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**Long term performance and Method of Payment: A  
study of the Nordic Mergers and Acquisitions  
Market**

**Authors:**

Jonathan Svensson

Zied Boudabbous

**Supervisor:**

Marco Bianco

# Abstract

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**Authors:** Jonathan Svensson and Zied Boudabous

**Advisor:** Marco Bianco

**Key words:** M&A, BHAR, Method of Payment, The Nordic Region, and Financial Constraints.

**Purpose:** The purpose of this study is to test how Nordic acquirers perform post M&A deals and to what extent the Method of Payment affects this performance. An additional analysis is also conducted where the above is tested, conditional on the financial constraints of the acquirer.

**Methodology:** To obtain the long-term performance (BHAR) of Nordic acquirers, an event study has been conducted. To test the performance and relationship to the method of payment two t-tests have also been conducted. Lastly, several OLS regressions have been run to test the relationship between BHAR, Method of Payment and Financial Constraints, where all models have been run with Robust standard errors. Additional robustness tests have been conducted.

**Theoretical perspective:** Signalling theory, Free cash flow theory, hubris theory.

**Empirical Foundation:** The analysis is based on a comprehensive examination of 167 M&A deals made between public companies over the period 2004-2022 in the Nordic region. The data is collected on Refinitiv Eikon, Capital IQ, and Zephyr.

**Conclusion:** This thesis provides evidence of negative BHAR of -2,8 % for Nordic acquirers over a one-year horizon following M&A transactions. We also provide significant evidence that firms using all-cash offers (0,3 %) outperform acquirers using stock- or mixed offers (-7,1 %). This study does not obtain any evidence that the above conclusions differ depending on acquirer financial constraints.

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# Abbreviations

BCAR - Bias Cumulative Abnormal Return

BHAR - Buy and Hold Abnormal Return

CAAR - Cumulative Abnormal Average Return

CAR - Cumulative Abnormal Return

ECB - European Central Bank

FASB - Financial Accounting Standards board

GFC - Global Financial Crisis

IFRS - International Financial Reporting Standards

IMAA - Institute for Mergers, Acquisitions and Alliances

M&A - Mergers and Acquisitions

OLS - Ordinary Least Square

R&D - Research and Development

# 1. Introduction

## 1.1. Background

Engaging in M&A deals might be one of the most important decisions in any firm's life cycle (Alexandridis et al. 2017; Loughran & Vih, 1997). M&A transactions enable firms to grow not only organically, but also to grow through acquisition. Renneboog and Vansteenkiste (2019) argue that M&A allows companies to penetrate new markets, diversify, acquire R&D, and realize all synergies one might hope for when acquiring or merging with another company.

Despite all possible advantages, evidence points to the fact that acquirers, both in the short term and a few years after the acquisition, gain insignificant, or even negative returns (Asquith, 1983; Loughran & Vih, 1997; Rau & Vermaelen, 1998). This is the million-dollar question scholars are trying to solve, since there is no evidence of the M&A market slowing down. Concentrating on the European market alone, 2021 was a record-breaking year, where over USD 2 600 billion were spent on M&A transactions (Statista, 2023). As a consequence, research has re-gain interest in the area, reaching record highs in the same year (Cumming et al., 2023).

## 1.2. Motivation

Prior research on post-merger performance seems to be concluding that there more than often is indifferent or negative performance in the years following the merger. However, what these studies have in common is that they investigate samples pre the 2008 GFC. More recently, Alexandridis, Antypas and Travlos (2017) found that mergers for US listed companies post 2009 indeed generate shareholder value, which contradicts prior research. The authors argue that characteristics and quality of M&A post GFC drastically have changed and might have contributed to these new findings, which makes studies on more recent samples interesting to conduct. For instance, Alexandridis et al. (2017) argues that internal control, corporate cultures, executive compensation, and risk management were put under the spotlight after the crisis. As a result, heavy regulation, litigation, and oversight followed that supposedly could have enhanced the value creation mechanism in corporations, especially regarding corporate investment decision making associated with inorganic growth. While Alexandridis et al. (2017) results relate to the short term, there is to the best of the



authors knowledge no studies investigating the long-term stock performance for acquiring firms using samples including the last two decades.

In addition to the apparent lack of up-to-date evidence of long-term performance, King et al. (2004) argues that there is confusion on what really affects performance and that this subject has *great potential for future research*. Method of payment is among the most important choices for both parties in such transactions and while there is some evidence that it influences the short-term shareholder wealth, the research on this factor in the long-term is somewhat scarce and highly inconclusive (King et al. 2004). More recently, Renneboog and Vansteenkiste (2019) conducted a meta-analysis on determinant of value in M&As, and argues that there is a lack of consistent long-term evidence on many M&A areas that predict long term performance, e.g., factors such as the method of payment. The authors argue that this provides “*substantial scope for further research*” and it is on that variable this thesis main focus will lie.

Additionally, DeBodt, Cousin and Officer (2022) argue that updated research and empirical evidence is needed on the method of payment in the M&A context since acquirers today operate in a very different market landscape with conditions different to the ones before 2001, similar to the argument of Alexandridis et al. (2017). First, DeBodt et al. (2022) points out that the FASB in 2001, removed management incentive to pay with shares by removing pooling accounting. A method that made it possible for acquirers not to take on any goodwill when paying with shares. Second, the authors argue that the cost of cash has been significantly reduced, not least following the global financial crisis, due to decrease in interest rates (Cash payments are frequently financed with debt). Finally, DeBodt et al. (2022) argue that the increased activity by private equity has increased the pressure on acquirers to use cash as payment, which, together with the above statements, makes it highly appropriate to investigate the subject. It is important to point out that the arguments of DeBodt et al. (2022) is very relevant also in the European context, with similar patterns being present. For example, the ECB benchmark rate for January 2001 and 2008 were 4,75 and 4 percent respectively, and 0,00 percent in 2022 (Presented in figure 4). Additionally, pooling accounting was prohibited also in the EU region in 2004 due to IFRS 3.

It is also highly interesting to analyse what factors drive the method of payment choice in corporate acquisitions. Therefore, this study will conduct an additional analysis on financial

constraints' role in such decisions. DeBodt et al. (2022) argues that there is to this date limited consensus and understanding on what really affects the choice of payment, a statement in which we will further deepen our analysis. Financial constraints are considered to be an important factor influencing the payment choice since most cash-offers are financed with debt. However, the author argues that research on financial constraints and method of payment remains limited. Faccio and Masulis (2005) uses Firm size, leverage, and collateral as proxies for financially constrained firms since; 1) the higher the firm value, the easier to raise funds, 2) the higher the leverage, the harder to raise funds, and 3) the higher the collateral, the easier to raise new funds. To the best of the authors knowledge, this paper will be among the first to investigate this relationship in our specific setting. Prior research has focused on financial constraints impact on method of payment in isolation, where this paper aims to take it one step further, analysing if the method of payment has an impact on performance and if this relationship differs depending on if the acquirer is constrained or not.

This relationship should be highly interesting to investigate since its very likely that the financial condition of the firm affects both the long-term performance and the payment choice in their acquisitions. Additionally, some authors (e.g., Travlos, 1987) have found evidence that acquirers using equity signals overvaluation to the market. However, since financially constrained firms might have an altered pecking order theory when choosing financing in acquisition, the overvaluation theory might not be true for such firms, creating noise in market reactions, making it even more interesting adding the financial condition to our analysis.

Further, this thesis will conduct its research on the Nordic M&A market. Many scholars (e.g., Sankar & Leepsa, 2018; Rao-Nicholson, Salaber & Cao, 2016), argues that there is a US and UK M&A research bias, since most of the M&A research is conducted on these markets, and therefore argues that future research would benefit from looking at other emerging regions. The Nordic (Sweden, Denmark, Norway, Iceland, Finland) could be argued being an emerging market in the M&A context. Using the Capital IQ screening tool and calculating the Nordic share of the total European market, the share in 2008 was 11,28 percent, measured with the number of acquirers being Nordic, whereas in 2022, the same share had increased to 14,31 percent, highlighting the growing importance of the Nordic. Additionally, research in the Nordic countries is scarce. Rose et al. (2017) is one of few to the authors knowledge that

researches M&A performance on the Nordic market and argues that this research gap should be subject for further research.

Additionally, Rose et al. (2017) finds evidence different from other regions such as the US or Europe in general and argue that the Nordic has different characteristics which could explain these differences. Doukas, Holmen, and Travlos (2002) further highlight this phenomenon, arguing that the typical Swedish ownership structure is not as dispersed as in other developed countries, and that Sweden has the highest percentage of firms that issue dual class shares. Rose et al (2017) argue that Nordic firms have similar corporate governance characteristics which makes the method of payment in Nordic mergers very interesting to investigate, since choosing stock over cash would be an important choice to make, especially for Nordic managers.

### **1.3. Research questions**

Motivated by the above discussion, the following research questions have been conducted and will guide the authors throughout this paper:

- 1. Do M&A transactions create long-term value for Nordic acquirers?*
- 2. Does method of payment affect long-term value creation for Nordic acquirers?*

### **1.4. Methodology**

To answer our first research question, this thesis will conduct an event study in which the measure of interest will be the BHAR. These measurements will then be subject to a series of univariate tests. Our second research question is intended to be partly answered through t-tests where the BHAR will be grouped by payment method. Additionally, our second research question will be subject for deeper analysis where Ordinary Least Squares (OLS) regression will be conducted. Lastly, and also related to our last research question, we will add interaction terms of three different proxies (Faccio & Masulis, 2005) for financially constrained firms to our regression model.

## **1.5. Main findings**

This study examined the long-term performance of Nordic companies involved in mergers and acquisitions (M&As) and found that Nordic acquisitions had a significant negative impact on acquirer shareholders' value (BHAR of -2,8 %). Full cash payments (BHAR 0.3%) outperformed stock and mixed (BHAR -7,1 %) financed transactions, generating higher acquirer shareholder wealth. However, there was no significant evidence to support the notion that financially constrained firms performing cash payments performed worse. The findings align with signalling theory and free cash flow theory, emphasizing the negative impact of equity payments and managerial incentives. Overall, this research contributes valuable insights for strategic decision-making in the Nordic M&A landscape.

## **1.6. Contribution**

To begin with, this thesis adds new evidence to the research area of long-term performance following M&A transactions which is highly relevant due to changing market conditions resulting from major events during the past two decades. Second, this thesis adds to the understanding and to some degree fills the confusion gap existing regarding method of payment and its effect on acquirer post M&A performance. Examining this relationship in the Nordic market is also highly relevant due to Nordic countries specific characteristics (mentioned above in the motivation section) and the new European M&A market that has been developed in the last two decades. Lastly, this paper adds to the understanding of financial constraints and its effect on method of payment and long-term performance in the context of M&A. This paper is to the best of the authors knowledge one of the first examining these relationships, making important contribution, and creating directions for future research to follow.

## **1.7. Outline**

First of all, we will present the literature review that consists of the empirical and theoretical literature related to this paper. The section will end with the development of three hypotheses related to our research questions derived from the literature. Next, the data and sample construction section will present and motivate the empirical foundation of this paper and the choices made in choosing the sample. Before turning to the results and analysis, the methodology used in this paper will be presented, including a discussion of event studies,

univariate and multivariate tests. The last part of this paper will present and analyse the results generated from the research in the empirical analysis section, which is divided into uni- and multivariate analysis. This section will also include a presentation and univariate analysis about the sample and the summary statistics of the variables that are used. Lastly, this paper ends with a conclusion section, which summarizes the findings of this study.

## **2. Literature Review**

To answer the research questions of this thesis, one must first familiarize itself with prior studies and theories related to the areas of interest. This section begins with discussing the empirical literature, before turning to the theories often used to describe the relationships in the research area.

### **2.1. Empirical literature**

This section will be introduced with discussion about motives for M&A activity, followed by presenting prior research in the M&A performance area. Next, we will present prior research regarding what factors are believed to drive M&A performance and next, there will be a detailed section describing prior literature about methods of payment and long-term performance. Lastly, before turning to the theoretical framework, some empirical studies on financial constraints and method of payment will be presented.

#### **2.1.1. Motives for M&A**

Berkovitch and Narayanan (1993) finds that the primary motive for takeovers is synergy, which is the expected increase in value resulting from the combination of the target and acquiring firm. Berkovitch and Narayanan (1993) further argue that management may undertake M&As for their own benefit, since many managers' compensations are tied to the size and performance of the firm. Such acquisitions are often to the expense of shareholders, since acquisitions may not enhance performance, only size of the firm. Lastly, Berkovitch and Narayanan (1993) identifies hubris as another motive for takeovers, i.e., the overconfidence of the acquiring firm's management. This motive suggests that managers may overestimate their abilities and engage in value-destroying acquisitions.

