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The Influence of Payment Methods on Acquiror Stock Price in Mergers and Acquisitions

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Abstract

This study is examining acquiror CAR on the day of announcement following acquisitions made by Swedish public companies. The study investigates whether the acquiror CAR differs between cash and stock based acquisitions. Furthermore, it is tested to what extent a set of chosen independent variables explain the acquiror CAR. The research questions concerning possible differences in acquiror CAR are tested by a t-test. To examine to what extent the set of chosen independent variables affect acquiror CAR, a set of OLS regressions based on cross-sectional data are conducted. The study finds the result that there is a significant difference in acquiror CAR following acquisitions paid with cash and acquisitions paid with stocks. The study does not find evidence for a difference in acquiror CAR following acquisitions abroad and domestic acquisitions. The study does not find any significant results concerning the extent to which the chosen independent variables affect the acquiror CAR, except for the variable stake, which was found to have a weak impact on acquiror CAR.

Keywords: Acquiror Cumulative Abnormal Return (CAR), Cash Acquisitions, Stock Acquisitions, Mergers and Acquisitions (M&A), Method of Payment.

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Table of Content

1. INTRODUCTION	1
1.1 BACKGROUND	1
1.2 PROBLEM DESCRIPTION AND ANALYSIS	2
1.3 RESEARCH QUESTIONS.....	3
1.4 PURPOSE	3
2. THEORETICAL BACKGROUND & LITERATURE REVIEW	4
2.1 PAYMENT METHODS.....	4
2.1.1 <i>Stock Payment</i>	4
2.1.2 <i>Cash Payment</i>	5
2.2 INFORMATION ASYMMETRY THEORY	5
2.2.1 <i>Market for Lemons</i>	5
2.2.2 <i>Adverse selection</i>	6
2.3 SUMMARY OF RELEVANT ARTICLES AND RESEARCH.....	6
3. RESEARCH DESIGN & METHOD	9
3.1 METHOD FOR DATA COLLECTION	9
3.2 CUMULATIVE ABNORMAL RETURN (CAR)	10
3.2.1 <i>OMXS30</i>	11
3.3 VARIABLE DESCRIPTIONS.....	12
3.4 OLS REGRESSION	13
3.4.1 <i>OLS Set-up</i>	13
3.4.2 <i>Variance Inflation Factor (VIF)</i>	13
3.5 T-TEST.....	13
4. DATA	14
4.1 DATA COLLECTION.....	14
4.2 SAMPLE SCREENING	15
4.3 CLEANING THE DATA	16
4.4 DESCRIPTIVE STATISTICS	18
5. EMPIRICAL RESULTS	22
5.1 MODEL	22
5.2 FINAL RESULTS	23
5.2.1 <i>OLS Regression Results</i>	23
5.2.2 <i>T Test Results</i>	27
6. DISCUSSION	29
6.1 THE RESULTS.....	29
6.2 THE LIMITATIONS.....	32
7. CONCLUSION	32
8. BIBLIOGRAPHY	34
APPENDIX	36

1. Introduction

Mergers and Acquisitions (M&A) has been a popular strategy for companies to reach higher growth and gain larger market shares, more-so again in recent years during the pandemic. As a result, the value of M&A action and transactions has increased significantly, with the number of transactions reaching record high levels (PWC, 2022). Levels of M&A-action, along with methods of payment as observed in our data-set as well as previous research, come and go in waves, and the most recent one spiked our interest in the subject.

During the pandemic year of 2021, roughly 62 000 corporate transactions were made globally. These transactions together add up to 5 100 trillion dollars, which indicates a 20% increase from the previous all-time high record set in 2007, according to an article published by PWC in 2022.

Sweden has been no exception to this, as it has been an active space in terms of M&A transactions. In the period 2002 to 2022, which is the period selected for this study, Swedish publicly traded companies accounted for 6.61% of all the M&A transactions completed in Europe, which amounted to 57 138 acquisitions (Eikon, 2023). This can be compared to Sweden's share of European GDP, which in 2021 was 2.81% (Statista, 2022). As evidence shows, Sweden relative to GDP, makes Swedish companies very active within the M&A-space, which makes it an interesting market to examine.

