2013) argue that premiums are lower in larger deals than in smaller ones. The reasons they provide are that the larger deals have more complex post-merger integration processes, and the high value of the deal itself justifies the lower premiums. Consistent with Alexandridis et al. (2013), neither Bhagat et al. (2005) find evidence that acquirer firms overpay.

Moeller et al. (2004) note that there is no universal method to define the premium, and they find that the results concerning the effect of premiums are sensitive to the calculation method, i.e., whether it is calculated from the terminal price, initial offer price, or the sum of payment methods. This finding emphasizes the indicative nature of the results and the need for cautious interpretation.

The literature recognizes the effect of different payment methods on M&A performance. Deals are typically paid purely with cash, equity, or a mix of both (Omotesho & Obadire, 2024). Dong et al. (2006) argue that cash acquisitions are related to the acquirers' perception of the target being undervalued. This argument is supported by Moeller et al. (2004), who find that, in dollar terms, cash-paid deals perform better in announcement situations compared to equity-paid deals, though the percentage-based result is the opposite. Dong et al. (2006) find similar results but explain that highly valued targets are more often acquired with equity, and their announcement returns are generally lower. Similarly, Rhodes-Kropf and Viswanathan (2005) argue that the better performance is not explained by the payment method itself, but rather by the fact that cash payments are typically made in undervalued markets, which increases profit opportunities.

4.3 Synergy benefits

Synergy gains can be defined as the benefits that merged firms achieve through their combination. These gains can materialize through financial channels, such as lower capital costs, or operational channels, such as cost savings or increased revenues (Aalbers et al., 2021). The underlying idea of synergy gains is that the combined entity should be more valuable than the individual firms operating separately. Devos et al. (2009) find that synergy benefits stem primarily from improved resource utilization, rather than tax savings or economies of scale. Moeller et al. (2004) observe that small firms generally realize larger synergy gains than large firms. While synergy gains are positive for both groups in percentage terms, at the aggregate level, measured in dollars, synergy gains are negative, indicating that M&As, in the aggregate, tend to destroy value.

Rozen-Bakher (2017) studies the possible reasons behind unsuccessful M&As through the trade-off between synergy gains and efficiency. Rozen-Bakher (2017) argues that although firms may achieve revenue expansion, it may be done at the cost of profitability when companies increase their workforce. This trade-off can be explained by the literature review by Bauer and Friesl (2022), which reveals that there are variations in evaluation techniques and methods used to proxy the different channels of synergy benefits, despite the assumption that synergy evaluation is an objective process in the company. Additionally, the evaluation of synergy gains by investors also varies. Danbolt et al. (2015) argue that investor sentiment affects the perceived value of synergy gains, for example, they argue that positive sentiment leads to overestimation, while negative sentiment results in more pessimistic evaluations. These perceptions are reflected in stock prices at the time of the M&A announcement.

Moreover, the anticipated synergy benefits do not always materialize, and the ease and success of realizing these gains vary depending on the synergy channel (Devos et al., 2009). Bauer and Friesl (2022) also refer to Haspeslagh and Jemison's (1991) book, where the authors argue that while the financial benefits of a deal may be realized quickly, poor strategic fit between the acquirer and the target can lead to weak long-term performance. Similar findings are presented by Bauer and Matzler (2013), who conclude that strategic complementarity and cultural fit are positively related to M&A success. However, they also find that cultural fit, the speed, and the degree of integration can negatively impact outcomes. Rozen-Bakher (2017) argues that some acquirers grow the company at the cost of profitability.

These findings on strategic fit may explain the results of Moeller et al. (2004) and Jaffe et al. (2015), who report that subsidiary acquisitions are the most profitable in terms of the public status's effect on the abnormal announcement returns. However, Jaffe et al. (2015) find no evidence of greater synergies in subsidiary deals when using a market valuation-based method for evaluating synergies.

4.4 Explaining the M&A Performance

Tuch and O'Sullivan (2007) study the literature related to the effect of acquisition on firm performance. They find that the returns of M&As for shareholders are insignificant in the short run and negative over a longer time period. Antoniou et al. (2007) find supportive evidence, and their finding is that M&A returns are positive in the short term, but the long-term results show that these gains do not materialize. Bo et al. (2021) study the reasons for M&A performance variation. They highlight that performance can be measured in financial metrics or stock performance, which can differentiate the results between studies.

Kellner (2024) studies how M&A announcements affect the target company's stock and the acquirer company's stock in the European Union region. The result is that the target company's stock shows significant positive development after the announcement, whereas the acquirer experiences little positive effect. Kellner's (2024) literature review reveals that European M&As generally yield low returns, about -0,2–1% CARs for acquirers, but significantly higher, about 9–12% CARs for target companies. They find that mergers provide the highest returns. This result is opposite to Bhagat et al. (2005) and Tuch and O'Sullivan (2007), because their results do not support the hypothesis that acquirer firms overpay. According to Moeller et al. (2004), if the acquirer "overpays", the wealth transfers from acquirer shareholders to target company shareholders and does not destroy value.

Overall, studies explain M&A over- or underperformance by hostile takeovers, payment method (Fung et al. 2009), acquisition of large companies, target's relative size (Tuch & O'Sullivan, 2007; Bo et al. 2021), M&A integration, managerial hubris and overpayment (Moeller et al. 2004), misaligned incentives, empire building goals, and differences in corporate governance matters. There is no consensus on whether the positive results hold in the longer term.

4.5 Investor sentiment in M&A announcements

Rosen (2006) studies investor sentiment and M&A momentum and finds that M&A announcement reactions are affected by recent M&As. If recent M&As have yielded positive returns, subsequent M&As are more likely to yield similar results. The reaction is more positive in an active market environment, but the effect is reversed in the post-announcement period, which implies that the reaction is driven by sentiment and overoptimism of the investors (Rosen, 2006).

Similarly, Danbolt et al. (2015) study investor sentiment's effect on M&A announcements by using social media as a source. They find that sentiment has a positive relation to the abnormal returns of the bidder in M&A announcements. Danbolt et al. (2015) argue that in a positive sentiment environment, investors are more optimistic towards the risks and synergy benefits, and the result is opposite in a negative sentiment environment. The results indicate that there is an overreaction to the events and that returns tend to revert to normal after the announcement. Danbolt et al. (2015) also control for the effect of ownership and find that sentiment's effect is stronger in companies where ownership is not concentrated, for example, in acquirers where there is also a large number of retail investors involved. Also, public target deals are more affected by sentiment due to higher media attention on the event and its effect on investor sentiment.

5 Methodology and data

This chapter introduces and describes the methods and the dataset. The methodology for the thesis follows Moeller et al. (2004) and Hitt and Schijven (2012) in regression models, which take into account characteristics of the deals and the firms.

Data for acquisitions is retrieved from the LSEG Workspace (formerly Refinitiv / Thomson Reuters). The initial sample includes 20202 observations, which include share buybacks, exchange offers, private acquirers, government acquirers, and investor acquirers, which are excluded, in addition to other requirements described below, to concentrate only on typical M&As.

5.1 Data preprocessing

Due to some outliers in this sample, following Bodt et al. (2022), all financial ratios and, as in Humphery-Jenner and Powell (2011), CARs, ECARs, and BHARs are winsorized at the 1% and 99% levels as a corrective step to reduce biases in the results. This thesis requires the most important variables to have observations other than zero or NaN, in order to reduce the subjectivity of the author's own choices in handling missing values. However, a few obvious faulty market values are manually checked, and seven acquisitions are excluded from the sample, which do not significantly affect the results. The cleaned variables are: "Deal Value", to determine the size of the deal; "Market Value at the year-end before the deal", for classifying firm size; "Acquiror Total Assets Last 12 Months" and "Acquiror Common Equity Last 12 Months", for Tobin's Q calculations; "Acquiror Net Cash from Operating Activities" and "Acquiror ROA" to measure fundamental performance; and "Percentage of Shares Owned after Transaction", to ensure that the acquirer ends up owning all the shares of the target.

To include the acquirer in the sample, the thesis requires that stock return index data be available to conduct CAR regressions. The dataset also includes acquirers that announced more than one acquisition during the time period, but deals announced on the same day by the same acquirer are excluded to avoid overlapping returns on the same day, as in Kontonikas et al. (2023). If the gross change ($RI_{t+1} - RI_{t-1}$) in stock return index during the event window is zero, the row is deleted to reduce possible biases in the stock return data. If the M&A announcement day is a non-trading day, this thesis uses the next trading day after the announcement date, and the days -1 and +1 around the announcement are considered accordingly.

As in Moeller et al. (2004), this thesis uses Brown and Warner's (1985) standard event study method in abnormal return calculations. The thesis includes both mergers and acquisitions in the sample. Bhagat et al. (2005) argue that the benefit of short-term reaction analysis to the announcement event, compared to long-term analysis, is that there is a smaller risk of other information influencing the pure effect of the M&A on firm performance, although a few-day event window may be too narrow to fully capture the M&A's effect on the acquirer. On the other hand, Moeller et al. (2004) find that markets are quite efficient in evaluating returns in the short term. Additionally, a benefit of CAR calculations using the event study method is that the results are comparable across studies (Hitt & Schijven, 2012).

The thesis includes only completed deals. M&A deals are required to be equal to or greater than one million euros and the deal value is required to be equal to or greater to 1% of the acquirer firm size so that the deals can be considered meaningful, as suggested by Moeller et al. (2004) and Hitt et al. (2009). This thesis includes deals where the acquiring firm owns less than 50% of the company or the voting power before the deal. It considers deals in which the acquirer buys all or the remaining shares of the target. Deals can be mergers or acquisitions of public, private, or subsidiary companies, as the nature of the acquired assets is similar regardless of the target's public status (Moeller et al., 2004). To capture the announcement's effect on the acquirer's stock, the acquirer must be, or have been (if delisted), a public company. The acquirer must be from a Nordic country, but the target company may be located outside the Nordic region.

The success of deals may depend on firm- and deal-specific characteristics, which are taken into account in the regression models. The variables and return indices are measured in euros. For variables that are not retrieved in euros from the data system, the currencies Swedish krona, Norwegian krone, Icelandic krona, and Danish krone are converted to euros using the year-end average exchange rate before the M&A announcement. The exchange rate is calculated as the average of December's exchange rates for the relevant years. The exchange rates are retrieved from Investing.com and ECB.eu.