A last motive for engaging in M&As that is mentioned here is the shareholder wealth effect. Asquith et al. (1983) finds that mergers can create value for bidding firms. Similarly, Mitchell and Mulherin (1996) find that mergers can create value for shareholders of both the acquiring and target firms. The results could impose that managers could engage in M&As just to enhance shareholder wealth. Mitchell and Mulherin (1996) further mentions the desire to diversify, gain market power, and improve efficiency as possible motives for M&As.

## 2.1.2. M&A Performance

The literature is highly concentrated on the short-term announcement return, whereas long term performance is relatively less investigated. Renneboog and Vansteenkiste (2019) states that long-term performance either can be measured through stock performance or accounting measures, this thesis will focus on the stock performance.

### 2.1.2.1. Long-Term Performance

It is a puzzle why firms engage in corporate acquisitions, since there is much evidence that such transactions destroy acquirer shareholder value in the long term, i.e., negative abnormal returns (e.g., Mandelker, 1974; Franks, Harris & Timan, 1991; Agrawal, Jaffe and Mandelker, 1992; Andre, Kooli and L'her, 2004). For example, Asquith (1983) found a negative CAR of -7,2 percent 240 days post-merger for US acquirers between 1962 and 1976. Similarly, Loughran and Vjih (1997) found significant negative BHAR in the three years following the acquisition announcement for 947 US M&A transactions between -70 and -89. Another important paper, Rau and Vermaelen (1998), examined mergers and tender offers between 1980 and 1991. For mergers, the authors used the BCAR and found statistically significant negative performance of -0,0404 36 months after the merger. For tender offers, the authors found statistically significant negative CAAR of -0,0738 for the same period.

The literature for long term performance is well investigated, however, most research is done on periods prior to the GFC (E.g., Alexandridis et al., 2017; Cumming et al., 2023). While most prior studies seem to conclude that acquirer shareholders lose wealth in the long-term post acquisitions, little is known about the phenomena today.

## 2.1.3. Value drivers of long-term performance

There is confusion and little understanding on what factors truly drive acquisition success and performance in the long-term. This section aims to discuss several of these factors and begins with a detailed discussion about the method of payment, followed by a shorter section describing other value affecting variables.

### 2.1.3.1. Method of Payment

Martynova and Renneboog (2008) argues that the M&A market moves in waves and examines all the five M&A “waves” of the 1900s. The authors find clear evidence that the means of payments have changed a lot during the century. During the first wave (early 1900s)

all-cash offers dominated in M&A transactions, but during the second (1920s) and third (1960s) wave, Equity offers constituted the majority of all payments. During the fourth (1980s) wave, cash was once again the most popular means of payment, and during the fifth (1990s) wave Equity was the dominant payment method. Several authors argue that firms using their stock as currency will perform worse than firms using cash (Myers & Majluf, 1984; Martin, 1996; Loughran and Vijh, 1997; Mitchell and Stafford, 2000; Martynova, Ostling & Renneboog, 2007).

For example, Loughran and Vijh (1997) examined US acquisitions between 1970 and 1989 and found a significant difference in post-acquisition returns between firms paying with stock versus firms paying with cash. Cash offers earn on average 18,5 % more than matching firms whereas stock offers earn 24,2 % less than matching firms (Loughran & Vijh, 1997).

Similarly, Fuller, Netter and Stegemoller (2002) investigated US M&As between 1990 and 2000. They argue that there is a lack of consensus regarding acquirer shareholder wealth effects and found significant differences in acquirer returns depending on payment method. Returns for cash and mixed offers were insignificant whereas returns for equity offers were significantly negative (Fuller et al., 2002).

Savor and Lu (2009) investigated US acquisitions between 1962 and 2000 and found evidence that only overvalued firms gained from using stock offers in M&A transactions. According to the authors, the market timing theory posits that firms generate value (BHAR) when they use their equity in booming markets where the stocks is generally overvalued and convert it to less overvalued hard assets. Regarding cash offers, the authors found no significance and could therefore draw no conclusions. Similarly, Akbulut (2013) US deals between 1993 and 2009 of public acquirers and found that firms that are mis- or overvalued tend to use stock more frequently to pay for acquisitions. The author also found that these acquirers earn both lower long-run shareholder returns when compared to acquirers using cash and mixed offers. The author found that overvalued firms making acquisitions with stocks underperform similar overvalued firms not doing acquisitions by 17,8% in a three-year period following acquisitions.

In contrast to prior literature Georgen and Renneboog (2004) found that acquiring shareholders earned more when using equity offers than when using all-cash offers in European M&As between 1993 and 2000. Equity offers earned on average a CAAR of 1%



whereas Cash offers only earned 0,4%. Additionally, the authors found that out of the bids in their sample, 60% constituted all-cash offers.

#### 2.1.3.2. Other value drivers

Whether or not the transaction is crossing borders or not is believed to have great predictive power of long-term performance and is included in many regressions analysis. Geographical and cultural distance is believed to decrease performance since it complicates integrations, since culture, regulation and other factors often differ between regions and nations (Renneboog & Vansteenkiste, 2019). Conn et al. (2005) found for example that cross-border deals were significantly negative for UK acquirers when measuring performance with BHAR.

Renneboog and Vansteenkiste (2019) argue that in theory, there should be an increased wealth effect on focused deals compared to diversifying deals. However, evidence is contradictory, whereas Martynova et al. (2007) do not find any significant difference when investigating long term performance, Renneboog and Vansteenkiste (2019) argue for a positive relationship in the short-term effects. No matter the impact, the variable is believed to have an impact on performance and is included in countless analyses in the M&A field.

According to Renneboog and Vansteenkiste (2019), prior acquisition experience, or whether the acquirer is a serial acquirer or not, is one of the most common theories trying to explain post-merger performance. The idea is that CEOs making lots of acquisitions become better at it and CEO and organizational learning as acquisition leads to better and better results. However, theories about CEO overconfidence and hubris rising with the number of acquisitions suggest that serial acquirers making more acquisitions, are making more and more bad acquisitions (Renneboog & Vansteenkiste, 2019).

Another common line of research is derived from agency theory, where CEO incentives and compensation is used to predict acquisition outcomes (Renneboog & Vansteenkiste, 2019). As it's a common belief that M&As destroys value more commonly than it creates, empire building is often used as a possible explanation to this phenomenon. The idea is that CEOs are often incentivized to engage in M&As even though they are value destroying, since their compensation is often closely related to firm sales and growth (Renneboog & Vansteenkiste, 2019).

#### 2.1.4. Financial Constraints and Method of Payment

Several papers have found that more financially constrained firms tend to use stock offers rather than cash, since cash is often financed with debt and becomes too expensive for these firms (Faccio & Masulis, 2005; Karampatsas et al., 2014; Uysal, 2011)

For example, Faccio and Masulis (2005) investigated US M&As between -84 and -98. The authors analyse whether the payment method is dependent on financial characteristics of the acquiring firms, such as their leverage levels, cash flow, and credit ratings. Faccio and Masulis (2005) argue that the choice of payment method, i.e. The choice between cash and equity should be highly dependent on the acquirer's financial strength and constraints since cash offers are often financed with debt. To measure financing constraints, the authors include measures for collateral, leverage, and acquirer size. Collateral is used since more collateral means fewer financial constraints, Leverage is used since higher leverage should mean higher financial constraints, and Acquirer size is used since larger acquirers have access to more debt. Faccio and Masulis (2005) find that financially constrained acquirers are more likely to use stock as a method of payment compared to cash which highlights the role of financial constraints in shaping corporate decisions and strategies.

DeBodt et al. (2022) lists several indexes used to proxy for financial constraints, among other the Whited and Wu (2006) WW index. That index aims to capture the proxies used in Faccio and Masulis (2005), but also include measurements for industry and firm sales growth. However, this paper will focus solely on the proxies used by Faccio and Masulis (2005).

## 2.2. Theoretical Literature

In this section, theories relevant to the research questions will be discussed.

### 2.2.1. Neoclassical theory

The neoclassical theory suggests that firms have valuable, scarce assets that they use to their advantage through acquisitions and diversification, leading to increased value and better performance (Arikam & Stulz, 2015). The theory suggests that firms act in their shareholders best interest and that M&As will only be engaged in if they generate value. Overall, the neoclassical theory suggests that M&As can be value-increasing because they allow a firm to exploit its valuable scarce assets, including growth opportunities. Ahern and Weston (2007)

argue that the neoclassical theory challenges that acquiring firms destroys shareholder value and instead draws upon that the new combination should be more productive than the sum of its parts. This theory is interesting since it is challenging most prior evidence in the area but might be highly relevant due to the short-term results of Alexandridis et al. (2017).

### 2.2.2. Hubris theory

Another theory that could explain why many Mergers and Acquisitions still occur, despite evidence of bad acquirer performance, could be the hubris theory. The hubris theory was first introduced by Roll (1986) and simply means that managers overestimate their own capabilities, expected synergies, and their own ability to get these synergies realized, which leads to management overpaying for their targets (Martynova & Renneboog, 2008). The theory suggests the presence of irrational managers who engage in M&As, believing they are value enhancing, when they are in fact the opposite, could explain the phenomena. Although this thesis doesn't include any measurements for CEO overconfidence, the theory is still highly relevant and interesting to discuss in the context of this thesis.

### 2.2.3. Signalling theory

First introduced by Spence (1973), signalling theory suggests that every decision made by management contains information to the market. Travlos (1987) argues that in a world of asymmetric information, management choice of the method of payment can provide the market with such information. Travlos (1987) refers to Myers and Majluf (1984) who argue that managers prefer cash payments if they think their firm is undervalued, and stock payments if they believe their firm is overvalued. This inclines that shareholders react positively to firms announcing cash offers whereas the opposite if the firm announces stock offers in the acquisition context (Travlos, 1987). This is due to the signalling content of stock payments, where the market reacts as if the managers believe their firm is valued higher than its actual value, which in turn results in negative reactions.

### 2.2.4. Pecking order theory

A theory relevant to the method of payment choice is the pecking order theory of Myers (1984) who suggests that firms pick their financing based on costs and information asymmetry. The theory suggests that firms will prefer internal financing first, then raising new debt, and last raising new equity due to such costs. However, there is reason to believe

that financially constrained firms may have an altered pecking order, since they could experience higher costs, covenants and restrictions from creditors etc. since such firms, in the creditor's perspective, means higher risks. It is also reasonable to assume such firms have lower internal funds, which means that financially constrained firms might be forced to turn to equity. Either because it is the least expensive source of funds for such firms, or to the sole fact that they are unable to raise funds any other way.

### 2.2.5. Free Cash Flow Theory

The Jensen (1986) free cash flow theory implies that most managers are incentivized to engage in value destroying activities, since compensation is often closely tied to growth and sales increases. Jensen (1986) argues that this results in managers' tendency of growing firms far beyond their optimal size and capacity, which is value destroying for shareholders. Jensen (1986) argues that because of this, firms are often better off paying out excess cash, after all positive net present value projects have been funded, to shareholders. This could mean that firms acquiring with cash might have excess cash, and are more probable and making bad acquisitions, and therefore hurt shareholder value in the long term. This is interesting in the context of this research since it is contradicting the majority of the existing evidence in the field.

### 2.2.6. Agency theory

Agency theory is another well-established framework that is often used to explain the behaviour of firms and managers. Several studies have examined the relationship between the method of payment and the outcomes of M&A transactions from the agency theory perspective. For example, a study by Jensen and Ruback (1983) found that the use of stock in M&A transactions was associated with higher returns for shareholders compared to cash payments. They argued that this was because stock payments align the interests of managers and shareholders, as managers are more likely to make value-enhancing decisions if they have a stake in the merged company.

### **3. Hypothesis Development**

Derived from the two research questions presented in section 1 of this paper, and the empirical evidence and theory presented in the previous section, this section presents three hypotheses that will be tested.

#### **3.1. Hypothesis 1: M&A and value creation**

The *Hubris Theory* suggests that due to hubris, managers pay too much for targets, which often leads to costs being larger than synergy effects, which in turn leads to negative wealth effects. This is a common explanation in the literature for why firms still engage in M&A transactions, even though they often hurt shareholder value. Many research papers are in line with the hubris theory (e.g., Mandelker, 1974; Franks, Harris & Timan, 1991; Agrawal, Jaffe and Mandelker, 1992; Andre, Kooli and L'her, 2004). For example, Rau and Vermaelen (1998) found negative long term abnormal returns for both mergers and tender offers.