5.2 Complete dataset

The complete dataset covers a total of 824 Nordic mergers or acquisitions from January 2014 to December 2023. The period is important to study because it covers, for example, the zero-interest rate environment, the rising interest rate environment, and the COVID-19 pandemic. Returns are calculated from total return indices, which include, i.e., paid dividends and stock repurchases, for Nordic companies and major Nordic indices from the beginning of 2013 to 2024. The Nasdaq OMX Nordic 120 is used as the benchmark index. The benchmark index includes companies from Finland, Sweden, and Denmark, but reflects the Nordic markets effectively. The benchmark index and the return data include only trading days. Figure 1 shows the distribution of the M&As between the countries. About 64% of the sample firms are from Sweden, 14% are from Finland, 13% are from Norway, 8% of the companies are from Denmark, and the Icelandic firm proportion is approximately 1%.

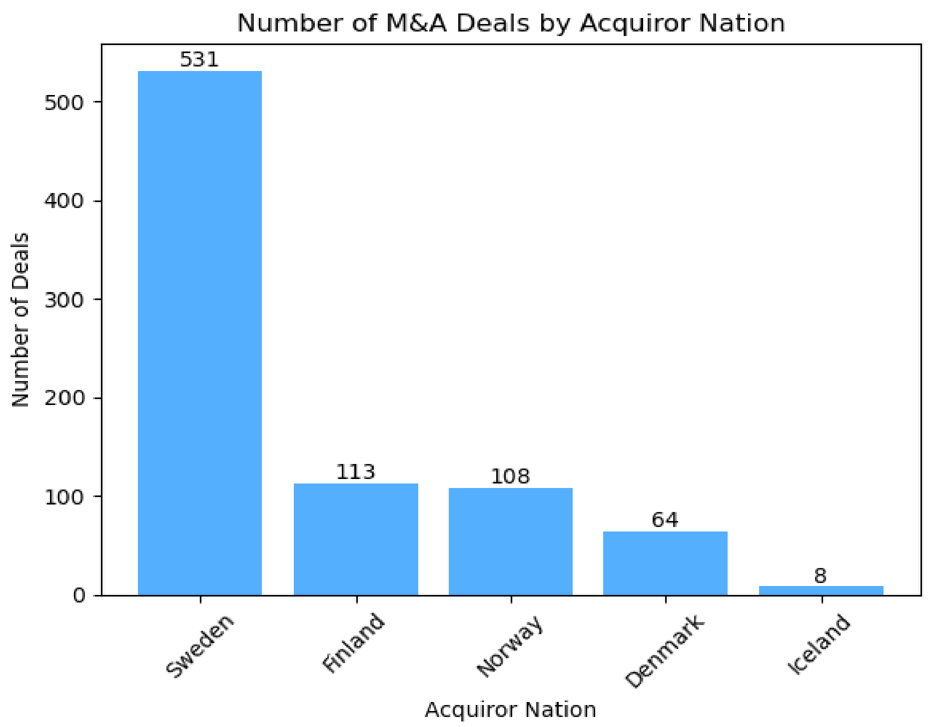

Fig 1 The distribution of the acquisitions by country.

5.3 Methodology

The purpose of the study is to find out whether firm size has an effect on M&A performance. The acquirer's market value is defined as the year-end market capitalization prior to the deal announcement. Following Moeller et al. (2004), adjusting to the dataset used in this thesis, small firms are defined to have market capitalization below or equal to the 25th percentile, and large firms have higher market capitalization than the 25th percentile of Nordic stocks at the end of the year prior to the M&A announcement. Due to the dataset used, Nordic stock market value data is available as the year-end market capitalization. Using the acquirer's year-end value for the year of acquisition would bias the measure of acquirer size. Therefore, the nature of the dataset results in a slightly different definition from Moeller et al. (2004), who use the NYSE market capitalizations from the announcement year. Table 1 shows the yearly deal amounts sorted by the acquirer size.

Table 1 The number of acquisitions by year sorted by acquirer size.
This sample includes 824 completed M&A transactions of the public, private, and subsidiary companies from the years 2014 to 2024, whose deal value is over €1 million and the deal is at least 1% of the firm market value. The firm market value is defined following Moeller et al. (2004), and is calculated as total book assets minus the book value of equity plus the acquirer's market capitalization at the end of the year before the deal announcement, where the book value of equity is from the latest earnings announcement. Small (large) firms are defined as those with market capitalization equal to or less (greater) than the 25th percentile of Nordic stocks at the end of the year before the M&A announcement.

Announcement	**Acquirer Size**		
Year	**Large**	**Small**	**Total**
2014	29	9	38
2015	44	14	58
2016	58	17	75
2017	48	26	74
2018	67	25	92
2019	66	27	93
2020	55	37	92
2021	99	55	154
2022	56	33	89
2023	41	18	59
Total	563	261	824

The size classification of acquirers, based on market capitalization, results in a sample in which 563 (68%) of the M&A deals were executed by large acquirers and 261 (32%) by small acquirers. The composition of this sample supports the findings of Fung et al. (2009), who argue that CEOs make acquisitions based on market valuations. The year 2021 has the highest number of M&A observations (154), and valuations were high. The time period from 2018 to 2022 appears to be the most active; for example, COVID-19's effect on the business environment increased the need for firms to improve their operations and make acquisitions. After the M&A peak year of 2021, interest rates increased at the beginning of 2022, which lowered company valuations and may explain the smaller number of M&As in light of Fung et al. (2009) argument.

5.3.1 Return calculation and normal return estimation

Returns are calculated using daily logarithmic returns to include the compounding effect. The logarithmic returns are calculated with the formula:

$$R_{it} = LN(\frac{RI_{t+1}}{RI_t}), \qquad (1)$$

Where *LN* is the natural logarithm, RI_{t+1} is return index of the security *i* of day *t+1* and RI_t is the return index of the security *i* of day t. The expected rate of return is calculated following Moeller et al. (2004) using the Market model formula:

$$E(R_i) = \alpha_i + \beta_i R_m + \epsilon_i, \qquad (2)$$

where $E(R_i)$ is the expected return of security *i* at time t. α is the intercept term for security *i,* β is the beta of security *i* from the estimation window, R_m is the return of the benchmark index and ϵ is the error term for security *i*. The parameters for the market model are estimated over a 200-day estimation window, from trading days -205 to -6 before the M&A announcement.

5.3.2 Abnormal return calculations

Abnormal returns are calculated by subtracting the expected rate of return of the acquirer's stock, estimated using the market model, from the actual return. The result is the abnormal return relative to the systematic risk.

$$AR_{it} = R_{it} - E(R_{it,}), \qquad (3)$$

Where AR_{it} is the abnormal return for stock *i* at time t, R_{it} is the actual return of stock *i* at time t, and $E(R_{it})$ is the expected rate of return of stock *i* at time t.

AAR_{it} is an average abnormal return for stock *i* from the event window, and it is the average abnormal return on day *t* of M&A during the event window.

$$AAR_{i=} \frac{1}{N} \sum_{t-1}^{t+1} AR_{it}\,, \qquad (4)$$

Cumulative abnormal announcement returns (CARs) are calculated for a three-day event window (-1, 1), following Moeller et al. (2004) and Jaffe et al. (2015), as the sum of abnormal returns defined using the market model. The return data includes only trading days, which means the event window corresponds to trading days (-1, 1).

$$CAR_{it} = \sum_{t-1}^{t+1} AR_{it}\,, \qquad (5)$$

The statistical significance is calculated by using a standard *t*-test. The test determines whether the abnormal returns are significantly different from zero under the null hypothesis.

$$T - stat = \frac{\overline{CAR}}{S(CAR)/\sqrt{N}.}, \qquad (6)$$

$\overline{CAR}$ denotes the sample-level mean CAR of the group of interest. It is divided by *S(CAR),* which is the standard deviation of the CARs which is divided by the square root of the number of observations in the sample.

After calculating percentage CARs, the thesis examines the economic significance of the M&As by calculating ECAR as in Humphery-Jenner and Powell (2011). ECAR represents euro cumulative abnormal returns in millions. ECAR is calculated by multiplying the acquirer's market value four days before the M&A announcement by the CAR (-1, 1). ECAR is inflation-adjusted based on 2024 euros to make euros comparable across the years (Humphery-Jenner & Powell, 2011). Inflation adjustment is performed by multiplying the deal value by the inflation multiplier. The inflation multiplier is calculated as the product of the year-end inflation rates from the end of the year x to 2024. Because sample firms are from different countries, there is no universal inflation. As an inflation measure, this thesis uses "Harmonized Indices of Consumer Prices (HICP)", which reflects the average inflation level in the European region, retrieved from ECB.eu. The ECAR measure provides insight into the general deal profitability in euros and shows the euro amount of the profits at the aggregate level.

$$ECAR = Acq.mkt.value_{t-4} * CAR_i * \text{Inflation multiplier.}, \qquad (7)$$

According to Moeller et al. (2004), the returns of larger deals should be given more weight in the analysis than those of smaller deals due to their greater economic significance. Following Moeller et al. (2004) and Humphery-Jenner and Powell (2011), this thesis uses VWCAR(–1, 1), which is the value-weighted cumulative abnormal return. It is calculated as described in Humphery-Jenner and Powell (2011), where the sum of ECARs is divided by the sum of the market values of the acquirers within the subset of large or small firms four days before the deal annoncement.

$$VWCAR = \frac{\sum ECAR}{\sum Acq.mkt\ value_{t-4}}, \qquad (8)$$

5.4 The cross-sectional regression methods

The cross-sectional regression analysis is conducted separately using different key characteristics, as in Moeller et al. (2004). The thesis uses the Ordinary Least Squares (OLS) model to run regressions for all firms, and separately for small and large firms, to evaluate the differences between the groups and how size might affect M&A returns.