On the other hand, the *Neoclassical theory* discussed by Ahern and Weston (2007) challenges the fact that acquiring firms destroys shareholder value. The theory suggests that managers act in their shareholder interests and that the new merged firm combination should be more productive than the sum of its parts, leading to positive performance. Alexandridis, Antypas and Travlos (2017) found evidence in line with this theory in the short term. They additionally challenged the *hubris theory*, and measured CEO over-optimism using executive stock option exercise as a measure, which indicated that hubristic behaviour has decreased significantly in recent years. This discussion makes it highly interesting to investigate whether the short-term findings of Alexandridis et al. (2017) also holds in the long term. Thus, the following hypothesis will be tested:

*Hypothesis 1: M&A activity generates negative abnormal long-term returns statistically significant different from zero in the Nordic region.*

#### **3.2. Hypothesis 2: Method of payment and value creation**

In 1987, Travlos found early evidence that was in line with *signalling theory*, that firms paying with equity in acquisitions signals that management believes that their stock is overvalued, and in turn leads to negative shareholder returns. In line with Travlos (1987), several studies have found similar results (e.g., Myers & Majluf, 1984; Martin, 1996;

Loughran and Vijh, 1997; Mitchell and Stafford, 2000; Martynova, Ostling & Renneboog, 2007). Loughran and Vijh (1997) found that cash offers earn on average 18,5 % more than matching firms whereas stock offers earn 24,2 % less than matching firms.

Applying the Jensen *free cash flow theory* to the method of payment choice and the relationship with long-term performance, would suggest that cash payments might perform worse. Jensen (1986) suggests that managers act in their own interest and would engage in value destroying transaction activity when having excess cash. If this is true, then the transactions made by those managers would be cash offers and generate negative abnormal returns. Additionally, one can include the perspective of agency theory, which suggests that firms paying with equity aligns the interests of managers with the shareholders. Georgen and Renneboog (2004) results are in line with this discussion. They found that European equity offers outperformed all-cash offers. From the discussion above, the following hypothesis is constructed:

*Hypothesis 2: Acquirer paying with all-cash performs better in the long-term compared to acquirers using stock- or mixed offers.*

### **3.3. Hypothesis 3: Method of payment and financial constraints**

The pecking order theory suggests that firms prefer internal financing before turning to outside funds (Myers, 1984). When internal funds are limited, the firm should in theory then turn to debt. However, if the firm is financially constrained the firm would then be subject to higher costs of such financing which might force them to issue new shares or use existing shares to fund transactions. Faccio and Masulis (2005) found exactly this, that financially constrained firms tend to use stock more frequently. Combining this discussion with the signalling theory that suggests that firms using equity signals overvaluation, might put financial constraints in a vicious circle, continuously being forced to use equity and sending bad signals to the market. This discussion would impose that financially constrained firms using equity should perform worse, measured with stock performance, compared to firms using cash offers. This would also mean that, on the contrary, firms that are financially unconstrained using cash offers, would generate higher abnormal returns. Combining the evidence of method of payment and long-term performance and the evidence on financial constraints and the method of payment together, leads us to the following hypothesis:

*Hypothesis 3: Financially unconstrained firms using all-cash offers perform better in the long term than financially constrained firms using all-cash offers.*

## 4. Data and Sample Construction

This section of the thesis presents our Nordic sample and the choices made when restricting it to certain limitations. The section will also discuss the various data sources used to obtain the sample for this research.

### 4.1. Sample Description

#### 4.1.1. Sample Construction

To ensure reliability our sample follows the characteristics criteria by Rose et al. (2017). For their Nordic sample, the authors use the following criteria.

- 1) Bidder and target are Nordic,
- 2) Bidder and target are public,
- 3) Deal must be completed,
- 4) Announcement between selected dates (2004-2022 in this study),
- 5) M&A classification.

Additional criteria were used by Rose et al. (2017) to ensure data availability. Savor and Lu (2009) argues that it is customary in the literature to exclude transactions where the market value of the target's equity is smaller than 5 percent of the acquirer's equity value. The authors argue that this is to ensure a material impact of the transaction on acquirer financials, this procedure is also employed also in this paper. The procedure resulted in 32 acquisitions being excluded from our sample.

The period of interest in this thesis is post 2004 (IFRS 3) and 2022. De-Bodt et al. (2022) uses the sample period between 2002 and 2020, to capture the effect of the prohibition of pooling accounting in the US 2001. To account for the pooling accounting prohibition in Europe 2004 by the IFRS, the aftermath of the GFC, and to ensure feasibility of our data (Lots of variables are collected manually), this study will focus on the period between 2004 and 2022. The period ending is based on the motive of this study, where the BHAR of 1 year is being investigated, which limits us from investigating later transactions.



Our initial sample included 565 transactions made between Nordic public firms. However, the initial sample included internal transactions which were deleted and resulted in a sample of 476 transactions. The next step was merging transactions that were recorded as independent, when they in fact were the same but divided due to mixed consideration, which probably made Refinitiv Eikon read them as independent. 45 such errors were detected and corrected for. Next, the transactions with a deal value of 0 and an unidentified payment method were omitted, resulting in a sample of 349 transactions. Additionally, transactions where there were missing data from Refinitiv Eikon, were cross checked and hand gathered in Capital IQ or Zephyr, and if it were missing in those sources as well the transaction was dropped. Additionally, all transactions were cross-checked on Zephyr, where variables such as the method of payment and deal value were investigated. Lots of payments needed to be addressed and changed, since the values reported in Refinitiv Eikon were wrong/incomplete, most probably due to reporting differences where some deals were reported independently when they in fact were related.

It's common practice in the literature to exclude financial firms in the sample due to characteristics differences Fama & French (1992), however, some include such firms due to data restrictions Akbulut (2013). In this study, we will exclude transactions where the acquirers are financial firms. When appropriate, independent variables were winsorized at the top and bottom at the 1 percent level, in line with prior literature (e.g., Alexandridis et al., 2017). In the end, the sample consists of 167 Nordic M&A transactions and the summary statistics are presented and discussed in the summary statistics section. The sample size is a bit smaller than prior literature, however, the Nordic market is also smaller than most prior literature used samples. Looking at Rose et al. (2017), our sample size seems to be in line with Nordic research, since they obtain a sample of 184 transactions.

#### 4.1.2. Sources of data

Majority of all transaction data were collected on Refinitiv Eikon due to good data availability and guidance in prior literature. The source was also highly appropriate since most variables could be collected time specific to every transaction, saving the authors lots of time. Missing data points were hand gathered on Zephyr and Capital IQ and those points that were not available were omitted from the sample. The Zephyr database was also used when

cross-checking our M&A data, to ensure reliability, since the database specializes in M&A transactions.

The price data were mainly collected on Refinitiv Eikon whereas the Index data were collected on Capital IQ. Due to omittance of variables and data restrictions our final sample did not include any Icelandic acquirers, which resulted in exclusion of any Icelandic index.

## **5. Methodology**

This section presents the various methodologies used to answer the thesis research questions (Presented in section 1). The section is divided into three sub-sections: Univariate test, Multivariate tests, and Regression diagnostics.

### **5.1. Univariate tests**

#### **5.1.1. Event study**

Renneboog and Vansteenkiste (2019) argues that event studies are the most common approach in investigating long term stock performance in the M&A area. Fama, Fisher, Jensen, and Roll (1969) introduced the concept of event studies in the finance literature, investigating abnormal stock returns. Specifically, an event study involves analysing the market's reaction to a specific event, and then measuring the change in a future point in time. The authors noted that the speed and efficiency with which stock prices adjust to new information can be analysed through an event study, which allows researchers to measure the magnitude and direction of the market's response to the event. By conducting an event study, researchers can also determine whether the market's reaction was immediate or delayed, and whether the response was consistent across different types of stocks or industries.

Renneboog and Vansteenkiste (2019) argue that event studies can be classified in two categories, studies that compare returns to matching set of control firms and those event studies that obtain coefficients from regressions using different models (Market Model, CAPM; or Fama French three factor model etc.). This study will focus on the first, where two of the most common methods used are BHAR and CAR where both use the event time in estimation, e.g., number of days from event to the time  $x$  (Renneboog & Vansteenkiste, 2019).

#### **5.1.2. BHAR**

Renneboog and Vansteenkiste (2019) states that long-term performance either can be measured through stock performance or accounting measures, this thesis will focus on the stock performance. The Buy and Hold Abnormal Return (BHAR) is a commonly used method in finance to evaluate the performance of a portfolio or a stock. It measures the return

of a portfolio or stock relative to the expected return based on the market's risk and return characteristics. The BHAR is calculated by subtracting the expected return from the actual return and is used to assess the effectiveness of investment strategies (e.g., Savor & Lu, 2009; Barber & Lyon, 1997; Lyon, Barber & Tsai, 1999).

The BHAR calculation includes measuring company return during a period as if an investor bought the stock at time  $t$  and held it until time  $t + n$  (Barber and Lyon, 1997). The return is then compared to matching firms to arrive at the abnormal return. Barber and Lyon (1997) portray different approaches to retrieve the expected return; 1) Matching firms' portfolio, 2) Relevant index investigation. Savor and Lu (2009) uses the first approach where they adjust for size (Fama & French, 1992), book to market ratio (Fama and French, 1993), and industry effects (Andrade, Mitchell, & Stafford, 2001) to arrive at matching firm's portfolio returns for every company, where every portfolio contains 10 similar firms.

This study will use the second approach where a relevant index will be used in calculating the expected return for every company. Barber and Lyon (1997) use the CRSP equally weighted NYSE/AMEX/NASDAQ market index when investigating US companies, which suggests high relevance in using region specific indexes for expected return calculation. This study will derive on this idea, and we will calculate the  $E(R)$  and BHAR using the FTSE Nordic Index on all acquiring firms. The index is designed to track the performance of the Danish, Finnish, Norwegian, Icelandic, and Swedish markets. The relevance of the index is among other factors e.g., that most of the firms included in the index are from the industrial and the energy sector, which is similar to the distribution of our sample. Additionally, Sweden is the biggest contributor of the index, which is a similar characteristic to our sample.

The equation of calculating BHAR is as follows:

$$BHAR_{it} = \prod_{t=1}^t [1 + R_{it}] - \prod_{t=1}^t [1 + E(R_{it})] \quad (1)$$

where  $R_{it}$  represents the actual return of the stock  $i$  at time  $t$  and  $E(R_{it})$  represents the expected return of the benchmark at time  $t$  which is in our case the FTSE Nordic Index.

Roll (1978) discusses the potential problems with using benchmark indexes when measuring long-term performance. The issue is that the abnormal return is entirely dependent on the author's choice of benchmark, hence, it is particularly important to choose an efficient one. This study is using the FTSE Nordic Index, which is constructed to represent the Nordic in general. The authors argue that this is a more appropriate method rather than choosing company specific benchmarks, since trade among the Nordic countries is large and many of our observations are cross-border inside the Nordic region. Some argue for the construction of matching portfolio returns for every observation of firms with similar size and other characteristics to measure abnormal performance, however, due to data restrictions and timely issues we are restricted from implementing this approach (E.g., Franks, Harris & Titman, 1991).

### 5.1.3. Test for difference in means (T-test)

To answer our first and partially our second research question, i.e., test hypothesis 1 and 2, this paper will employ two t-tests. One t-test will test if the average BHAR obtained in our sample is different from zero, and the second t-test will test if there is difference in means between firms paying full cash and firms that either use stock or mixed offers. Using t-tests are common practice in prior literature for testing similar hypotheses as the ones stated in this paper (e.g., Savor & Lu, 2009; Alexandridis et al., 2017; Agrawal et al., 1992; Loughran & Vijh, 1997). The mathematical equation for t-tests is presented below:

$$t = \frac{\bar{x}-u}{\frac{s}{\sqrt{n}}} \quad (2)$$

## 5.2. Multivariate tests

### 5.2.1. OLS Regression

To investigate the relationship between BHAR and method of payment, this study employs OLS regression, like prior research investigating abnormal returns and determinants (e.g., Alexandridis et al., 2017; Georgen & Renneboog, 2004; Martynova, Ostling & Renneboog, 2007). This method allows us to examine whether the method of payment has a statistically significant effect on the BHAR of the companies in our Nordic sample. In addition to the

main explanatory variable, other explanatory variables will be used in our regression. These are derived from results in several prior studies, where they have been proven significant in affecting long-term performance and should therefore be included in our regression. These variables include several deal characteristics, acquirer characteristics, and controls for year and industry fixed effects.

We are going to use interaction terms to test our 3rd hypothesis in model 8, 9, and 10 which is a methodology mainly inspired from Yang, Guariglia and Guo (2019). The authors use interaction terms including method of payment regressed against stock performance. This paper will use interaction terms of the proxies for financial constraints (Faccio & Masulis, 2005) and the payment method with a similar approach as the previous mentioned paper. Yang et al. (2019) additionally investigates the financial constraints and method of payment and creates dummy variables which equals 1 if the firm is financially constrained and 0 otherwise. The authors use Total Assets in one of those measurements, where the firm is assumed constrained if it is in the bottom three deciles of comparable firms. The same approach will be taken here, comparing each firm to a sample of public Nordic firms. The authors are aware of additional proxies for financial constraints, such as the Whited and Wu (2006) WW-Index. However, Farre-Mensa and Ljungqvist (2016) argues that such measurements do not correctly proxy for financially constrained firms, since they find evidence that firms that should act as if they were constrained according to these proxies, had in fact no trouble at all raising any additional debt. Therefore, the proxies of Faccio and Masulis (2005) will be used in this paper.

The variables will be described in the next section (see also Table (1): Variable definitions). Our regression models are presented below:

### OLS Regression

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$$BHAR_i = \alpha + \beta_1 CASH\_ONLY + \lambda Industry + \varepsilon$$
$$+ \beta_2 TENDER\_OFFER + \delta Year$$
$$+ \beta_3 RELATIVENESS$$
$$+ \beta_4 CROSS\_BORDER$$
$$+ \beta_5 LOG\_DEAL\_VALUE$$
$$+ \beta_6 MTB$$
$$+ \beta_7 RELATIVE\_SIZE$$
$$+ \beta_8 LEVERAGE$$
$$+ \beta_9 CASH\_TO\_ASSETS$$
$$+ \beta_{10} FC\_ASSETS$$
$$+ \beta_{11} FC\_ASSETS * CASH\_ONLY$$
$$+ \beta_{12} FC\_LEVERAGE$$
$$+ \beta_{13} FC\_LEVERAGE * CASH\_ONLY$$
$$+ \beta_{14} FC\_COLLATERAL$$
$$+ \beta_{15} FC\_COLLATERAL * CASH\_ONLY$$

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Our OLS Regression will be divided into 9 different models. Where model 1 and 2 will regress BHAR against CASH\_ONLY only. Models 3 and 4 will include controls for deal characteristics ( $\beta_2 - \beta_5$ ). Models 5, 6 and 7 will include acquirer characteristics ( $\beta_6 - \beta_9$ ). And finally, model 8 to 10 will include three different measures and interaction terms for financial constraints ( $\beta_{10} - \beta_{15}$ ). Financial constraint measurements are included in table (1) variable definitions in the tables section.

## 5.2.2. Variable Definition

### 5.2.2.1. Dependent variable (BHAR)

Savor and Lu (2009) uses the BHAR. This study will focus on the BHAR for 1 year after the merger announcement. The measurement is calculated using the FTSE Nordic index as a benchmark and proxy for the expected return. Closer explanation of the method and the calculation of it is presented in the Univariate tests section.

### 5.2.2.2. Main explanatory variable

Our main explanatory variable is the method of payment used in the transaction. We are going to follow the distinction made by Martin (1996). The author classifies payment methods into stock and cash. The authors of this paper acknowledge the fact that there are more methods, e.g., earnouts, but due to data availability and feasibility concerns, such methods are overlooked. Martin (1996) classifies cash as cash, non-contingent liabilities, and

newly issued notes. Stock is classified as shares with full or inferior voting rights. In our regression, we will use a dummy variable, *CASH\_ONLY*, which equals 1 if 100 percent of the transaction consideration consists of cash, and 0 otherwise.

#### 5.2.2.3. Other explanatory variables

Cross border transactions result in not only geographical distance but could also result in cultural differences. Therefore, cross-border is often used as a predictor for long-term performance. Conn et al. (2005) investigated cultural distance and found that cross border deals and long run stock returns (Measured with BHAR) were significantly lower than the returns for domestic deals. We include a dummy variable, *CROSS\_BORDER*, in our regressions that equals 1 if the parties are from different nations, and 0 otherwise.

Related or focused mergers are often used to predict long-term performance since firms employing focused acquisitions are presumed to have the relevant resources and experience to operate in that industry (E.g., Rhodes-Kropf & Robinson, 2008). Interesting though, is that Martynova et al. (2007) did not find any differences in long term returns for related firms in Europe. Literature is often distinct between horizontal/vertical and conglomerate/diversifying acquisitions where it's common practice to use the parties SIC codes as proxy for industry relatedness. The variable used in our regressions is a dummy, *RELATIVENESS*, which equals 1 if the firm's 2-digit SIC code is equal, and 0 otherwise. The two digits SIC code is often preferred in the literature, since using 3- and 4-digit codes does not yield improved proxies (Clarke, 1989).

Fama and French (1992) found a positive relationship between the market-to-book ratio and acquirers' cumulative abnormal returns. Consequently, a higher market-to-book ratio may indicate that the acquiring company is undervalued by the market, leading to increased BHARs following mergers and acquisitions. Martin (1996) uses Tobin's Q as a proxy for target investment opportunities. Martin (1996) argues that firms with higher investment opportunities use cash more frequently, and it is therefore expected that the higher the ratio, the higher the likelihood of using cash in the transaction as payment method, and hence better performance. The author uses equity market value divided by the book value of equity, prior to the announcement. The same will be employed in our regression, using the variable *MTB*.

The form of M&A is frequently used as an explanation and control in the literature for both long-term performance and method of payment. Agrawal, Jaffe and Mandelker (1992) argues



for a positive relationship between tender offers and long-term stock performance. In our regressions, we include the variable *TENDER\_OFFER*, which takes the value of 1 if the deal is a tender offer and 0 otherwise. The classification is made using a tender offer flag function in the Refinitiv Eikon screening tool.

Like Travlos (1987), Moeller et al (2005) found evidence that there is a negative relationship between the acquirer's abnormal return and the relative deal size. The authors discuss the use of the absolute size variable as a proxy for the information asymmetry theory. They suggest that as a company grows, the level of information asymmetry increases, making it more difficult for shareholders and the market to monitor the company. The authors expect that larger companies will face lower abnormal returns due to this increased difficulty in monitoring. Harford et al. (2009) measures *RELATIVE\_SIZE*, which is included in our regression, as the value of the transaction divided by the acquirer market value of equity prior to the announcement. Additionally, like Alexandridis et al. (2017), Deal value is going to be included in our regressions, denoted *DEAL\_VALUE*.

If a company has excess cash, it may be more inclined to engage in value destroying acquisitions, in line with Jensen (1976). Martynova and Renneboog (2006) uses cash holdings over total assets as a proxy for such agency costs associated with free cash flow. The same approach will be adopted in our analysis where the variable *CASH\_TO\_ASSETS* is going to be included, measured on the values for the acquirer the year prior to the announcement of the completed merger.

Leverage is often used in the literature for controlling for acquirer debt level, one the one hand the higher the debt the lower the probability the usage of cash. On the other hand, the higher the debt, the higher the creditor monitoring and the lower the probability of making value destroying acquisitions. Whatever the direction, *LEVERAGE* is going to be controlled for in our regressions. Martynova, Ostling and Renneboog (2007) found no significant evidence of the impact on pre-acquisition leverage on post-acquisition performance.

#### 5.2.2.4. Financial constraints and interaction terms

Our proxies for financial constraints are derived from Faccio and Masulis (2005), Firm size, leverage, and collateral. Firm size is used since larger firms should have better access to cheaper funds compared to smaller firms. Leverage is used since the larger the leverage, the harder it should be to raise additional debt, i.e., the smaller the debt capacity. Collateral is

used since the higher the collateral, the better access to better terms, i.e., cheaper debt financing (Faccio & Masulis, 2005). This paper will use these variables; however, we will employ the approach used by Yang et al. (2019) where each of these variables will be made into dummy variables. However, since the method of payment variable used here equals 1 if the payment method is all cash, the inverted approach will be used when constructing the dummy variables for financial constraints, since financially unconstrained firms are assumed to be cash-users more frequent. Therefore, for every financial constraint proxy, the variable will equal 1 if the acquirer is financially unconstrained.

Yang et al. (2019) uses comparable firms as a benchmark when assessing the financial condition of the acquirer. For this paper, a list of all Nordic publicly listed firms, with financial information available, was used when assessing each acquirer's financial constraints. The acquirer is assumed to be financially unconstrained if it is above the bottom three deciles of comparable firms for firm size and collateral, and below the top three deciles for leverage, the threshold used by Yang et al. (2019). Variables are further defined in table 1.

#### 5.2.2.5. Control Variables

It is common practice in most of the M&A literature to control for industry and year fixed effects. This is especially important since the global M&A market moves in waves and so to capture and isolate such effects from the phenomena of interest these controls are often included.

#### 5.2.2.6. Omitted Variables

This paper is excluding some important variables with evidence in prior literature in the study due to several reasons. The first variable proven to predict post-merger performance (e.g., Alexandridis et al. 2017) is excluded not because of data limitations, but because more than 98 percent of all transactions in our final sample were classified as friendly on the Refinitiv Eikon Database, and the remaining 2 percent was neutral or unclassifiable. Due to these reasons, it did not make any economic nor statistical sense to include the variable in our regressions. The second variable proved to have predictive power in post-merger performance but that was omitted in this study was the public status of the acquiring firm (e.g., Renneboog & Vansteenkiste, 2019). The simple fact that our sample criteria made it irrelevant to control for this effect, since all our targets were public firms. Also seemed

relevant in the literature is CEO incentives and CEO connections, but due to data restrictions we were limited in investigating these variables.

### 5.3. Regression Diagnostics

#### 5.3.1. Multicollinearity

Dorman et al. (2013) argues that one of the most commonly used methods to detect collinearity among variables is to conduct a pairwise correlation table, where the authors argue for a threshold of  $> 0,7$  and  $< -0,7$  for the correlation coefficient. The authors find significant evidence of severe distortion of the model predictors above or below these correlation levels. Therefore, these thresholds are used in this paper.

Although our correlation table below (Table2), does not show evidence of multicollinearity, using the thresholds of Dorman et al. (2013), there are some correlations interesting to discuss. For example, TENDER\_OFFER is negatively, although weekly, correlated with CASH\_ONLY, which indicates that tender offers seem to be more financed with stock and mixed offers. CROSS\_BORDER and CASH\_ONLY show among the strongest correlations among the ones presented in the table of 0.27, indicating that cross-border deals use cash more frequently. The highest correlation detected was between DEAL\_VALUE and LOG\_TOTAL\_ASSETS, suggesting, not surprisingly, that bigger firms make bigger deals. No variables were omitted followed by the investigation of the correlations table since no relation was above or below the threshold of Dorman et al. (2013).

Pairwise correlations											
Variables	1	2	3	4	5	6	7	8	9	10	11
(1) BHAR_NORDIC	1.000										
(2) CASH_ONLY	0.149	1.000									
(3) TENDER_OFFER	0.162	-0.171	1.000								
(4) RELATIVENESS	0.033	-0.058	-0.035	1.000							
(5) CROSS_BORDER	0.092	0.271	-0.110	-0.073	1.000						
(6) LOG_DEAL_VALUE	0.140	-0.025	0.040	-0.006	0.141	1.000					
(7) MTB	-0.124	-0.168	0.094	-0.027	-0.048	0.037	1.000				
(8) RELATIVE_SIZE	-0.013	-0.203	0.101	0.090	-0.071	0.289	-0.107	1.000			
(9) LEVERAGE	0.038	-0.012	-0.103	0.067	0.016	0.194	-0.172	0.243	1.000		
(10) CASH_TO_ASSETS	-0.163	-0.130	0.154	-0.029	-0.065	-0.120	0.117	-0.031	-0.229	1.000	
(11) LOG_TOTAL_ASSETS	0.193	0.337	-0.168	-0.066	0.230	0.549	-0.239	-0.226	0.250	-0.212	1.000

Table 2: Pairwise Correlation Table

### 5.3.2. Heteroskedasticity

To test the null hypothesis of homoscedasticity we considered white tests for all three different models which can be seen in table 3. The test only gets a significant p-value in our first test, where CASH\_ONLY is regressed against BHAR. This p-value results in a rejection of the null hypothesis and we find evidence of heteroskedasticity. Models 3 and 5 show no evidence of heteroskedasticity however, since they generate insignificant p-values in the white's test.

Source	Regression 1			Regression 3			Regression 5		
	chi2	df	p-value	chi2	df	p-value	chi2	df	p-value
Heteroskedasticity	4.530	1	0.033**	23.310	23	0.443	72.330	73	0.500

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 3: White tests for heteroskedasticity for regression 1, 3, and 5. The models are plain and exclude the controls for country and industry effects. \*, \*\* and \*\*\* denote the level of statistical significance at the 10%, 5% and 1% respectively.

### 5.3.3. Normality

One of the assumptions of OLS is that the variables are normally distributed. To check for this assumption, we plotted histograms of all variables used in the OLS. The ones that did not show evidence of normality we used the natural logarithm, which is a common method to deal with normality concerns in econometrics (De Veaux, Velleman & Bock, 2016). Figure 2 and figure 3 show the distribution of TOTAL\_ASSETS and DEAL\_VALUE both before and after using this method. Both variables showed characteristics of skewed distributions, which made it appropriate using the logarithm, making the distributions behave normally.