The dependent variable is the three-day cumulative abnormal return. The variables Private, Public, Small, Conglomerate, Tender Offer, Pure Equity Deals, and Pure Cash Deals are dummy variables that take the value one (1) if the criterion is met and zero (0) otherwise. The control variables are defined below.

$$CAR_{it} = \alpha + \beta_1 Private + \beta_2 Public + \beta_3 Small + \beta_4 Conglomerate + \beta_5 ROA + \beta_6 TenderOffer + \beta_7 PureEquity + \beta_8 PureCash + \beta_9\, Relative\ size + \beta_{10} Tobin's\ Q + \beta_{11} Debt/assets_{mkt.} + \beta_{12} \text{OCF}/Assets_{mkt.} + \epsilon, \quad (9)$$

$$CAR_{it} = \alpha + \beta_1 Private + \beta_2 Public + \beta_3 \ln equity(market) + \beta_4 Conglomerate + \beta_5 ROA + \beta_6 TenderOffer + \beta_7 PureEquity + \beta_8 PureCash + \beta_9\, Relative\ size + \beta_{10} Tobin's\ Q + \beta_{11} Debt/assets_{mkt.} + \beta_{12}\ \text{OCF}/\ Assets_{mkt.} + \epsilon, \quad (10)$$

$$CAR_{it} = \alpha + \beta_1 Private + \beta_2 Public + \beta_3 \ln assets\ (book) + \beta_4 Conglomerate + \beta_5 ROA + \beta_6 TenderOffer + \beta_7 PureEquity + \beta_8 PureCash + \beta_9 Relative\ size + \beta_{10} Tobin's\ Q + \beta_{11} Debt/assets_{mkt.} + \beta_{12} \text{OCF}/Assets_{mkt.} + \epsilon, \quad (11)$$

$$CAR_{it}(Small) = \alpha + \beta_1 Private + \beta_2 Public + \beta_3 Conglomerate + \beta_4 ROA + \beta_5 TenderOffer + \beta_6 PureEquity + \beta_7 PureCash + \beta_8\, Relative\ size + \beta_9 Tobin's\ Q + \beta_{10} Debt/assets_{mkt.} + \beta_{11} \text{OCF}/Assets_{mkt.} + \epsilon, \quad (12)$$

$$CAR_{it}(Large) = \alpha + \beta_1 Private + \beta_2 Public + \beta_3 Conglomerate + \beta_4 ROA + \beta_5 TenderOffer + \beta_6 PureEquity + \beta_7 PureCash + \beta_8\, Relative\ size + \beta_9 Tobin's\ Q + \beta_{10} Debt/assets_{mkt.} + \beta_{11} \text{OCF}/Assets_{mkt.} + \epsilon. \quad (13)$$

5.4.1 Deal characteristics

In the regression analysis, the thesis uses several control variables to examine whether the common explanatory factors explain the cumulative abnormal returns.

Relative size variable measures how significant the deal is for the acquirer, which means that the larger the investment, the riskier and more impactful it is likely to be for the firm's performance (Asquith et al., 1983; Rosen, 2006; Bo et al., 2021). Similarly, Asquith et al. (1983) and Rosen (2006) find that acquirer returns increase as the size of the target grows relative to the acquirer, which contradicts Malmendier et al. (2018), who argue that larger deals tend to be more costly and less profitable. Schwert (2000) also notes that the target firm may have increased bargaining power when it is large relative to the acquirer. However, Malmendier et al. (2018) note that the relationship between relative size and profitability is not straightforward because for example firm development stage may influence acquisitions of relatively larger or smaller targets.

The literature (Moeller et al., 2004; Dong et al., 2006; Vermaelen & Xu, 2014) recognizes the effect of payment on M&A performance. The cash payment has the advantage of liquidity in comparison with equity payment, and, cash payments do not dilute the existing shareholders' ownership (Omotesho & Obadire, 2024). On the other hand, cash payment can be more expensive if the capital structure is not feasible and the loans would be expensive (Vermaelen & Xu, 2014; Obadire & Omotesho, 2024). Allen et al. (2011) point out that, unlike in stock payment, the cost of the cash payment does not depend on the stock market fluctuations, as also Fu et al. (2013) noted.

Tender offer is used following Moeller et al. (2004), who find that tender offers yield higher returns than conglomerate deals, and the coefficient is positive. Humphery-Jenner and Powell (2014) also find that tender offers have a positive effect on abnormal returns.

The conglomerate deal variable measures the business diversification in terms of the industries in which the companies operate. The use of the conglomerate variable to explain the returns is justified by Morck et al. (1990), who find that public target conglomerate deals have lower abnormal returns than public non-conglomerate deals. Devos et al. (2009) further highlight that conglomerate acquisitions tend to be motivated by defensive or empire-building objectives rather than efficiency gains, which would explain the differences in returns between conglomerate and non-conglomerate deals.

This thesis uses the target's public status variable to capture the effect of the organizational form. The organizational form of the target company can affect acquirer returns, for example, due to liquidity differences, which result in lower valuations of unlisted targets, as Officer (2007) notes. Differences in information availability between public and private targets also play a role, as Capron and Shen (2007) note that the private targets do not release as large amount of information as public firms, but also the information found privately may allow value-creating opportunities. Capron and Shen (2007) find that acquisitions of private targets are more profitable than public target acquisitions, though the result depends on controlling for the endogeneity bias. Also, Jaffe et al. (2015) find that subsidiary acquisitions are the most profitable but argue that the reasons behind the relative success are unclear.

5.4.2 Firm characteristics

This thesis uses the relative cash amount to capture the differences between the large and small firms. Jaffe et al. (2015) find that cash holdings have a negative effect on the announcement returns. The firm market value is an auxiliary variable used to calculate other variables.

Maloney et al. (1993) find that firms with high leverage make more profitable acquisitions and argue that the debt ratio disciplines managerial actions, whereas the findings of Humphery-Jenner and Powell (2014) suggest that high leverage yields negative returns due to higher risk. Leverage is measured using the variables debt/the firm market value and debt/acquirer total assets.

Morck et al. (1990) find that high ROA acquirers tend to make more profitable acquisitions. Following Morck et al. (1990), this thesis uses the acquirer's Return on

Assets (ROA) at the year-end prior to the acquisition announcement to control for M&A performance. Hitt and Schijven (2012) find that ROA has a statistically significant negative effect on the CARs in a few of their models, whereas Humphery-Jenner and Powell (2014) enrich the analysis by including governance quality-related factors and find that ROA has a statistically significant positive effect on the CARs, which they explain by high quality manager's ability to perform well. Also, OCF/the firm market value (assets market) is used in Moeller et al. (2004), Harp et al. (2021), and Ma and Li (2025) to examine an additional measure of acquirer performance.

Tobin's Q is used as a proxy for firm value. Lang et al. (1989) find that high Tobin's Q acquirers make more profitable acquisitions than the low Q bidders. The effect is stronger when the target has a low Tobin's Q, as it may indicate poor management, allowing the acquirer to improve the target's operations Lang et al. (1989).

5.5 Buy and hold abnormal returns (BHAR)

The short-term event study assumes that the markets are efficient and account for the value of the M&A immediately (Moeller et al. 2004; Rosen, 2006). To examine whether the long-term effect of firm size is confirmed, this thesis tests the long-term performance of the acquirers. As mentioned, it is not straightforward to draw conclusions about long-term performance of M&As by calculating abnormal returns (Lyon et al., 1999), due to events occurring after the M&As, such as some of the acquirers may be involved in a new acquisition during the post-announcement period, as Rosen (2006) note. The result is, however, indicative and can either confirm the findings in the long term or reject the persistence of the results over a longer period.

Rosen (2006) argues that the Buy and Hold abnormal return (BHAR) method is efficient in hypothesis testing but may lead to false null hypothesis rejections, which imply Type 1 error as suggested by Barber and Lyon (1997). To test whether the small firms overperform large firms over a longer time period, this thesis follows Lyon (1999) and uses BHAR calculations.

BHARs are calculated over the period of (0, 12), (0, 24), and (0, 36) months relative to the announcement month. To be included in the BHAR group, the acquirer is required to have data for the full BHAR period to reduce biased long-term results.

For the calculations, this thesis uses monthly return index data from the LSEG database, which includes share repurchases and dividends paid. Returns are calculated as simple returns with the formula $(RI_1/RI_0) - 1$.

As in the studies by Rosen (2006) and Ma and Li (2025), and also due to the nature of this thesis, i.e., the interest is in the size effect, the market index OMXN120 is used as a benchmark instead of the book-to-market and size-based matched portfolio method. The use of a market index as a benchmark may lead to biased results in long-run event studies because, according to Barber and Lyon (1997), market indices are subject to new listing bias, i.e., companies are added and removed from the index, which makes the index composition change in different times during the calculation period; Rebalancing bias, which means that the equally weighted indices are periodically rebalanced whereas matched portfolio approach reflect real-time balances. Skewness bias, i.e., stock market returns are generally positively skewed in the long run.

The BHAR is calculated by subtracting the buy-and-hold return of the benchmark from the buy-and-hold return of the acquirer.

$$BHAR_{i,t} = \prod\left(1 + R_{i,t}\right) - \prod\left(1 + R_{m,t}\right), \qquad (14)$$

Where $R_{i,t}$ is the buy-and-hold return over the time period (0, t) and $R_{m,t}$ is the buy-and-hold return of the market index over the same period.

The statistical significance for BHARs is calculated based on the standard t-statistic, which is calculated following Lyon (1999).

$$t - stat_{BHAR} = \frac{\overline{AR}}{(\overline{AR})/\sqrt{N}.}, \qquad (15)$$

Where $\overline{AR}$ is average abnormal return over time period, $\sigma(\overline{AR})$ is the standard deviation of the abnormal returns and $\sqrt{N}$ is the square root of the number of observations in the sample of interest.

6 Empirical findings

Table 2 shows the descriptive statistics and the differences between large and small acquirers and their deal characteristics.

Table 2 Deal and acquirer characteristics sorted by acquirer size.
This sample includes 824 completed M&A transactions of the public, private, and subsidiary companies from the years 2014 to 2024, whose deal value is over €1 million and the deal is at least 1% of the firm market value. The firm market value is defined following Moeller et al. (2004), and is calculated as total book assets minus the book value of equity plus the acquirer's market capitalization at the end of the year prior to the deal announcement, where the book value of equity is from the latest earnings announcement. Small (large) firms are defined as those with market capitalization equal to or less (greater) than the 25th percentile of Nordic stocks at the end of the year prior to the M&A announcement. Deal value (DV) is defined as the euro value of the deal, including amounts of cash and equity payment, excluding fees and expenses. Relative size is defined following Moeller et al. (2004) as "deal value" divided by the "equity market capitalization" of the acquirer. The days to completion variable is calculated as the difference between the announcement day and the day of the completion of the deal, as in Moeller et al. (2004). Conglomerate deals in this study are defined as deals where the acquirer and target company have different "Primary SIC" industry classifications. A tender offer is a formal offer to acquire a target company's shares directly from its shareholders, usually subject to requirements to purchase a certain minimum number of shares. Pure cash (Pure equity) deals are paid only with cash (equity). Following Moeller et al. (2004), the variable cash-to-assets (book) is defined as cash (cash + marketable securities) divided by the book value of assets, where the book value of assets is the acquirer's total assets from the latest earnings release. Public target is an exchange-listed company. A private target is a company that is not listed on the stock exchange. A subsidiary target is a business unit or division of another company. ROA is return on assets and is defined differently for the industrials, banks, insurance companies, the numerator for all groups is (net income + interest expense on debt – interest capitalized) * (1-tax rate). The denominator for industrials is the average of current and last year's total assets; for banks, it is the average of total assets minus customer liabilities on acceptances; for insurance companies, policyholders' surplus, and for other financial companies, the average of total assets minus custody securities. The debt is calculated as in Moeller et al. (2004), total liabilities minus common equity minus preferred ordinary shares. Tobin's Q is the firm market value divided by total book assets, as in Moeller et al. (2004). In this sample, the operating cash flow (OCF) is defined as cash inflow or outflow calculated as net income plus adjustments such as depreciation and amortization, changes in accounts receivable, inventories, accounts payable, and deferred revenues. Book-to-market is calculated as the book value of equity divided by the market capitalization of the acquirer. Median is denoted in square brackets below the variable. The non-ratio numerical values are denoted in millions. The significance test of *p*-value is conducted using a standard *t*-test for the equality of means between small and large firms, assuming unequal variances. The statistical significance of differences between medians is tested with the Mann-Whitney U-test. Following Moeller et al. (2004), superscripts a, b, and c denote the statistical significance at the 1%, 5%, and 10% level, respectively.

	Large	**Small**	**All**
Panel A: Deal Characteristics			

Deal Value (DV)	267,34[a]	21,47[a]	189,46[a]
	[51,77][a]	[5,91][a]	[26,66][a]
DV/assets	0,3[a]	1,41[a]	0,65[a]
	[0,11][a]	[0,25][a]	[0,14][a]
Relative Size	0,19[a]	1,13[a]	0,49[a]
	[0,08][a]	[0,23][a]	[0,11][a]
Days to completion	55,5[a]	42,46[a]	51,37[a]
	[30,0]	[28,0]	[29,0]
Conglomerate deals (%)	70,87 %	72,41 %	71,36 %
Tender Offer Deals (%)	2,84 %	1,15 %	2,31 %
Pure Cash Deals (%)	23,09 %	3,07 %	16,75 %
Pure Equity Deals (%)	43,52 %	39,08 %	42,11 %
Public Target	6,22 %	2,3 %	4,98 %
Private Target	44,58 %	73,56 %	53,76 %
Subsidiary Target	49,2 %	24,14 %	41,26 %
Panel B: Acquirer Characteristics	**Large**	**Small**	**All**
Acquirer Total Assets	2031,16[a]	40,81[a]	1400,57[a]
	[481,18][a]	[26,11][a]	[176,21][a]
Acquiror ROA	1,63[a]	-0,88[a]	0,84[a]
	[0,84][a]	[0,32][a]	[0,72][a]
Cash / Acquirer Total Assets	0,13[a]	0,23[a]	0,16[a]
	[0,08][a]	[0,16][a]	[0,09][a]
Acquiror Market Value	2207,74[a]	35,75[a]	1519,77[a]
	[586,26][a]	[31,84][a]	[243,44][a]
Debt/Total Assets	0,52	0,51	0,52
	[0,55]	[0,53]	[0,54]
Debt/assets (market)	0,32	0,33	0,32
	[0,31]	[0,32]	[0,31]
Tobin's Q	2,58	2,41	2,53
	[1,68]	[1,6]	[1,64]
OCF/assets (market)	0,04[a]	-0,01[a]	0,03[a]
	[0,04][a]	[0,02][a]	[0,04][a]
Book-to-market	0,46[c]	0,52[c]	0,48[c]
	[0,38]	[0,43]	[0,39]

By following Moeller et al. (2004), the superscripts a, b, and c show whether the characteristics are significantly different between small and large firms. The differences in deal and firm characteristics help to understand the differences between small and large firms in M&A performance.

DVs are not winsorized, and DVs between large and small firms differ significantly, with small firms making acquisitions averaging €21,47 million, while large firms' deals average €272 million. Medians for small and large firms, respectively, €5,91 million and €51,77 million, are low in comparison with average DVs, which indicate variation and the presence of large deals in both groups. In this sample, large deals are about 12,45 times larger than small deals. Compared to the Moeller et al. (2004) study, the large deals are about 15,6 times larger than the smaller deals.

However, the deal values of small firms are larger in relation to their assets and differ significantly at both the average and median levels. For small firms, the average deal value-to-assets is 141% of whereas for large firms, the corresponding ratio is only 30%. The median deal value-to-assets ratios are 11% for large firms and 25% for small firms, respectively, indicating greater variation, particularly within the small firm sample. The difference in the relative size of the deal is further supported by the variable relative size. These differences in mean and median values can partly explain the substantial difference in the returns between large and small firms, as Asquith et al. (1983) find.

Table 2 shows that small firms acquire primarily (73,56%) private firms, whereas the corresponding figure for large firms is 44,12%. Large firms predominantly acquire subsidiaries (49,2%), while the respective proportion for small firms is 24,14%. The proportion of public targets at the aggregate level is relatively low, with an average of 4,98%, whereas the sample in Moeller et al. (2004) includes nearly 22% public targets.
Larger firms in this sample tend to be generally more profitable, as measured by ROA. The average ROA for large firms is 1,63%, whereas for small firms it is -0,88%. The medians support this finding but also suggest the presence of both profitable companies

and outliers within the small firm sample, as the median ROA is positive. The median ROA values are 0,84 for large firms and 0,32 for small firms. The difference is statistically significant, and based on the findings of Morck et al. (1991) that the high-ROA acquirers outperform low-ROA acquirers, large firms should perform better due to their higher pre-announcement ROA in this thesis sample.

Cash-to-assets measures scaled cash reserves and is used to assess whether the free cash flow theory could explain the performance of M&A. The theory suggests that a lack of sufficient investment opportunities and managerial interest can lead to poorly performing acquisitions (Moeller et al., 2004). The difference in cash reserves between large and small firms indicates that small firms have relatively more cash in the balance sheet, consistent with findings in Moeller et al. (2004).

Dong et al. (2006) argue that higher Tobin's Q and book-to-market (BM) ratios may indicate overvaluation of equity. In this sample, there is no statistically significant difference in Tobin's Q ratios between large and small firms, either in mean or medians, which would suggest that neither group is overvalued relative to the other. However, Tobin's Q's are relatively high, approximately 2,53 on average, although statistically insignificant, compared to Lang et al. (1989), who defined high Q bidders as those with Q greater than one and low Q bidders to be less than one. However, the book-to-market ratio averages differ statistically between large and small firms at the 10% level. Small firm BM ratio is 0,52, which is higher than large firms. This would indicate overvaluation of the equity of small firms.

The results suggest that, among the deal and firm characteristics, total assets, market values, and OCF/assets differ significantly between the small and large firms, which may lead to differences in percentage returns and absolute euro returns.
Days to completion is the duration of the deal, and is significantly longer for large firms: the average days to completion is approximately 56 days for large firms, compared to 42 days for small firms, this may suggest the complexity of implementing larger deals, as

suggested by Moeller et al. (2004) and Hitt et al. (2009). On the other hand, Humphery-Jenner and Powell (2014) find that the larger deals are easier to implement in non-developed countries due to governance relations, while the variable days of completion is longer in developed countries due to stricter regulation.

6.1 Cumulative abnormal announcement returns

Table 3 shows descriptive statistics, including mean, standard deviation, 25th, 50th, and 75th percentiles, minimum, and maximum values of the cumulative abnormal announcement returns.

Table 3 Descriptive statistics of CAR(-1, 1) sorted by acquirer size.
This sample includes 824 completed M&A transactions of the public, private, and subsidiary companies from the years 2014 to 2024, whose deal value is over €1 million and the deal is at least 1% of the firm market value. The firm market value is defined following Moeller et al. (2004), and is calculated as total book assets minus the book value of equity plus the acquirer's market capitalization at the end of the year prior to the deal announcement, where the book value of equity is from the latest earnings announcement. Small (large) firms are defined as those with market capitalization equal to or less (greater) than the 25th percentile of Nordic stocks at the end of the year prior to the M&A announcement. CAR(-1, 1) is the three-day cumulative abnormal return of the acquirer measured using the market model as in Moeller et al. (2004). Table 3 shows the descriptive statistics of the three-day CARs for all, large, and small firms. The standard *t*-test is used to examine whether the CAR means differ statistically significantly from zero, while the medians are tested using the Wilcoxon signed rank test. Following Moeller et al. (2004), superscripts a, b, and c denote the statistical significance at the 1%, 5%, and 10% level, respectively.