In addition, this paper tested the normality using the Shapiro-Wilks test for normality for the two variables above (Table 4). The two DEAL\_VALUE and TOTAL\_ASSETS. These variables show evidence of non-normality also here, so these variables are logarithmized, similar to prior literature.

Shapiro-Wilk test for normality						
Variable	Obs	W	V	z	Prob>z	
DEAL_VALUE	167	0.143	109.409	10.704	0.000	
TOTAL_ASSETS	167	0.422	73.800	9.806	0.000	

Table 4: Shapiro-Wilks test for normality.

## 6. Empirical Results and Analysis

This section will present our results and analyse the hypothesis stated in section 3 related to our research questions. This section is divided into univariate analysis, multivariate analysis, and will end with robustness and endogeneity. The univariate analysis will include presentation and discussion on the sample, variables, and analysis of our first research question. The multivariate analysis will include presentation of our models and analysis about our second and last research questions.

### 6.1. Univariate Analysis

#### 6.1.1. Sample summary

As illustrated in the graph (Figure 1), the year where most of the transactions occurred in our sample is 2006 where 19 transactions are accounted for. The second-best year was 2007 where 15 transactions were included in our sample. Next, there are five different years with 11 transactions each included in our sample: 2004, 2005, 2009, 2020, and 2021. As illustrated in figure 1, and as is noted in the literature, the Nordic M&A market seems to correlate with the European and the US M&A market and appears to move in waves (Often discussed in the literature).

Table 5 illustrates the number and percentage of M&A deals in each of the four Nordic countries: Denmark, Finland, Norway, and Sweden. The cash offers column shows the number of M&A deals where the payment was made entirely in cash, while the stock and mixed offers column shows the number of M&A deals where the payment was made partially or entirely in stock. From this table, we can see that Sweden had the highest total number of M&A deals (82), while Denmark had the lowest (9). The table also shows that cash offers were more common than stock and mixed offers in all four countries and more specifically all half of the M&A transactions of the sample occurred in Sweden.

<b>Acquirer Region</b>	<b>Cash Offers</b>	<b>Stock and Mixed Offers</b>	<b>Total</b>	<b>%</b>
Denmark	8	1	9	5%
Finland	10	7	17	10%
Norway	44	15	59	35%
Sweden	43	39	82	49%
<b>Total</b>	<b>105</b>	<b>62</b>	<b>167</b>	<b>100%</b>

Table 5: Acquirer Region frequency, grouped by method of payment.

Table 6 illustrates the number and percentage of M&A deals in each industry sector. From this table, we can see that the High Technology sector had the highest total number of M&A deals (30), while the Retail sector had the lowest (4). The table also shows that cash offers were more common than stock and mixed offers in most industry sectors.

<b>Acquirer Industry</b>	<b>Cash Offers</b>	<b>Stock and Mixed Offers</b>	<b>Total</b>	<b>%</b>
Consumer Products and Services	1	1	2	1%
Consumer Staples	18	4	22	13%
Energy and Power	16	6	22	13%
Healthcare	7	5	12	7%
High Technology	10	19	29	17%
Industrials	18	10	28	17%
Materials	3	2	5	3%
Media and Entertainment	9	1	10	6%
Real Estate	11	12	23	14%
Retail	4	0	4	2%
Telecommunications	8	2	10	6%
<b>Total</b>	<b>105</b>	<b>62</b>	<b>167</b>	<b>100%</b>

Table 6: Acquirer Industry frequency, grouped by method of payment.

### 6.1.2. Variable summary

The mean value of *CASH\_ONLY* indicates that out of the sample of 167 transactions, 62.3 % were financed completely with cash and the rest with either equity or a mix between cash and equity. This is a characteristic like several of the prior studies investigated in the literature review. *TENDER\_OFFER*, *CROSS\_BORDER* and *RELATIVENESS* are all dummy variables, which is indicated by their min and max values. *TENDER\_OFFER* has a mean value of 0.431, which means that 43.1% of all transactions were flagged as a tender offer in the Refinitiv Eikon database. For *CROSS\_BORDER*, 20.4 percent of all transactions were done internationally and for *RELATIVENESS*, 71.3 percent were focused deals where the acquirer and the target had the same 2-digit SIC code. *LOG\_DEAL\_VALUE* represent the amount of money put in place for the acquisition, with a mean value of 4.368 and a median of 4.207 which indicates that the distribution of the values in our data set normally distributed which shows that most of the acquisitions are made with relatively medium values.

*MTB* is used by investors to determine whether a stock is overvalued or undervalued. A ratio above 1 indicates that the market values the company's assets at a higher level than their book

value, which could indicate that the company has strong growth prospects or a favourable market position. A ratio below 1 suggests that the market values the company's assets at a lower level than their book value, which could indicate that the company is facing challenges or is not performing as well as expected. As illustrated in table 7 the mean value of *MTB* is 2.32 This suggests that the market values the company's assets at a higher level than their book value, which could indicate that most of the companies in our sample have strong growth prospects or a favourable market position. *LOG\_TOTAL\_ASSETS*, which can be translated to the size of the acquirer company, has a mean value equal to 6.82 and a median equal to 7.28 indicating that the variable is normally distributed.

*CASH\_TO\_ASSETS* is a financial ratio that measures the proportion of a company's total assets that is held in the form of cash and cash equivalents. It's an important ratio that should be considered when investigating the method of payment. As illustrated in Table 7, the mean value is 0.162. The min value is equal to 0 showing that within our sample there are companies with no cash held and the max value equal to 0.91. These values indicate that most firms have a low amount of cash, whereas few firms hold large amounts of cash.

*LEVERAGE*, with a mean value equal to 0.518 and a median of 0.548 showing that leverage within our sample is normally distributed.

For the remaining variables, all of them are dummy variables measuring financial constraints for each firm; *FC\_ASSETS*, *FC\_LEVERAGE*, and *FC\_COLLATERAL* and interaction terms between each of the proxies and the variable *CASH\_ONLY*. Looking at the financial constraint's proxies only, one can notice that most of the firms in our sample are considered financially unconstrained regarding assets. Looking at collateral, roughly half of the firms are considered unconstrained, and regarding leverage, 10 percent of our firms are considered financially constrained.

**Summary statistics**

<b>Variables</b>	<b>#</b>	<b>Mean</b>	<b>Median</b>	<b>SD</b>	<b>Min</b>	<b>Max</b>
<i>BHAR (FTSE Nordic)</i>	167	-.028	-0.047	.219	-.733	.6
<i>CASH_ONLY</i>	167	.623	1.000	.486	0	1
<i>TENDER_OFFER</i>	167	.431	0.000	.497	0	1
<i>CROSS_BORDER</i>	167	.204	0.000	.404	0	1
<i>RELATIVENESS</i>	167	.713	1.000	.454	0	1
<i>LOG_DEAL_VALUE</i>	167	4.368	4.207	1.898	-2.659	10.335
<i>RELATIVE_SIZE</i>	167	.306	0.117	.465	0	3.004
<i>MTB</i>	167	2.313	1.922	1.626	.347	7.158
<i>CASH_TO_ASSETS</i>	167	.162	0.077	.333	0	.91
<i>LEVERAGE</i>	167	.518	0.548	.186	.037	.93
<i>LOG_TOTAL_ASSETS</i>	167	6.822	7.285	2.496	.166	11.641
<i>FC_ASSETS</i>	167	.731	1.000	.445	0	1
<i>FC_LEVERAGE</i>	167	.108	0.000	.311	0	1
<i>FC_COLLATERAL</i>	167	.461	0.000	.5	0	1
<i>FC_ASSETS*CASH_ONLY</i>	167	.521	1.000	.501	0	1
<i>FC_LEVERAGE*CASH_ONLY</i>	167	.06	0.000	.238	0	1
<i>FC_COLLATERAL*CASH_ONLY</i>	167	.275	0.000	.448	0	1

Table 7: Summary statistics for all variables.

**6.1.3. Hypothesis 1: BHAR**

Our first hypothesis was regarding whether Nordic companies generated acquirer long term value, where this study is limited to the 1-year BHAR. Investigating the summary statistics of the BHAR on its own (Table 8), one can note that in general, Nordic acquisitions seem to hurt acquirer shareholders' value. As illustrated in the table 8 the mean or average value of the BHAR is -0.028, statistically significant from zero. This suggests that, on average, the portfolio underperformed the FTSE index by 2.8% in our sample between 2004 and 2022. In addition to that, the median is -0.047, no big difference compared to the mean, stating that the BHAR is normally distributed. The standard deviation of BHAR is 0.219. This is a measure of the variability of the data around the mean value. In this case, the standard deviation suggests that the portfolio's returns varied widely, with many observations both above and below the mean. Overall, these summary statistics suggest that the portfolio did not perform well relative to the FTSE index during the period under consideration, as the mean BHAR value is negative.

Our findings align with parts of prior literature, even though our sample and investigation period differ. Similar to our results, Renneboog and Vansteenkiste (2019) argue that M&A



transactions destroy acquirer shareholder value and performance in the long term. Rau and Vermaelen (1998), used BCAR and found statistically significant negative long-term performance of -0,0404 in the long run. Our results are in line with these prior findings which suggests that acquirers in the Nordic are no different than other acquirers in that sense. Moreover, the finding of Alexandridis et a. (2017) in the short term, does not hold in the long term for Nordic countries.

<b>Variable</b>	<b>#</b>	<b>Mean</b>	<b>St Err</b>	<b>t value</b>	<b>p value</b>
BHAR (FTSE Nordic)	167	-0.028	0.017	-1.677	.096*

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 8: One sample t-test, testing if BHAR mean is different from zero. \*, \*\* and \*\*\* denote the level of statistical significance at the 10%, 5% and 1% respectively.

## 6.2. Multivariate Analysis

### 6.2.1. Hypothesis 2: BHAR and Method of Payment

This section will begin analysing the second hypothesis using a two-sample t-test, where the t-test is grouped on method of payment. The second part of the section will analyse the findings in the OLS regressions.

#### 6.2.1.1. T-Test

Investigating table 9 of the t-test conducted between the long-term stock performance of all cash offers and stock/mixed offers, one can note that there is evidence of significant differences between the two payment methods. The p-value is significant below the 10 percent (Close to 5 %) threshold at 0,055 and there is a difference in means of 7,1 percent. Investigating the means of both groups indicate that cash only payments perform significantly better compared to stock and mixed financed transactions. Further, cash only transactions earn on average a 1-year BHAR of 0,3 percent, which indicate that cash financed deals in the Nordic on average generate acquirer shareholder wealth.

Such evidence is in line with most prior research which indicates that cash offers tend to perform better than mixed and stock offers (e.g., Myers & Majluf, 1984; Martin, 1996;

Loughran and Vijh, 1997; Mitchell and Stafford, 2000; Martynova, Ostling & Renneboog, 2007). Specifically, and like our findings, Martynova, Ostling and Renneboog (2007) found evidence of cash offers outperforming other payment methods. The authors found that cash offers increase performance with 1 percent whereas equity and mixed offers decrease performance with -1,2 and -1,9 percent respectively. Our results are in the same direction, with a significant difference in means, but with a much larger magnitude than the results of the authors. Further, Fuller et al. (2002) found no significant results for cash and mixed offers which is contradictory to the results of this study, however, the study used a much older sample and investigated the fourth wave which most reasonably should yield different results.

An interesting similarity of our statistics is the fact that the proportion of all cash offers is 62,3 percent, which is much similar to the statistics in Georgen and Renneboog (2004) that investigated a European sample between -93 and -00 (60% all cash bids). This might suggest strong similarities in preferences among regions in Europe.

Variable	Cash Only		Stock / Mixed		dif	St Err	t value	p-value
	#	Mean	#	Mean				
BHAR (FTSE Nordic)	105	.003	62	-0.071	-.067	.035	-1.95	.055*

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 9: T-test for difference in means, grouped by method of payment. \*, \*\* and \*\*\* denote the level of statistical significance at the 10%, 5% and 1% respectively.

#### 6.2.1.2. OLS Regressions

This section presents the findings of model 1 to 6, which aim to identify and examine the underlying factors driving the general wealth effects discussed in the event study and therefore test the second hypothesis. As can be noted in the regression Table 10, first, *CASH\_ONLY* is regressed against BHAR (Model 1), which reports a statistically significant positive effect. In fact, four out of the six models discussed in this section show significantly positive effects on long term performance for all-cash offers. In addition, the coefficient is relatively stable in the six models ranging between 5.7 and 8.7 percent. This finding is in line with prior literature, where most of the authors found positive effects on all-cash offers (e.g., Myers & Majluf, 1984; Martin, 1996; Loughran & Vijh, 1997; Mitchell & Stafford, 2000; Martynova et al., 2007). Additionally, the results are in line with our second hypothesis. The

results are also in line with the signalling theory which suggests that acquirers using equity perform worse than acquirers using all-cash offers due to the believed overvaluation.