CAR(-1,1)	Obs.	MEAN	STD	MIN	25 %	MEDIAN	75 %	MAX
All	824	4,23%^{a}	8,41 %	-16,82%	-0,28%	2,89 %^{a}	6,91 %	40,22%
Large	563	3,12%^{a}	5,98 %	-16,82%	-0,37%	2,48 %^{a}	5,82 %	40,22%
Small	261	6,62%^{a}	11,74%	-16,82%	-0,16%	4,39 %^{a}	10,33 %	44,22%

According to Brown and Warner (1985), daily stock returns are not usually normally distributed, which may cause problems in parametric hypothesis testing models such as the *t*-test. However, if the sample size is sufficiently large, contains over 30 observations, as suggested by Kwak and Kim (2017), and the CARs are independent and identically distributed (i.i.d), the Central Limit Theorem guarantees that the sample mean will converge to a normal distribution (Brown & Warner, 1985). Based on the Kolmogorov-Smirnov test, the CARs in this thesis do not obey normal distributions in any group, but since the observations are i.i.d., it allows to assume that the cross-sectional mean CAR will converge to a normality, which implies that the *t*-test is applicable.

Small firms generate average CARs of 6,62% while large firms generate 3,12%. The CARs are statistically significant at the 1% level for all groups. These percentage CARs indicate that small firms make acquisitions that are 3,5 percentage points more profitable than those of large firms, measured by percentage cumulative abnormal returns. The difference between small and large firms' returns (3,5 percentage points) indicates a larger size effect than the (2,24%) reported in Moeller et al. (2004). Both large and small firms make profitable acquisitions in percentage terms, with equally weighted abnormal returns averaging 4,23%. The inexistence of organic growth opportunities is more probably a large firm's problem, which may lead to M&As, and investors can see it as a negative signal (Moeller et al. 2004).

Considering the sample characteristics, this result aligns with the fact that deals are relatively larger for small firms, which would have a greater impact on acquirer returns. Although descriptive statistics in Table 2 indicate that small firms have excess cash relative to large firms, the CARs in Table 3 do not support the free cash flow hypothesis of Jensen (1986), which argues that firms with excess cash undertake value-destroying acquisitions. The results in Table 3 are statistically significant at the 1% level.

Table 3 shows that the median for both large and small firms is positive, and the difference between the median values is not as large as in the mean CARs. The standard deviation of returns is significantly higher in small acquirer deals with a value of 11,74%, compared to 5,98 % in large acquirer deals. This indicates that returns in large acquirer deals are more stable, whereas small acquirer returns tend to vary more, which affects the mean returns. These results are largely consistent with Moeller et al. (2004), although in this thesis's sample, the medians are positive for both groups, whereas Moeller et al. (2004) show negative medians for large and positive for small firms. Despite the presence of high maximum values, the 75th percentiles indicate that the difference between small and large firm abnormal performance is stronger in the upper percentiles with returns of 10,33% and 5,82%, respectively.

Table 3 reveals that maximum values are not significantly different between large and small firms. Winsorized results show that the maximum CAR for small and large firms is 40,22% and the minimum for both groups is-16,82%, indicating that extreme positive returns exceed the extreme negative returns. Non-winsorized CARs, not reported, reveal that large firm maximum is 40,2%, whereas small firm maximum is 129%, and minimums are -26,6% and -28,3% for small firms, indicating that small firms experienced higher profits and losses in the 1% quintiles, at both ends, in percentage terms.

Table 4 presents the AARs, ECARs, and value-weighted CARs for all acquirers, and separately for large acquirers and small acquirers, along with the differences in AARs, ECARs, and median ECARs between large and small acquirers.

Table 4 AAR, ECAR, and VWCAR of acquirers sorted by acquirer size.
This sample includes 824 completed M&A transactions of the public, private, and subsidiary companies from the years 2014 to 2024, whose deal value is over €1 million and the deal is at least 1% of the firm market value. The firm market value is defined following Moeller et al. (2004), and is calculated as total book assets minus the book value of equity plus the acquirer's market capitalization at the end of the year prior to the deal announcement, where the book value of equity is from the latest earnings announcement. Small (large) firms are defined as those with market capitalization equal to or less (greater) than the 25th percentile of Nordic stocks at the end of the year prior to the M&A announcement. AAR is the three-day average abnormal return in percent in measured using the market model. ECAR is inflation-adjusted, based on the 2024 euros, three-day euro CAR calculated as acquirer market value t-4 multiplied by three-day CAR(-1,1). VWCAR is the value-weighted CAR calculated separately for the subsamples of large and small firms, and for the whole sample as the sum of ECARs of the (sub)sample divided by the sum of the (sub)sample's acquirer market value at the time t-4 relative to the M&A announcement. The medians are denoted in square brackets, and the sum of the ECARs is denoted in italics. The non-percentage values are denoted in millions. The tests for statistical significance of means are conducted using standard *t*-tests, while medians are tested using the Wilcoxon signed rank test to assess whether they differ from zero. For group comparisons, differences in means are tested using independent samples *t*-tests, and differences in medians

are tested using the Mann-Whitney U-test. Following Moeller et al. (2004), superscripts a, b, and c denote the statistical significance at the 1%, 5%, and 10% level, respectively.

	All (1)	**Large (2)**	**Small (3)**	**Difference (2)-(3)**
AAR	1,409%[a]	1,039%[a]	2,206%[a]	-1,164%[a]
ECAR	49,63[a]	70,07[a]	5,54[b]	64,53[a]
	[6,004][a]	[14,33][a]	[1,74][a]	12,59[a]
	m€40895	*m€39449*	*m€1446*	
VWCAR	2,673 %	2,614 %	6,92 %	
N	824	563	261	

When considering average abnormal returns over the event window, small firms generate abnormal returns of 2,21%, whereas large firms generate 1,04%, and the AARs differ statistically between the large and small firms. Euro CAR shows that large acquirers generate profits of €70,07 million on average and €14,33 million at the median. Small firms generate €5,54 million on average and €1,74 million at the median. The difference in ECARs between large and small firms, measured with the Mann-Whitney test, is statistically significant at the 1% level. Humphery-Jenner and Powell (2011) find similar results to this thesis, they find that large firms generate larger positive returns in absolute terms than small firms, but the magnitude is significantly lower. their Dollar CARs are 5,6 million Australian dollars for large firms and 0,52 million for small firms. The median ECARs are statistically significantly different from zero at the 1% level, indicating that this thesis's sample generally consists of profitable acquisitions for both large and small firms (14,33m€) and (1,74m€), consistent also with Humphery-Jenner and Powell (2011), where they find medians of 0,78m for large firms, and 0,41m for small firms, though at a significantly lower magnitude.

Moeller et al. (2004) measured dollar CARs using a slightly different method (ANPV), but the underlying concept is similar, their results are contradictory to this thesis findings, Moeller et al. (2004) find that large firms generated losses of -47,9 million dollars and small firms generated profits of 1,7 million dollars with corresponding medians of -0,1 million and 0,6 million dollars. The difference between this thesis and Moeller et al. (2004) is that their sample, large firms, generated negative median CARs, whereas in this thesis, both large and small firms show positive CARs, which would explain this inconsistency. Despite the difference in signs between, the overall result, that large firms generate economically significantly larger profits and losses than small firms, is consistent with Moeller et al. (2004).

M&As generated abnormal returns (ECARs) of 40,9 billion euros in total during the sample period. Large firms account for €39,44 billion of the aggregate total, while small firms generated the remaining €1,45 billion.

Acquirers in this sample generate value-weighted abnormal returns at the aggregate level of approximately 2,67%. In this thesis, the value-weighted CAR for large firms is 2,61%, whereas small firms generate a VWCAR of 6,9%. The result is consistent with the Moeller et al. (2004), who find that small firms had significantly higher VWCARs (1,282%) compared to large firms -1,249%. Similarly, Humphery-Jenner and Powell (2011) find even larger VWCARs for small firms 9,43%, and 0,167% for large firms.

In Table 5, the acquirer performance is sorted by payment method, acquirer size, and public status. The reported returns are CAR (-1,1) averages for the specific panel and the specific payment method. As mentioned above, the CAR data is not normally distributed, but the CLT suggests that the *t*-test can be applied when the number of observations is sufficiently large.

Table 5 Acquirer CAR(-1, 1) sorted by size, target public status and payment method.
This sample includes 824 completed M&A transactions of the public, private, and subsidiary companies from the years 2014 to 2024, whose deal value is over €1 million and the deal is at least 1% of the firm market value. The firm market value is defined following Moeller et al. (2004), and is calculated as total book assets minus the book value of equity plus the acquirer's market capitalization at the end of the year prior to the deal announcement, where the book value of equity is from the latest earnings announcement. Small (large) firms are defined as those with market capitalization equal to or less (greater) than the 25th percentile of Nordic stocks at the end of the year prior to the M&A announcement. Rows "All", "Small", and "Large" show mean three-day CAR for the payment methods, Mixed (1), which includes deals that are paid with both cash and equity, Equity payment (2), where the deal is paid only with equity, Cash payment (3), where the deal is paid only with cash, and All (4) CARs for the target group of interest regardless of the payment method. CARs are sorted by target public status. The statistical significance levels in columns (1), (2), and (3) of Table 5 are determined using one-

sample *t*-tests, under the null hypothesis that the CAR is equal to zero. The difference tests reported in columns (5), (6), and (7) are independent two-sample *t*-tests for the equality of means following Moeller et al. (2004). Superscripts a, b, and c denote the statistical significance at the 1%, 5%, and 10% level, respectively.

	Mixed (1)	Pure equity (2)	Pure Cash (3)	All (4)	(1)-(2) (5)	(2)-(3) (6)	(1)-(3) (7)
Panel A: Full Sample							
All	0,042[a]	0,049[a]	0,025[a]	0,042[a]	-0,007	0,024[a]	0,017[a]
N	339	347	138	824			
Small	0,052[a]	0,0898[a]	0,03	0,066[a]	-0,038[b]	0,0598[b]	0,022
N	151	102	8	261			
Large	0,034[a]	0,032[a]	0,025[a]	0,031[a]	0,002	0,008	0,010
N	185	245	130	563			
Panel B: Public Targets							
All	0,009	0,021	0,011	0,014	-0,012	0,010	-0,002
N	12	16	13	41			
Small		-0,033		-0,033			
N	0	6	0	6			
Large	-0,009	0,053	0,011	0,022	-0,044	0,042	-0,002
N	12	10	13	35			
Panel C: Subsidiary Targets							
All	0,057[a]	0,049[a]	0,026[a]	0,045[a]	0,009	0,023[b]	0,031[b]
N	90	162	88	340			
Small	0,010[a]	0,131[a]	0,048	0,113[a]	-0,031	0,083[c]	0,052
N	29	31	3	63			
Large	0,037[a]	0,029[a]	0,025[a]	0,03[a]	0,008	0,004	0,012
N	61	131	85	277			
Panel D: Private Targets							
All	0,038[a]	0,053[a]	0,027[a]	0,043[a]	-0,014	0,025[b]	0,011
N	237	169	37	443			
Small	0,041[a]	0,082[a]	0,019	0,054[a]	-0,041[b]	0,0062	0,021
N	122	65	5	192			
Large	0,035[a]	0,034[a]	0,029[a]	0,034[a]	0,001	0,006	0,007
N	115	104	32	251			

Overall, in this sample, small firms outperform large firms in terms of percentage returns. However, large firms tend to make more profitable acquisitions in absolute euro terms due to the larger size of the deals. Also, large firms outperform small firms measured by BHARs in the longer period. At the full sample level, subsidiary acquisitions are the most profitable (4,5%) and the result is statistically significant at the 1% level. Table 5 shows that public acquisitions generate the lowest CARs (1,4%), while this result is indicative because it is not statistically significant, but consistent with the Moeller et al. (2004) and Jaffe et al. (2015), who find public acquisitions tend to generate negative CARs. The limited number of public target acquisitions in the sample, 41 observations, may explain the lack of statistical significance in the public target panel.

At the full sample level, regardless of the organizational form of the target, the results indicate that equity payments and mixed payments yield 2,43 and 1,72 percentage points higher returns than cash payments. These differences in payment methods are statistically significant at the 1% level, and the results are consistent with Humphery-Jenner and Powell (2011). However, the results contradict those of Moeller et al. (2004), where they find that cash deals have the best performance at the whole sample level, as well as those of Dong et al. (2006), where they also find that cash-financed acquisitions have the best performance. Similarly, Fung et al. (2009) explain that equity payment yields negative M&A performance.

On the other hand, Fuller et al. (2002) find that equity-financed acquisitions yield negative returns only for the public target group, whereas equity payments in private and subsidiary deals yield positive returns. Fuller et al. (2002) findings are consistent with Moeller et al. (2004) and this thesis's results. In this sample, small public acquisitions paid with equity generate negative returns of -3,3%, although the result is not statistically significant. Regardless of the payment method, private acquisitions are the most profitable for large firms.

Table 5 shows that, at a full sample level, regardless of the organizational form of the target, small acquirers benefit significantly from equity payments. This is supported by the difference test, which indicates that equity payments yield 6,0 percentage points higher CARs than cash payments and 3,8 percentage points higher CARs than mixed payments. The results are statistically significant at the 5% level, and these findings are consistent with Humphery-Jenner and Powell (2011).

In this sample, the highest average CAR for small firms is 13,1%, which is observed when the target is a subsidiary and the deal is paid with equity. In contrast, mixed-payment private deals yielded the lowest returns at 4,1%. Among large firms, the best performing combination is mixed payment and subsidiary target, yielding an average CAR of 3,7%. The lowest returns for large firms are observed in the cash paid subsidiary group. All CAR combinations, except in the public target panel, differ statistically from zero at the 1% significance level for both large firms. Cash payment is not statistically significant in any subgroup for small firms, whereas large firms generate statistically significant positive returns also in cash-paid deals. The positive returns of cash-paid deals are consistent with the findings of Moeller et al. (2004). However, although the sorted combinations differ from zero, the results do not support the hypothesis that there are differences between payment methods in large firm samples.

In the subsidiary panel for small firms, there appears to be a weakly statistically significant difference, at the 10% level, between equity and cash payments. Equity payment yields 8,3 percentage points higher CARs than cash payment. This result is indicative due to the small number of observations, and the normality assumption does not hold. However, similar findings are reported by Moeller et al. (2004) who find that small subsidiary target acquisitions paid with equity yield higher CARs than, for example, cash-paid subsidiary acquisitions.

In the private target panel for small firms, equity payment yields CARs that are 4,1 percentage points higher than mixed payments, and the difference is statistically significant at the 5% level. This finding is also consistent with Moeller et al. (2004).

In this sample, private acquisitions are profitable for both large and small firms. However, there is a difference between the payment methods on CARs only in the small firm subsample. Moeller et al. (2004) argue that the outperformance of private firms financed with equity or mixed payments can be explained by a signaling effect, since acceptance of equity payments may convey insider information from target company's management and reflect the target company management teams' perception of the deal as explained also by Hitt and Schijven (2012), who suggest that investors evaluate acquisitions based on the actions of the company's managers.

When examining acquisitions regardless of the payment method, subsidiary acquisitions by small firms are the most profitable, as shown in Moeller et al. (2004) and Jaffe (2015), whereas large firms make the most profitable acquisitions when the target is private.

6.2 Multivariate regression analysis

Table 6 shows the regression models (1)-(5), which control for different variables for the whole sample and for large and small firms separately.

Table 6 Cross-sectional OLS regression results for models (1)-(5).
This sample includes 824 completed M&A transactions of the public, private, and subsidiary companies from the years 2014 to 2024, whose deal value is over €1 million and the deal is at least 1% of the firm market value. The firm market value is defined following Moeller et al. (2004), and is calculated as total book assets minus the book value of equity plus the acquirer's market capitalization at the end of the year prior to the deal announcement, where the book value of equity is from the latest earnings announcement. Small (large) firms are defined as those with market capitalization equal to or less (greater) than the 25th percentile of Nordic stocks at the end of the year prior to the M&A announcement. Relative size is defined following Moeller et al. (2004) as "deal value" divided by the equity market capitalization of the acquirer at the end of the year prior to the M&A announcement. Small, conglomerate, tender offer, pure cash, pure equity, public, and private variables are dummy variables that take the value of one if the condition is met. Ln(equity) and Ln(assets) are natural logarithms of the book value of the equity and total assets of the acquirer, respectively. ROA is return on assets, and is defined differently for the industrials, banks, and insurance companies. The numerator for all groups is (net income + interest expense on debt – interest capitalized) * (1- Tax rate). The denominator for industrials is the average of current and last year's total assets; for banks, it is the average of total assets minus customer liabilities on acceptances; for insurance companies, policyholders' surplus, and for other financial companies, the average of total assets minus custody securities. The debt is calculated as in Moeller et al. (2004), total liabilities minus common equity minus preferred ordinary shares. Tobin's Q is the firm market value divided by total book assets, as in Moeller et al. (2004). In this sample, the operating cash flow (OCF) is defined as cash inflow or outflow

calculated as net income plus adjustments such as depreciation and amortization, changes in accounts receivable, inventories, accounts payable, and deferred revenues. Table 6 shows the coefficients of the variables and their effect on the CARs, which is the dependent variable. The *p*-values are based on robust, white-adjusted standard errors as in Moeller et al. (2004). Superscripts a, b, and c denote the statistical significance at the 1%, 5%, and 10% level, respectively.

Dependent Variable			Sample		
CAR(-1, 1)	All (1)	All (2)	All (3)	Small (4)	Large (5)
Intercept	0,0351[a]	0,0824[a]	0,0773[a]	0,099[a]	0,0118
Private	-0,0100	-0,0134[b]	-0,0139[b]	-0,0483[a]	0,0017
Public	-0,0211	-0,0188	-0,0186	-0,161[a]	0,0168
Small	0,0168[b]				
ln equity (market)		-0,0078[a]			
ln assets (book)			-0,0079[a]		
Conglomerate	-0,0027	-0,0028	-0,0029	-0,024	0,0051
Acquiror ROA	-0,0003	-4,36e-05	-2,997e-05	-0,0005	-0,0005
Tender Offer	-0,0228	-0,0243	-0,0246	0,091[a]	-0,065[b]
Pure Equity	0,0033	0,0024	0,0026	0,014	0,0025
Pure Cash	-0,0074	0,0002	0,0006	-0,0409[c]	-0,0056
Relative Size	0,0144[a]	0,0129[a]	0,0132[a]	0,0131[a]	0,0225[a]
Tobin's Q	0,0017	0,0023	0,001	-0,0033	0,0046[b]
Debt/assets (mkt.)	0,0045	0,0035	0,0272	0,0298	-0,0055
OCF/assets (mkt.)	-0,0775	-0,0576	-0,0571	-0,0953	0,0542
Adj. R-Square	0,136	0,152	0,152	0,201	0,062

The OLS models usually explain CARs poorly in M&A studies, with the explanatory power of different studies' models varying from 2,9% to 12,17% (Moeller et al., 2004; Rosen, 2006; Humpery-Jenner & Powell, 2011, 2014). In this thesis, the models perform somewhat better, R-squares in the models of this thesis vary from 6,2% to 20,1%. The model performance is consistent with Jaffe et al. (2015) and Zhao et al (2019), where they find (adjusted) R-Squares varying from 7,1% to 16,8% and 19,4%-23,5%, respectively. In both Jaffe et al. (2015) and Zhao et al. (2019), the samples are relatively small in the best-performing models in comparison with above mentioned poor-performing studies. The relatively small sample size may also explain the higher R-squares of this thesis.

In the first model (1), the coefficient for small firm size, measured using a size dummy variable, is statistically significant at the 5% level. The value for size coefficient is 0,0168, which indicates that small firm size is positively related to abnormal returns as in (Moeller et al., 2004; Humphery-Jenner & Powell 2014; Jaffe et al. 2015; Zhao et al. 2019; Ma & Li 2025). Specifically, if the acquirer is small, the positive effect on the CAR is 1,68 percentage points.

The size effect remains consistent in models (2) and (3), where firm size is measured differently, using the natural logarithm of equity and total assets. The coefficients for ln(equity) and ln(assets) are negative, -0,0078 and -0,0079, indicating that higher equity market capitalization and total assets are associated with lower CARs. Similar to Moeller et al. (2004), the magnitude of the coefficients is significantly lower in the complementary regression models (2) and (3) than in the market value-based regression model (1), but as they argue, the result supports the conclusion that the size effect may occur. Because book value-based size measures support the size effect as in Moeller et al. (2004), they argue that the results are not driven by the overvalued acquirers and do not support Dong et al. (2006) overvaluation hypothesis.