The authors conducted additional analysis to point out exactly what makes the significance drop for the CASH\_ONLY variable and found that its significance drops when adding acquirer characteristics to the regression. More specifically, the variable CASH\_TO\_ASSETS is introduced and indicates remarkably high significance, which might explain some of the effect in CASH\_ONLY. The relationship might be in line with the Jensen free cash flow hypothesis (Jensen, 1976) that firms with more cash tend to engage in more value destroying acquisitions, and it would be reasonable that these firms use cash in their acquisitions. Although our collinearity test did not show any sign of collinearity, we try to drop the CASH\_TO\_ASSETS variable to be sure (See model 7). And as can be noted, the CASH\_ONLY is once again significant, which might confirm the above discussion.

Turning to deal characteristics, one can see that TENDER\_OFFER and LOG\_DEAL\_VALUE seem to have high predictive power on BHAR. *TENDER\_OFFER* is highly statistically significant in all models with a positive coefficient indicating that tender offer deals lead to higher BHAR which is consistent with the findings of Agrawal, Jaffe and Mandelker (1992). *LOG\_DEAL\_VALUE* also shows statistical significance indicating that larger deals yield higher long-term returns, which is not unreasonable since bigger deals should get more attention from all parties. Looking at CROSS\_BORDER, Conn et al. (2005) found that cross-border deals were associated with lower returns, none of our models indicate significance for CROSS-BORDER. Regarding industry relatedness, there is no significance in any of our models, and the coefficient is small, which is in line with the findings of Martynova et al. (2007) who found no significant difference between such deals.

Looking at the acquirer characteristics, MTB is only significant in one model, however, the coefficient is negative in all, which suggests that relatively higher valued firms perform worse, which is in line with the findings of Fama and French (1992). *RELATIVE\_SIZE* shows no sign of significance, but the coefficient is constantly negative in all models, which is in line with Moeller et al (2005) that found a negative relationship between the variable and performance. Additionally, *LEVERAGE* shows no sign of significance, similar to the findings of Martynova et al. (2007). Interestingly, *CASH\_TO\_ASSETS* is highly statistically significant in all models with a constant coefficient around -10 percent. This implies that

firms with higher amounts of excess cash tend to engage in value destroying acquisitions, which is very much in line with the free cash flow theory of Jensen (1976).

### 6.2.2. Hypothesis 3: BHAR, Method of payment and financial constraints

In this section the third hypothesis will be tested and discussed. Table (10) shows three additional regressions Model 8,9 and 10 with a starting point from model 6. The three regressions, each include a different proxy for financially constrained firms mainly derived from Faccio and Masulis (2005); Firm size, leverage, and collateral. Once again, we stress the fact that the dummies equal 1 if the firm is unconstrained. We include interaction terms in every regression between these proxies and the method of payment, to see if there is any evidence that financially constrained firms that use cash as payment performs differently.

As apparent in table (10) we didn't obtain any significant results either for the method of payment (CASH\_ONLY) or for our financial constraints proxies and their interaction terms, which limits us from drawing any conclusions. However, the results show some interesting characteristics. First, investigating the firm size proxy, the coefficients tell us that if the firm is larger than the three smallest deciles of comparable firms, i.e., equals the dummy 1, the BHAR increase by a total of 3,6 percent  $((-0,025*1) + (0,061*1))$ . This tells us that large firms using cash as a method of payment seem to experience larger BHAR than small firms using cash as method of payment. Firm size is used as a proxy for financial constraints in this instance. This is a reasonable result in the context of financial constraints, since larger firms should be less financially constrained and more inclined and able to follow the pecking order theory of new funds (Myers, 1984).

Next, looking at the leverage proxy for financial constraints, we would expect that the lower the leverage, the lower the constraints, and the higher the use of cash. Our results tell us, although without significance, that firms with low leverage that uses cash as method of payment seems to experience a lower return of -5 percent  $((-0,042*1) - (0,008*1))$ . Since FC\_LEVERAGE equals 1 if the firm is unconstrained, i.e., below the top three deciles. This result is contradictory to the results of the assets proxy, however, the magnitude of the coefficient and the fact that there is no sign of significance might just indicate that the effect is basically zero.

Lastly, the difference between having high or low collateral, i.e., large, or small assets that can be securitized, neither show significance or any effect in the coefficient. Since if the firm has high collateral, i.e., the dummy variable equals 1, then the positive effect on the 1-year BHAR is 0,1 %. This result is somewhat contradictory to the evidence of the literature; however, our results may not fully show the effect due to our sample size. The same can be discussed about the above variables, since the standard deviations are quite large, which indicate large variations in the variables.

It is important to point out that any analysis on financial constraints should be done with caution. For example, Farre-Mensa and Ljungqvist (2016) found that several measurements often used as proxies for financial constraints, such as firms' size and the WW-index (Includes leverage measures), fail to capture several constrained firms. Therefore, it should be noted that financial constraints are very hard to measure, and it is also due to that fact this paper includes three different proxies for it used by Faccio and Masulis (2005).

Model	1	2	3	4	5	6	7	8	9	10
Variables	BHAR	BHAR	BHAR	BHAR	BHAR	BHAR	BHAR	BHAR	BHAR	BHAR
<i>CASH_ONLY</i>	0.067* (0.037)	0.065* (0.039)	0.079** (0.038)	0.087* (0.044)	0.057 (0.043)	0.068 (0.046)	.077* (.046)	0.028 (0.066)	0.073 (0.051)	0.032 (0.058)
Deal Characteristics										
<i>TENDER_OFFER</i>			0.086** (0.034)	0.070* (0.035)	0.100*** (0.033)	0.075** (0.036)	0.066* (0.035)	0.075** (0.036)	0.074** (0.036)	0.075** (0.037)
<i>RELATIVENESS</i>			0.026 (0.033)	0.025 (0.037)	0.024 (0.033)	0.018 (0.038)	0.021 (0.038)	0.021 (0.037)	0.015 (0.038)	0.018 (0.036)
<i>CROSS_BORDER</i>			0.028 (0.035)	0.002 (0.044)	0.026 (0.035)	-0.005 (0.044)	-0.004 (0.044)	-0.005 (0.043)	-0.009 (0.044)	-0.009 (0.044)
<i>LOG_DEAL_VALUE</i>			0.015* (0.008)	0.022** (0.009)	0.016* (0.009)	0.024** (0.011)	0.027** (0.011)	0.024** (0.011)	0.022** (0.011)	0.022** (0.010)
Acquirer Characteristics										
<i>MTB</i>					-0.017* (0.010)	-0.019 (0.013)	-0.021 (0.013)	-0.018 (0.013)	-0.018 (0.013)	-0.019 (0.013)
<i>RELATIVE_SIZE</i>					-0.032 (0.050)	-0.010 (0.045)	-0.014 (0.046)	-0.006 (0.049)	-0.006 (0.044)	-0.011 (0.044)
<i>LEVERAGE</i>					-0.008 (0.095)	0.001 (0.101)	0.022 (0.100)	-0.004 (0.113)	-0.138 (0.145)	-0.023 (0.106)
<i>CASH_TO_ASSETS</i>					-0.098*** (0.028)	-0.087** (0.038)		-0.089** (0.043)	-0.084** (0.039)	-0.100*** (0.036)
Financial Constraints										
<i>FC_ASSETS</i>								-0.025 (0.080)		
<i>FC_ASSETS*CASH_ONLY</i>								0.061 (0.086)		
<i>FC_LEVERAGE</i>									-0.042 (0.099)	
<i>FC_LEVERAGE*CASH_ONLY</i>									-0.008 (0.110)	
<i>FC_COLLATERAL</i>										-0.077 (0.070)
<i>FC_COLLATERAL*CASH_ONLY</i>										0.075 (0.074)
Constant	-0.070** (0.032)	-0.120 (0.194)	-0.205*** (0.062)	-0.293 (0.209)	-0.129 (0.090)	-0.257 (0.227)	-0.269 (0.217)	-0.267 (0.227)	-0.256 (0.222)	-0.195 (0.247)
Controls										
Industry Fixed Effects	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes
Robust Standard Errors	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.016	0.106	0.054	0.146	0.072	0.155	0.332	0.158	0.158	0.164
Observations	167	167	167	167	167	167	167	167	167	167

Robust standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 10: this regression table reports the results for the regression models with pooled-OLS Regressions with the objective of measuring the effect of the method of payment i.e., CASH\_ONLY on the BHAR. The dependent variable is BHAR for all models. Model 1 and 2 only includes CASH\_ONLY and runs using both with and without year and industry fixed effects. Model 3 and 4 Includes deal characteristics and they run both with and without year and industry fixed effects. Lastly, model 5 and 6 includes acquirer characteristics, also runs with and without year and industry effects. To save space, Industry and Year fixed effects are not tabulated. All models use robust standard errors since it is common practice in the literature and to ensure comparability. Robust t-statistics are reported in parentheses below the regression coefficient. \*, \*\* and \*\*\* denote the level of statistical significance at the 10%, 5% and 1% respectively

### **6.3. Endogeneity**

Savor and Lu (2009) argue that there might be an endogeneity problem when investigating the long-term stock performance of the acquiring shareholders. The authors argue that due to the overvaluation theorem, that the only requirement to increase shareholder value is that the acquiring firm is less over-valued than the target (Savor & Lu, 2009), leading to most acquirers being less overvalued than their target. That it is becoming more common for the acquirer to have these characteristics, since they have the most incentives to do so, which creates problems for investigating long term performance. For the sake of this study, we note the possible issue, and interpret our result with caution.

Loughran and Vijh (1997) also discuss the issue of endogeneity. To address this issue, the authors employ several control variables in their analysis. By including control variables like year and industry in our study, we aim to isolate the effect of the acquisition announcement on the abnormal returns while accounting for other factors that could potentially influence the returns. The authors also conduct additional analyses to further mitigate the endogeneity concern. So, following their method to address endogeneity, for example, we examine the abnormal returns of acquiring firms that have not made any acquisitions in the past five years. By focusing on firms with no recent acquisition history, we aim to reduce the possibility of endogeneity caused by factors related to previous acquisitions. While it is important to note that addressing endogeneity completely in an empirical study is challenging, our inclusion of control variables and additional analyses helps to mitigate potential endogeneity issues and strengthens the validity of our findings regarding the long-term shareholders' abnormal returns following acquisitions.



## 7. Additional Models

This section is intended to act as additional analysis in addressing our research questions, developing on the previous section multivariate analysis. The section is divided into two subsections, where the first section will run the same regressions including control for country fixed effects. The second part of the section will introduce an interest rate dummy to the models.

### 7.1. Country Fixed Effects

Since approximately 48,5 percent of our sample consists of Swedish acquirers, the results of this thesis might be subject to endogeneity issues. Hence, this thesis will also include a country control in the models where we also control for year and industry fixed effects. Country control is not included in our main model since most prior literature focus on year and industry controls and since the Nordic countries are assumed to have remarkably similar characteristics. Table (11) presents the same models used in the regression Table (10), with control for country fixed effects. The results of the regression on all models does not change significantly where both the level of significance and coefficient sign on every variable is constant. A minor difference can be detected in some of the coefficients, although none of the magnitude to raise further questions. Overall, our models show that our models yield nearly identical outcomes, thus highlighting the robust nature of our regressions, when adding the control for country fixed effects.

The results are consistent with the arguments of Rose et al. (2017) arguing that Nordic countries have several similar characteristics.