Table 5 does not report statistically significant coefficients for public target acquisitions, nor do the regression models in Table 6, except for the small firm regression (4), where the coefficient is statistically significant at the 1% level. The negative but statistically insignificant coefficients in Models (1)-(3), are consistent in sign and comparable in magnitude, varying from -1,86% to -2,11%, with Moeller et al. (2004), Humphery-Jenner and Powell (2014), Harp et al, (2021) and Ma and Li (2025) who find public target dummy to have from -1,5 to -3,47 percentage point effect on CARs. The only statistically significant result suggests that public target acquisitions by small firms have a -16,1 percentage point effect on the CARs, which is extremely high, but may be influenced by the limited number of observations (n = 6) for small public acquisitions.

Moeller et al. (2004) note that acquirers of private or subsidiary targets may have greater bargaining power, enabling them to negotiate more favorable deals due to the liquidity they provide, in comparison with the public firms which have higher liquidity already. Officer (2007) findings also support the liquidity explanation, whereas Capron and Shen (2007) argue that empirical studies do not consistently support a liquidity discount effect, and conclude that the superior performance of acquirers of private firms cannot be solely explained by liquidity effects.

In this thesis, the statistically significant regression coefficients for private acquisitions are negative, ranging from -1,34% to -4,83%. This finding is unexpected, given that private target acquisitions yield the second-highest positive returns in Table 5. These coefficients are statistically significant at the 5% level in models (2) and (3) and at the 1% level in model (4), suggesting that private target acquisitions have a negative effect on announcement returns despite the liquidity provider argument of Moeller et al. (2004). Similarly, Humphery-Jenner and Powell (2014) find negative coefficients for private acquisitions. Although the magnitude of these coefficients is smaller, they are statistically significant at the 10% level, implying that private acquisitions affect CARs from -0,37 to -0,63 percentage points.

Table 5 shows the highest announcement returns for subsidiary acquisitions across the full sample, i.e., regardless of the size of the acquirer. This result is consistent with the findings of Moeller et al. (2004), who argue that, under the ceteris paribus assumption, the regression models and the observed negative coefficients for private and public acquisitions imply that acquirers of subsidiaries are the most profitable in terms of CARs. The profitability of subsidiary deals may also be explained if the acquired subsidiaries or business units exhibit a stronger strategic fit compared to other organizational forms, as emphasized by Bauer and Matzler (2013), who highlight the importance of alignment between the acquisition target and the acquiring firm's strategic objectives.

Tender offers yield mixed results between the small firm regression model (4) and the large firm regression model (5). Small tender offers have a 9,1% positive effect on CARs, whereas large firm tender offers exhibit a negative effect of 6,5% on CARs. Moeller et al. (2004) find contrasting evidence that large firm tender offers by large firms have a positive effect on CARs. Also, Humphery-Jenner and Powell find tender offers to have a positive effect on CARs. The relatively small number of public acquisitions in this sample may explain the unexpected results.

The payment method may affect M&A performance (Moeller et al. 2004; Rhodes-Kropf & Viswanathan 2005). The coefficients of pure cash payments are negative in models (1), (4), and (5), the only weakly statistically significant result, at the 10% level, is on the small firm model (4). This result is indicative only, as there are eight small pure cash deals in the sample. The weakly significant statistical coefficient is -4,09%, implying that pure cash payment has a -4,09 percentage point effect on CARs. Moeller et al (2004) also find negative coefficients for cash payments in their regression models.

In contrast, Savor and Lu (2009) and Ma and Li (2025) find that cash payments have a positive effect on CARs. Savor and Lu (2009) do not include mixed paid acquisitions, which may affect their results. In this thesis, the results presented in Table 6 are indicative and may be explained by the support of Table 5 findings that, under a ceteris paribus environment, equity payment and mixed payment acquisitions in private and subsidiary subsamples perform better than the cash acquisitions. This finding is similar to the findings of Moeller et al. (2004), although they find that public acquisitions paid with cash perform better than equity or mixed payments.

According to Moeller et al. (2004), the relative size factor generally has a positive effect on the abnormal returns several times in the academic literature. This thesis also finds that relative size has a positive effect on CARs, with coefficients statistically significant at the 1% level across all models (1)-(5). The highest coefficient for relative size is found in model (5), which includes only large firms. The positive coefficient of 0,0225 implies that the larger the deal is relative to the acquirer’s assets, the more positive the announcement return. This result is consistent with the existing literature (Asquith et al. 1983; Moeller et al. 2004; Humphery-Jenner and Powell 2011, 2014; Danbolt et al. (2015); Zhao et al. 2019). The larger the deal, the more impact it is likely to have on the acquiring firm, which may explain the result (Bo et al. 2023).

Lang et al. (1989) find that high Tobin’s Q bidders perform better than low Q bidders. The sample in this thesis generally consists of firms with high Q values, which would indicate high returns. However, Tobin’s Q is statistically significant only in model (5), where it has a positive effect of 0,46% on M&A performance. In the other models, except for model (4), the Tobin’s Q coefficients are positive and consistent with existing literature (Lang et al. 1989; Humphery-Jenner &Powell 2014), whereas Moeller et al. (2004) find a slightly negative effect (-0,1%) of Tobin’s Q on CARs, which is similar to the statistically insignificant result observed in model (4) of this thesis.

The leverage variable, measured as debt-to-assets (market-based), is statistically insignificant in this thesis, as it is in Moeller et al. (2004) and Zhao et al. (2019). However, the leverage coefficients are positive in models (1)-(4), varying from 0,45% to 2,98%, which is consistent with Ma and Li (2025), where they report a 1,37-1,78 percentage point positive effect of leverage on CARs. The coefficient in the large firm regression, model (5), is negative, which is consistent with findings by Humphery-Jenner and Powell (2011, 2014).

6.2.1 Correlation matrix

Multicollinearity between variables can bias the regression results and reduce the reliability of the regression models. To assess the presence of multicollinearity among the control variables, a correlation matrix for the control variables is presented in Table 7.

Table 7 Correlation matrix of control variables in regression models (1)-(5).
This sample includes 824 completed M&A transactions of the public, private, and subsidiary companies from the years 2014 to 2024, whose deal value is over €1 million and the deal is at least 1% of the firm market value. The firm market value is defined following Moeller et al. (2004), and is calculated as total book assets minus the book value of equity plus the acquirer's market capitalization at the end of the year prior to the deal announcement, where the book value of equity is from the latest earnings announcement. Small (large) firms are defined as those with market capitalization equal to or less (greater) than the 25th percentile of Nordic stocks at the end of the year prior to the M&A announcement. Relative size is defined following Moeller et al. (2004) as "deal value" divided by the equity market capitalization of the acquirer at the end of the year prior to the M&A announcement. Small, conglomerate, tender offer, pure cash, pure equity, public, and private variables are dummy variables that take the value of one if the condition is met. ROA is return on assets and is defined differently for the industrials, banks, and insurance companies. The numerator for all groups is (net income + interest expense on debt – interest capitalized) * (1- Tax rate). The denominator for industrials is the average of current and last year's total assets; for banks, it is the average of total assets minus customer liabilities on acceptances; for insurance companies, policyholders' surplus, and for other financial companies, the average of total assets minus custody securities. The debt is calculated as in Moeller et al. (2004), Total Liabilities minus common equity minus preferred ordinary shares. Tobin's Q is the firm market value divided by total book assets, as in Moeller et al. (2004). In this sample, the operating cash flow (OCF) is defined as cash inflow or outflow calculated as net income plus adjustments such as depreciation and amortization, changes in accounts receivable, inventories, accounts payable, and deferred revenues. Table 7 shows the correlation coefficients of the regression models' control variables.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Private (1)	1											
Public (2)	-0,25	1,00										
Small (3)	0,27	-0,08	1,00									
Conglomerate (4)	0,00	-0,06	0,02	1,00								
Tender Offer (5)	-0,15	0,63	-0,05	-0,03	1,00							
ROA (6)	-0,02	0,00	-0,27	-0,02	-0,01	1,00						
Pure Equity (7)	-0,09	-0,01	-0,04	-0,04	-0,02	-0,09	1,00					
Pure Cash (8)	-0,24	0,09	-0,25	0,03	0,04	0,07	-0,38	1,00				
Relative Size (9)	0,02	-0,01	0,26	0,05	0,00	-0,13	0,09	-0,07	1,00			
Tobin's Q (10)	0,06	0,09	-0,03	-0,08	0,03	-0,11	-0,04	-0,06	-0,05	1,00		
Debt/assets (mkt.) (11	-0,18	-0,02	0,01	0,04	-0,05	0,01	0,12	0,03	0,08	-0,58	1,00	
OCF/assets (mkt.) (12)	-0,07	0,04	-0,31	-0,02	-0,04	0,53	-0,12	0,14	-0,25	-0,14	0,17	1,00

The correlation coefficients vary between -0,58 to 0,63. A correlation coefficient of 0,63 is high, but it occurs between the variables tender offer and the public firm dummy, which is unsurprising given that tender offers can only be made for public companies. Similarly, the coefficient of -0,58 between debt-to-assets (market) and Tobin's Q is high and suggests that a higher debt-to-assets ratio is associated with a lower Tobin's Q.

6.2.2 Variance Inflation Factor

Because several correlation coefficients are relatively high, additional tests were conducted to assess the interdependence and multicollinearity of the variables using the Variance Inflation Factor (VIF), which measures how much the variance of an independent variable is inflated due to the influence of other variables. According to Hitt and Schijven (2012), a VIF value below 10 is generally considered acceptable. The VIF results show that all variables have a VIF coefficient below 10. The highest VIF coefficient in this thesis is for leverage, measured as debt-to-assets (market), at 3,37, while the other coefficients vary between 1,23-2,96, indicating low multicollinearity. Based on these results, this thesis concludes that the variables are not significantly collinear and are thus suitable for inclusion in the regression models. Table 8 below presents the VIF coefficients for the variables.