Model	1	2	3	4	5	6	7	8	9	10
Variables	BHAR	BHAR	BHAR	BHAR	BHAR	BHAR	BHAR	BHAR	BHAR	BHAR
<i>CASH_ONLY</i>	0.067* (0.037)	0.071* (0.039)	0.079** (0.038)	0.090* (0.046)	0.057 (0.043)	0.071 (0.048)	0.080* (0.048)	0.025 (0.070)	0.073 (0.053)	0.029 (0.063)
Deal Characteristics										
<i>TENDER_OFFER</i>			0.086** (0.034)	0.070* (0.036)	0.100*** (0.033)	0.078** (0.037)	0.068* (0.036)	0.078** (0.037)	0.072* (0.037)	0.077** (0.037)
<i>RELATIVENESS</i>			0.026 (0.033)	0.023 (0.039)	0.024 (0.033)	0.014 (0.039)	0.017 (0.040)	0.017 (0.040)	0.015 (0.040)	0.016 (0.039)
<i>CROSS_BORDER</i>			0.028 (0.035)	0.000 (0.045)	0.026 (0.035)	-0.009 (0.045)	-0.007 (0.045)	-0.009 (0.044)	-0.016 (0.045)	-0.014 (0.045)
<i>LOG_DEAL_VALUE</i>			0.015* (0.008)	0.021** (0.010)	0.016* (0.009)	0.022* (0.012)	0.025** (0.011)	0.023* (0.013)	0.022* (0.012)	0.022* (0.012)
Acquirer Characteristics										
<i>MTB</i>					-0.017* (0.010)	-0.020 (0.013)	-0.022* (0.013)	-0.019 (0.013)	-0.020 (0.013)	-0.021 (0.013)
<i>RELATIVE_SIZE</i>					-0.032 (0.050)	-0.010 (0.046)	-0.014 (0.048)	-0.007 (0.049)	-0.006 (0.045)	-0.011 (0.045)
<i>LEVERAGE</i>					-0.008 (0.095)	0.005 (0.103)	0.026 (0.102)	0.001 (0.115)	-0.138 (0.153)	-0.019 (0.108)
<i>CASH_TO_ASSETS</i>					-0.098*** (0.028)	-0.087** (0.039)		-0.091** (0.044)	-0.090** (0.040)	-0.102*** (0.038)
Financial Constraints										
<i>FC_ASSETS</i>								-0.036 (0.091)		
<i>FC_ASSETS*CASH_ONLY</i>								0.069 (0.090)		
<i>FC_LEVERAGE</i>									-0.105 (0.112)	
<i>FC_LEVERAGE*CASH_ONLY</i>									-0.011 (0.111)	
<i>FC_COLLATERAL</i>										-0.084 (0.073)
<i>FC_COLLATERAL*CASH_ONLY</i>										0.084 (0.078)
Constant	-0.070** (0.032)	-0.086 (0.202)	-0.205*** (0.062)	-0.263 (0.216)	-0.129 (0.090)	-0.195 (0.243)	-0.223 (0.226)	-0.190 (0.244)	-0.120 (0.240)	-0.114 (0.273)
Controls										
Industry Fixed Effects	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes
Robust Standard Errors	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Additional Controls										
Country Fixed Effects	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.016	0.096	0.054	0.130	0.072	0.140	0.132	0.130	0.137	0.138
Observations	167	167	167	167	167	167	167	167	167	167

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table (11): Regression model including country fixed effects at tables that control for Industry and year fixed effects. this regression table reports the results for the regression models with pooled-OLS Regressions with the objective of measuring the effect of the method of payment i.e., CASH\_ONLY on the BHAR. The dependent variable is BHAR for all models. Model 1 and 2 only includes CASH\_ONLY and runs using both with and without year, industry, and country fixed effects. Model 3 and 4 Includes deal characteristics and they run both with and without year, industry, and country fixed effects. Model 5 and 6 includes acquirer characteristics, also runs with and without year, industry, and country. And Lastly Model 8,7 and 9 Includes all the above with the interaction terms and with control for country fixed effects. To save space, Industry, Year and Country fixed effects are not tabulated. All models use robust standard errors since it is common practice in the literature and to ensure comparability. Robust t-statistics are reported in parentheses below the regression coefficient. \*, \*\* and \*\*\* denote the level of statistical significance at the 10%, 5% and 1% respectively.

## 7.2. Interest rates

One of the motivations for the relevance of conducting research on performance and method of payment is the changing market conditions one could notice after the financial crisis. For example, DeBodt et al. (2022) argues for decreased interest rates, i.e., decreased costs of raising new debt (Also illustrated in figure 4). Therefore, this study will include an additional analysis on the interest rate effect on our regressions where a dummy variable will be introduced. Further, it is highly relevant and interesting to control for such major macroeconomic factors in our models since the M&A market moves in waves and appears to correlate with such factors (Martynova & Renneboog, 2008).

The variable IR\_DUMMY equals 1 if the transaction took place post 2008, and 0 if the transaction took place during 2008 and prior. Table 12 illustrated our regression, including the IR\_DUMMY variable. This variable is intended to represent low and high interest rate climates.

Looking at table 12, the coefficient direction is constantly positive, indicating that the interest rate has a positive impact on BHAR. Specifically, this tells us that when the interest rate is low, post 2008, i.e., cash is cheap, the performance seems to be higher. This could relate to the method of payment and above discussions where cash payments outperform stock and mixed offers (E.g., Signalling theory). It is possible that when cash is cheap the amount of all-cash offers increase, and the fact that there are more cash-offers increase BHAR.

However, our study does not provide evidence for this discussion. Additionally, it is important to point out that there is no significance in any of the models for the variable which limits us from any conclusions related to it. Additionally, one can notice that including the variable does not significantly alter the results for any other variable.

The sole fact that performance pre and post the GFC in 2008 differ, that the performance seemingly is higher post, is in line with the arguments of Alexandridis et al. (2017) who argues that characteristics and quality of M&A post GFC drastically have changed, resulting in heavy regulation, litigation, and oversight followed which could have enhanced the value creation mechanism in corporations. Yet again, our results indicate a positive change post GFC, but lacks statistical significance strengthening the statements above.

Model	1	2	3	4	5	6	7	8	9	10
Variables	BHAR	BHAR	BHAR	BHAR	BHAR	BHAR	BHAR	BHAR	BHAR	BHAR
CASH_ONLY	0.069* (0.037)	0.065* (0.039)	0.079** (0.039)	0.087* (0.044)	0.057 (0.043)	0.068 (0.046)	0.077* (0.046)	0.028 (0.066)	0.071 (0.052)	0.028 (0.061)
Interest Rate										
IR_DUMMY	0.029 (0.033)	0.074 (0.138)	0.030 (0.033)	0.064 (0.078)	0.032 (0.033)	0.026 (0.090)	0.039 (0.078)	0.021 (0.098)	0.015 (0.090)	0.032 (0.086)
Deal Characteristics										
TENDER_OFFER			0.085** (0.034)	0.070* (0.035)	0.099*** (0.033)	0.075** (0.036)	0.066* (0.035)	0.075** (0.036)	0.069* (0.036)	0.074** (0.036)
RELATIVENESS			0.025 (0.033)	0.025 (0.037)	0.023 (0.033)	0.018 (0.038)	0.021 (0.038)	0.022 (0.039)	0.019 (0.039)	0.020 (0.038)
CROSS_BORDER			0.032 (0.036)	0.002 (0.044)	0.029 (0.036)	-0.005 (0.044)	-0.004 (0.044)	-0.006 (0.044)	-0.012 (0.044)	-0.010 (0.044)
LOG_DEAL_VALUE			0.015* (0.008)	0.022** (0.009)	0.016* (0.009)	0.024** (0.011)	0.027** (0.011)	0.024* (0.013)	0.023* (0.012)	0.024** (0.012)
Acquirer Characteristics										
MTB					-0.017* (0.010)	-0.019 (0.013)	-0.021 (0.013)	-0.018 (0.013)	-0.019 (0.013)	-0.020 (0.013)
RELATIVE_SIZE					-0.035 (0.050)	-0.010 (0.045)	-0.014 (0.046)	-0.006 (0.049)	-0.006 (0.044)	-0.011 (0.044)
LEVERAGE					-0.006 (0.095)	0.001 (0.101)	0.022 (0.100)	-0.004 (0.113)	-0.138 (0.145)	-0.023 (0.106)
CASH_TO_ASSETS					-0.100*** (0.029)	-0.087** (0.038)		-0.089** (0.043)	-0.090** (0.039)	-0.102*** (0.037)
Financial Constraints										
FC_ASSETS								-0.025 (0.090)		
FC_ASSETS*CASH_ONLY								0.060 (0.087)		
FC_LEVERAGE									-0.103 (0.108)	
FC_LEVERAGE*CASH_ONLY									-0.012 (0.110)	
FC_COLLATERAL										-0.080 (0.072)
FC_COLLATERAL*CASH_ONLY										0.078 (0.077)
Constant	-0.087** (0.036)	-0.194 (0.157)	-0.222*** (0.065)	-0.357* (0.202)	-0.149 (0.092)	-0.283 (0.213)	-0.308 (0.213)	-0.285 (0.212)	-0.204 (0.213)	-0.214 (0.240)
Controls										
Industry Fixed Effects	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes
Robust Standard Errors	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.015	0.106	0.053	0.146	0.072	0.155	0.146	0.144	0.151	0.152
Observations	167	167	167	167	167	167	167	167	167	167

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 12: All models re-run including IR\_DUMMY, dummy variable equal to 1 if transaction is made post 2008, where interest rates began to drop. To save space, Industry, Year fixed effects are not tabulated. All models use robust standard errors since it is common practice in the literature and to ensure comparability. Robust t-statistics are reported in parentheses below the regression coefficient. \*, \*\* and \*\*\* denote the level of statistical significance at the 10%, 5% and 1% respectively.

## 8. Robustness

This thesis takes several measures to ensure the robustness of our results. For example, we conducted several regression diagnostics tests such as correlation table to detect collinearity, plotting variables to test for normality, and white's test to determine whether robust standard errors are appropriate. Additionally, we winsorized several variables to deal with outliers that might affect the reliability of our results. We also control for several fixed effects that might be hidden in the error term. Additionally, we adopted a step-by-step approach in our first regressions. This methodology ensures the robustness of the regressions and allows for deeper investigation of every independent variable and is a common approach to ensure robustness of OLS regressions (Lu and White, 2014). Lu and White (2014) argues that dropping and adding variables ensures structural validity. Investigating this paper's coefficient of interest, the CASH\_ONLY variable, it only changes approximately 1% in different directions and the coefficient is in the same direction.

In addition to the above discussion, this thesis re-run its first models, first including controls for country fixed effects, and then including a dummy variable for low and high interest rate climates. As apparent in our additional models, neither the magnitude nor the significance changes significantly when introducing additional controls and variables, which highlights the robustness of our initial models and analysis. This is especially true for the variable of main interest, CASH\_ONLY.

In summary, the first models consistently demonstrated its ability to produce reliable and accurate results across various scenarios and indicating a high level of consistency in the outcomes.

## 9. Conclusion

The final empirical part of this thesis will summarize, and present conclusions made about the research questions presented in section 1. The section is divided into two sections, Conclusion and Limitations & Future Research.

### 9.1. Conclusion

The findings of this study provide valuable insights into the long-term performance of Nordic companies involved in M&As, investigating a sample of 167 acquirers between 2004 and 2022. The results indicate that Nordic acquisitions had a significant negative, and different from zero, impact on acquirer shareholders' value, with the portfolio underperforming the FTSE Nordic index by 2.8 percent. These findings provide evidence for hypothesis 1 in this thesis and are consistent with previous literature (e.g., Renneboog & Vansteenkiste, 2019; Rau & Vermaelen, 1998; Mandelker, 1974). One interesting finding of this study, however, is the magnitude of the performance. While the direction is similar, our results report less negative abnormal returns compared to prior studies (e.g., -7,2% CAR, -4% BCAR, and -7,4% CAAR). The most comparable were Asquith (1983) who measured -7,2 percent 240 days post-acquisition announcement. These arguments are in line with the argumentation by Alexandridis et al. (2017) about changing market environment post GFC and the statement that acquirers nowadays are performing better. This paper however, proved negative return for the acquirers in our sample.

The results from our t-test revealed that cash-only payments outperformed stock and mixed financed transactions. Cash-only deals generated an average BHAR of 0.3 %, indicating that they tended to generate higher acquirer shareholder wealth in the Nordic region. However, the difference between all-cash offers and not, where more striking, were all-cash offers generated 6,7 percent higher returns compared to stock and mixed offers in our t-test. These results were significant under the 10% threshold. The regression analysis showed similar results, where most of the models showed similar significance as the t-test (After controlling for possible collinearity of CASH\_TO\_ASSETS) with coefficients ranging between 6,5 and 8,7 percent for all cash-offers. These results are in line with most prior research in the area (e.g., Myers & Majluf, 1984; Martin, 1996; Loughran & Vijh, 1997; Mitchell & Stafford, 2000; Martynova et al., 2007). Additionally, the results were shown to be robust after controlling for possible endogeneity issues related to the majority of acquirers being Swedish,



then again when including dummy variable for low interest rate climate. Generally, we provide evidence for hypothesis 2 of this study, strengthened with results both from t-tests and regression analysis.

Regarding the impact of financial constraints, the results did not provide significant evidence to conclude that financially unconstrained firms paying with cash performed better, nor that there was an impact of performance depending on acquirer financial condition in general. However, interesting observations were made. Larger firms using cash as a method of payment seemed to experience larger BHAR compared to smaller firms. Additionally, firms with high leverage that used cash as the payment method tended to have lower returns. However, the authors are careful drawing any further conclusions for both leverage and collateral, since there were no signs of significance, and the coefficients were very small. In general, this study finds no evidence that supports the third hypothesis. Therefore, hypothesis 3 is rejected, i.e., there is no evidence that Nordic acquirers that are financially unconstrained perform better using all-cash offers in their M&A transactions.

In general, this study is in line with the signalling theory of Myers and Majluf (1984) that predicts that firms paying with equity will perform worse due to overvaluation theory. Additionally, similar discussions can be made in line with the free cash flow theory of Jensen (1986) that predicts that managers engage in acquisitions because their compensation often incentivizes them to do so. The sole fact that our results show that Nordic acquirers tend to hurt shareholders in the long term, are also in line with the Hubris theory, however, this study does not measure this phenomenon and are therefore restricted in drawing any further conclusions.

To sum up, this thesis has been guided by the research questions stated in the introduction. Regarding our first research question, Nordic acquirers does not create value for their shareholders engaging in M&As. However, and regarding our second research question, the choice between different method of payment in these transactions seem to be very important, were all-cash offers significantly outperform stock and mixed offers.

## **9.2. Limitations and Future research**

In conducting this study, certain limitations should be acknowledged. Firstly, our analysis relies only on the BHAR using a one-year horizon as a proxy for long-term value creation,

which may not capture the complete long-term dynamics of the acquired firms. Additionally, more measurements could be used in assessing the long-term performance of acquirers, such as CAR or CTRP. Additionally, the study could have adopted other methodologies such as the Savor and Lu (2009) ten-company portfolio approach to investigate expected returns in BHAR. However, time and technological constraints limited our ability to explore such approaches.

Another limitation relates to the lack of target controls in our study, as we focused on a select few high-quality controls not including target characteristics. Although this approach was chosen for its effectiveness, future investigations could consider incorporating a more extensive set of target controls to further refine the analysis. Moreover, our study exclusively examined public acquirers and targets, which limited the sample size and prevented us from investigating the status of the target firm, despite its potential predictive power, which has been noted in existing literature.

To sum up, future studies should continue to focus on the last two decades included in this research paper. Very few studies include this period and changing conditions calls for more research in the area. Additionally, this study focuses on the Nordic region, which is interesting due to several reasons, but future research should also include more geographical regions to increase the understanding and update the knowledge in the research area.

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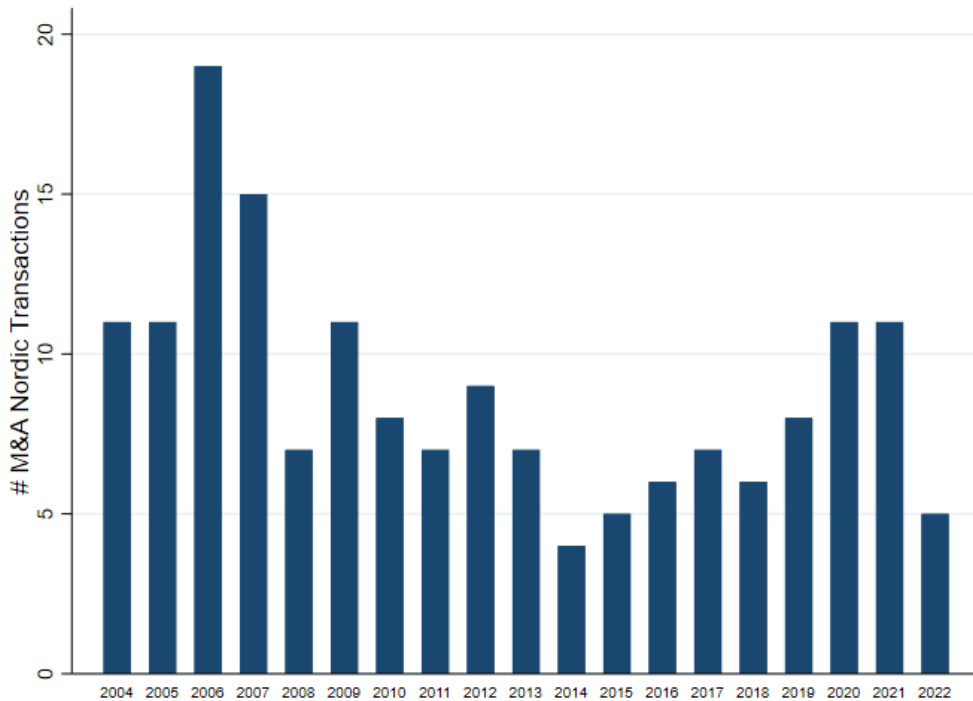
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# 11. Figures

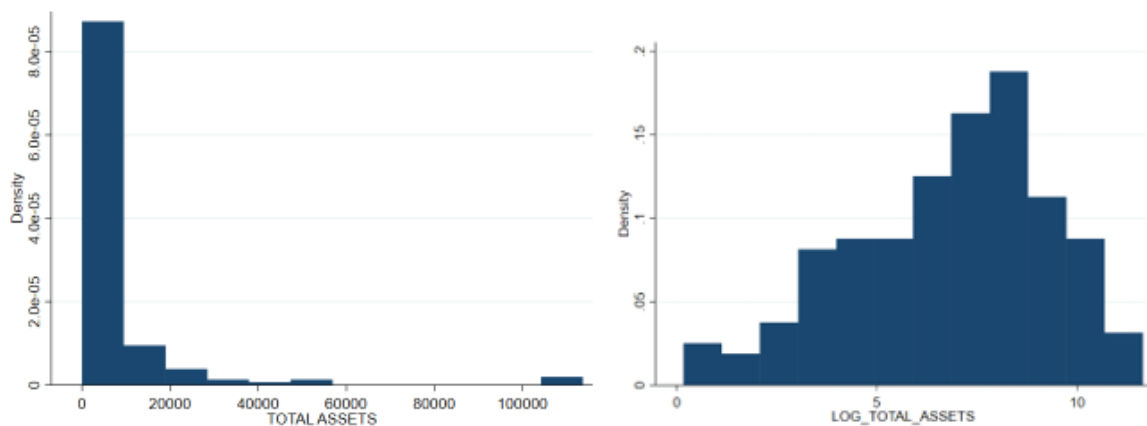
## 11.1. Figure 1: M&A transactions distribution among years

Figure 1: Frequency of M&A Transactions, grouped by year, *source: own tabulation.*



## 11.2. Figure 2: Total assets & log (total assets)

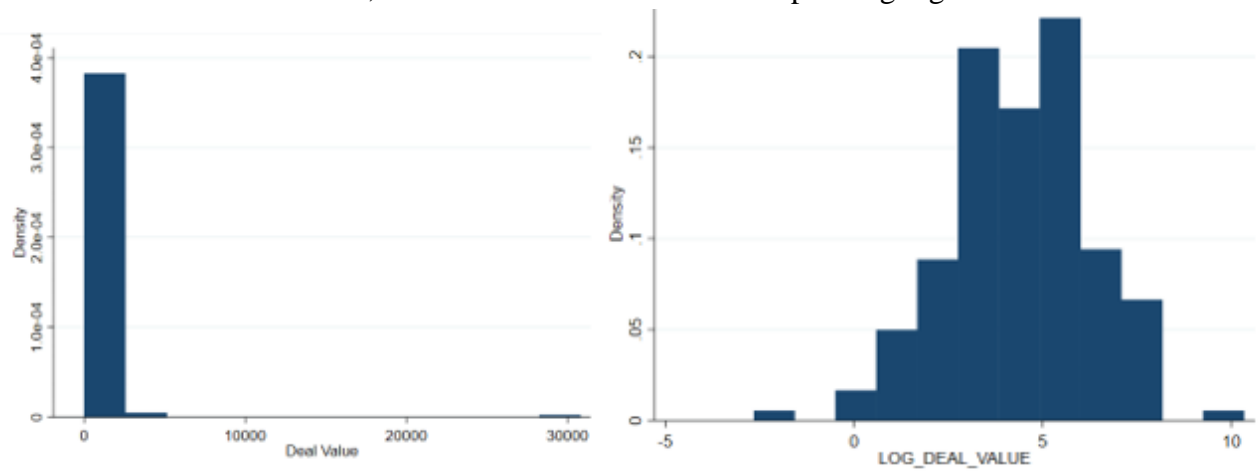
The distribution of total assets, and the distribution of its corresponding logarithmized values.





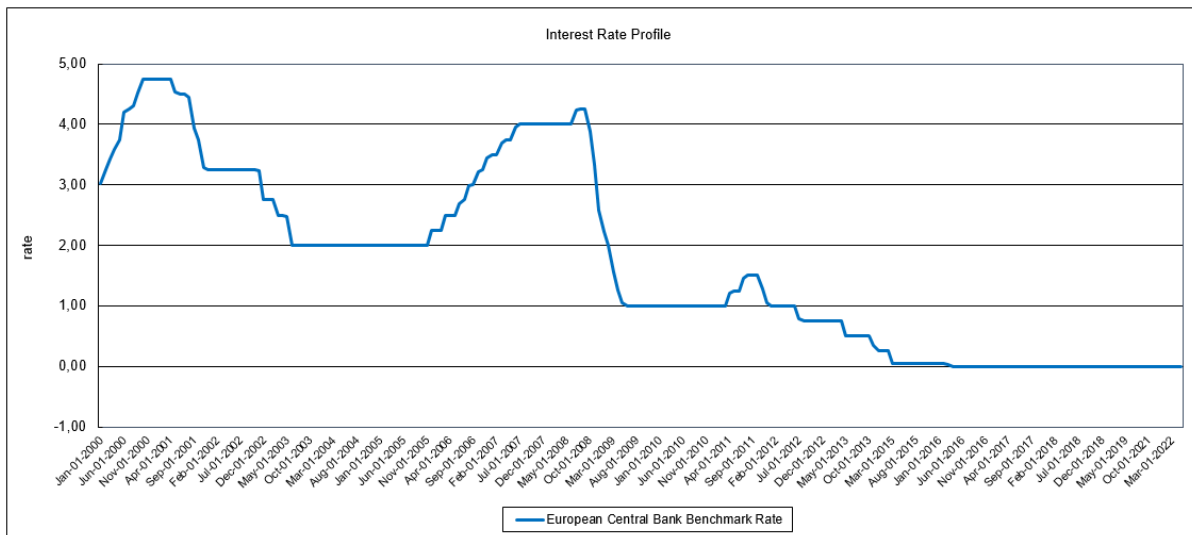
### 11.3. Figure 3: Deal value & log (deal value)

The distribution of deal value, and the distribution of its corresponding logarithmized values.



### 11.4. Figure 4: Historical Interest rate

ECB Benchmark Index), Source, Capital IQ



## 12. Tables

### 12.1. Table 1: Variable definition

<b>Variable:</b>	<b>Definition:</b>
<i>BHAR</i>	Buy and Hold Abnormal Return, expected return calculated using FTSE Nordic Index.
<i>CASH_ONLY</i>	Main explanatory variable, dummy variable, equals 1 if payment 100% cash.
<i>TENDER_OFFER</i>	Dummy variable that equals 1 if deal flagged as tender offer on Refinitiv Eikon.
<i>CROSS_BORDER</i>	Dummy variable that equals 1 if deal is not domestic.
<i>RELATIVENESS</i>	Dummy variable that equals 1 if firms are related, proxied for using 2 digit SIC codes.
<i>LOG_DEAL_VALUE</i>	Logarithm of total deal value.
<i>RELATIVE_SIZE</i>	Total deal value divided by the acquirer market capitalization 4 weeks prior to the M&A announcement.
<i>MTB</i>	Acquirer equity market value divided by book value of equity, 4 weeks prior to M&A Announcement.
<i>CASH_TO_ASSETS</i>	Acquirer total cash divided by acquirer total assets, 4 weeks prior to M&A announcement.
<i>LEVERAGE</i>	Acquirer total debt divided by acquirer total assets, 4 weeks prior to M&A announcement.
<i>LOG_TOTAL_ASSETS</i>	Logarithm of acquirer total assets, 4 weeks prior to the M&A announcement.
<i>FC_ASSETS</i>	Financial constraints proxy, dummy variable equal to 1 if (LOG_TOTAL_ASSETS >= Bottom 3 deciles of comparable firms) else (0).
<i>FC_ASSETS * CASH_ONLY</i>	Interaction term between financial constraints proxy FC_ASSETS and CASH_ONLY.
<i>FC_LEVERAGE</i>	Financial constraints proxy, dummy variable equal to 1 if (LEVERAGE <= top 3 deciles of comparable firms) else (0).
<i>FC_LEVERAGE * CASH_ONLY</i>	Interaction term between financial constraints proxy LEVERAGE and CASH_ONLY.
<i>FC_COLLATERAL</i>	Financial constraints proxy, dummy variable equal to 1 if (Collateral >= Bottom 3 deciles of comparable firms) else (0).

<b><i>FC_COLLATERAL * CASH_ONLY</i></b>	Interaction term between financial constraints proxy COLLATERAL and CASH_ONLY.
<b><i>Industry</i></b>	Control variable, one dummy variable for every industry.
<b><i>Year</i></b>	Control variable, one dummy variable for every year.
<b><i>Country</i></b>	Control variable, one dummy variable for every country.
<b><i>IR_DUMMY</i></b>	Dummy for interest rate climate, equal to 1 if deal is done post 2008 and 0 otherwise.