Table 8 VIF coefficients for control variables in regression models (1)-(5).
This sample includes 824 completed M&A transactions of the public, private, and subsidiary companies from the years 2014 to 2024, whose deal value is over €1 million and the deal is at least 1% of the firm market value. The firm market value is defined following Moeller et al. (2004), and is calculated as total book assets minus the book value of equity plus the acquirer's market capitalization at the end of the year prior to the deal announcement, where the book value of equity is from the latest earnings announcement. Small (large) firms are defined as those with market capitalization equal to or less (greater) than the 25th percentile of Nordic stocks at the end of the year prior to the M&A announcement. Relative size is defined following Moeller et al. (2004) as "deal value" divided by the "equity market capitalization" of the acquirer. Small, conglomerate, tender offer, pure cash, pure equity, public, and private variables are dummy variables that take the value of one if the condition is met. ROA is return on assets and is defined differently for the industrials, banks, and insurance companies. The numerator for all groups is (net income + interest expense on debt – interest capitalized) * (1- Tax rate). The denominator for industrials is the average of current and last year's total assets; for banks, it is the average of total assets minus customer liabilities on acceptances; for insurance companies,

policyholders' surplus, and for other financial companies, the average of total assets minus custody securities. The debt is calculated as in Moeller et al. (2004), Total Liabilities minus common equity minus preferred ordinary shares. Tobin's Q is the firm market value divided by total book assets, as in Moeller et al. (2004). In this sample, the operating cash flow (OCF) is defined as cash inflow or outflow calculated as net income plus adjustments, such as depreciation and amortization, changes in accounts receivable, inventories, accounts payable, and deferred revenues. This table shows the VIF coefficients of the regression models' control variables.

Variable	**VIF**
Private dummy	2,27
Public dummy	1,88
Small dummy	1,89
Conglomerate dummy	2,96
Tender offer dummy	1,73
ROA (eur)	1,47
Pure Equity Dummy	1,99
Pure Cash Dummy	1,46
Relative Size	1,23
Tobin's Q	1,89
Debt/assets (mkt.)	3,37
OCF/assets (mkt.)	1,74

6.3 Does the size effect hold in the long term?

Table 9 shows post-announcement buy-and-hold returns and their characteristics over the periods from 0 months to 12, 24, and 36 months.

Table 9 Long-term M&A performance measured by BHAR sorted by acquirer size.
This sample includes 824 completed M&A transactions of the public, private, and subsidiary companies from the years 2014 to 2024, whose deal value is over €1 million and the deal is at least 1% of the firm market value. The firm market value is defined following Moeller et al. (2004), and is calculated as total book assets minus the book value of equity plus the acquirer's market capitalization at the end of the year prior to the deal announcement, where the book value of equity is from the latest earnings announcement. Small (large) firms are defined as those with market capitalization equal to or less (greater) than the 25th percentile of Nordic stocks at the end of the year prior to the M&A announcement. This table shows mean buy-and-hold returns for small and large acquirers for the time periods (0,12), (0,24), and (0,36) months relative to the acquisition announcement. Tests for means are conducted using standard *t*-tests, while tests for medians use the Wilcoxon signed rank test to assess whether they significantly differ from zero. Superscripts a, b, and c denote the statistical significance at the 1%, 5%, and 10% level, respectively.

Firm Class	**Metric**	**BHAR (0,12)**	**BHAR (0,24)**	**BHAR (0,36)**

All	**N**	823	774	695
	Mean	4,38%[b]	0,68%	-1,93%
	Median	-5,43%	-15,295%[a]	-22,63%[a]
	Std.	54,78%	87,51%	107,55%
Large	**N**	562	527	477
	Mean	5,60%[a]	5,91%[c]	2,34%
	Median	-4,1%	-7,92%	-12,31%[b]
	Std.	50,83%	77,77%	90,03%
Small	**N**	261	247	218
	Mean	1,75%	-10,48%	-11,27%
	Median	-9,57%[c]	-34,50%[a]	-56,03%[a]
	Std.	62,46%	104,62%	138,15%

By examining long-term (0, 12) Buy-and-hold abnormal returns (BHARs), the returns are positive at 4,38% and statistically significant at the 5% level over the one-year period. However, over the longer term, the mean BHARs for the whole sample are statistically insignificant. The results suggest that small firms perform better in the short term, while large firms perform better in the long run. Large firms generate an average BHAR of 5,6%, which is statistically significant at the 1% level, whereas small firms generate statistically insignificant BHARs of 1,75%, indicating lower long-term returns for small firms. In other words, on average, large firms achieve BHARs that are 3,85 percentage points higher than those of small firms.

When examining BHARs over the (0, 24) month period, the average BHAR for large firms is 5,91%, statistically significant at the 10% level. Whereas small firms exhibit a BHAR of -10,48%, also statistically significant at the 10% level. Although the means for (0,36)-month post-announcement period are insignificant, the results support the findings that large acquirers perform better in longer time-periods, where large acquirers generate 2,34% on average, while small firms make a loss of 11,27%.

The results are consistent with Harp et al. (2021), who find that small acquirers experience negative stock returns and a decline in operating performance in the post-acquisition period. These findings are further supported by Zhao et al. (2019), who find that small acquirers outperform large acquirers in the short run, while large acquirers perform better in the long run, as measured by operating performance metrics. The long-term overperformance of large firms may be explained by their greater resources, which facilitate, for example, an easier post-acquisition integration process Zhao et al. (2019). In contrast, the short-term outperformance of small firms may be driven by investors' optimistic reactions to surprising information, relative to large firms, and may be amplified due to possible short-selling constraints on the acquirer's stock (Harp et al., 2021). The results are contradictory to Moeller et al. (2004), who use a calendar time portfolio approach and find that small firms outperform large firms also in the longer time period.

Post-event returns standard deviations vary from 50,83% to 90,03% for large firms, and are even higher for small firms, varying from 62,46% to 138,15%. The higher standard deviations for small firms are consistent with the short-term results and with the findings of Harp et al. (2021). This result suggests substantial variation in post-event performance across the sample.

However, median values reveal that at least half of small firm acquisitions yield negative returns, the median for (0,12)-month period is -9,57% and -34,5% for the (0,24)-month period, both of which are statistically significant at the 10% and the 1% levels, respectively. In contrast, the medians for large firms are statistically insignificant in all periods except (0, 36). However, the values of -4,1% for the (0,12)-month period and -7,92% for the (0, 24)-month period suggest that nearly half of the large acquirers also generate low or negative returns relative to the average BHARs. These negative post-announcement returns are supported by Harp et al. (2021), whose median results similarly indicate that small firms generate larger losses in percentages than large firms, with median returns of -22,95% and -8,9%, respectively.

Overall, only few BHAR means of Table 9 are statistically significant, which is not uncommon, similarly Rosen (2006) finds statistically insignificant BHARs, also in the Nordic context, for example, Savolainen (2017), in his master's thesis, find statistically insignificant negative long-term M&A returns in Finnish stock markets. However, both Rosen (2006) and Savolainen (2017) measured the long-term returns slightly differently. However, the results of Table 9 are rather indicative, and the negative post-announcement performance is not uncommon, as evident in Antoniou et al. (2007), Tuch and O'Sullivan (2007), and Harp et al. (2021).

7 Summary and conclusions

M&As are widely studied in academic literature, yet there is no consensus regarding the explanatory factors that affect the returns, effective methods to study, i.e., which is the correct event and estimation window, and whether M&As generate value or not.

This thesis complements the relatively small amount of M&A studies in Nordic markets. However, the relatively small sample size limits the generalizability of the findings. However, this thesis study Nordic M&As in terms of stock price behavior, and finds that generally Nordic acquisitions generate positive returns in the short term, but in the longer run, the abnormal returns are negative regardless of acquirer size. Small firms appear to make more profitable acquisitions around the announcement, whereas large firms tend to outperform small acquirers in the post-acquisition period. This long-term outperformance of large firms may be explained with for example their capabilities to allocate resources for the post-acquisition integration process as suggested by (Zhao et al., 2019).

Overall, the results of this thesis are consistent with the findings of earlier studies related to the topic, with few exceptions. The results indicate that short-term abnormal returns can be explained, for example, through the firm size effect, regardless of the definition of the size, i.e., market value vs book value, both yield similar conclusions. Also, the relative size of the deal has a substantial impact on CARs, as larger transactions tend to have a more significant effect on the acquirer's operations. Furthermore, the organizational form of the target and its signaling effect for the investors also appear to influence short-term returns.

When reflecting on the research results in light of the theoretical framework introduced in this thesis, the findings support the size effect in the short run. However, the overall result is not consistent with the efficient market hypothesis, as the short-term outcomes conflict with the long-term results. This suggests that investors do not immediately incorporate the effects of M&A deals on the acquirer's stock. The difference in results may also support arguments from behavioral finance, indicating that investors are partially influenced by their behavior. As mentioned, the overvaluation hypothesis is not supported by the regression results, as book value-based size measures also support the size effect. Table 3 shows that small firms have higher cash reserves, yet they yield higher returns in the short run, which indicates that the free cash flow hypothesis is not sufficient to explain the findings of this thesis in the short run. The interpretations presented in this paragraph should be considered as cautious reflections based on the results obtained.

This thesis does not investigate the determinants of long-term abnormal returns nor long-term operational performance, which represents a potential avenue for future research in the Nordic M&A landscape, aimed at deepening the analysis. Additionally, since there are multiple explanations for M&A performance and the performance depends ultimately on many different factors, it would be valuable to adopt non-linear methodologies, such as quantile regression, to better understand the performance variation across different segments of the distribution, or the researcher would examine the CAR differences between the companies from different industries.

There is a clear distinction between the returns of small and large acquirers in the short term. The practical implication of the observed results suggests that it is beneficial for investors to exploit price inefficiencies of small firm acquisitions in the short term. The investor benefits from large firm acquisitions by utilizing the long-term buy-and-hold strategy. Also, managers of acquiring companies should consider deal and firm-specific characteristics and the strategic fit of the target company when committing to deals.

Due to the increased attention and legislation about sustainability, future research could also examine the combined role of ESG factors and size effect together in M&A outcomes, both in terms of stock price reaction and in ESG performance. For instance, would a high-ESG acquirer benefit from acquiring a low ESG target or vice versa, and how would the acquisition affect the acquirer’s ESG score and operations over the long term.

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