Out of all the M&A transactions completed by Swedish public companies during this period, approximately 53% of the targets were foreign companies. Swedish companies, as a group, is standing out as an active acquiror in the European M&A market. A majority of the acquisitions completed by Swedish companies are involving a target abroad i.e., target is not from Sweden. This study aims to contribute by focusing on Swedish companies acquiring targets with headquarters both in Sweden, and abroad.

1.1 Background

One important factor in these M&A transactions is the method of payment chosen by the acquiror (Hussaini, Rigoni & Perego, 2022; Luypaert & Van Caneghem, 2017). From our observations, there are usually two main methods of payment, stock or cash. Cash-financed acquisitions implies that the acquiror pays with their own cash reserve or either takes on debt from banks to fund their acquisition.

Public companies can also acquire cash by issuing new stock. Stock-payment acquisitions on the other hand, requires the acquiror to issue new shares to the target company's shareholders. As a result, the choice of payment can impact the value and performance of the acquirors stock and the target company's shareholders. As shown in an article by Golubov, Petmezas & Travlos (2016), it shows that stock-financed acquisitions tend to result in the destruction of value for the acquirors shareholders. This is explained to be a result of companies choosing to pay with stocks when the acquirors stock is overvalued.

Additionally, information asymmetry is an important factor to take into account in M&A transactions (Hussaini et al, 2022), especially in acquisitions that have a low proximity, i.e., far away, the risk of information asymmetry runs higher. For situations like this (high information asymmetry), the payment method can act as a way of mitigating and limiting the information asymmetry. And as a result, have an impact on the reaction in the acquirors stock (Luypaert & Van Caneghem, 2017).

Understanding the importance and impact of the choice of payment method and information asymmetry in M&A transactions are essential to understand the factors causing an impact on the reaction, value and performance of the acquirors stock. This impact is what this study aims to capture and explain. By deep diving into the relationship between major stake acquisitions announcements made by publicly traded companies from Sweden, and the resulting Cumulative Abnormal Return (CAR) observed on the day of the announcement.

1.2 Problem description and analysis

During the last couple of years, more so during the pandemic a lot of mergers and acquisitions have been observed. This has caused a magnitude of reactions, one of which is abnormal returns on the day of the announcement. As explained later on, in the [1.4 Purpose](#) section of the paper, our thesis believes that the choice of payment for acquisition is a great contributor to this reaction. Therefore, this paper will study the relationship between payment methods of major stake ($\geq 50\%$) M&A, and the intraday reaction in the acquiror company's stock measured by the acquiror CAR on the day of the acquisition announcement. While the subject of payment method and its impact on the stock is a well-researched subject, it has proven to be difficult finding research made on the Swedish market. Our paper will cover this gap by focusing on publicly traded companies that acquire both private and publicly traded companies combined with the selected choice of payment, either with 100% cash or 100% stock.

Furthermore, this paper will also consider information asymmetry and its effect on acquiror CAR. The choice of payment and information asymmetry is believed to be related. When information asymmetry is high, a company would most likely choose to pay with stock or equity (Eckbo, Makaew & Thorburn, 2018). So, if the target company is located in a different country with different regulations the asymmetry would be considered high, and the choice of payment would be stock. If, however, the target company is located in the same town as the acquiror a cash payment is deemed to be more likely (Eckbo et al, 2018). By incorporating other control variables that affect information asymmetry in our research it can help to further cover gaps in today's literature and provide a better understanding of what controls and drives the acquiror CAR in M&A scenarios.

The significance of this problem lies in understanding how payment methods affect acquiror CAR at the day of the acquisition announcement and perhaps why some reactions differ from others.

1.3 Research questions

Due to what has been stated in the previous section above, this paper has formulated the following research questions:

Does the acquiror CAR differentiate between stock and cash acquisitions? To what extent does the acquiror CAR on the day of the announcement differ between acquisitions involving domestic and foreign targets?

By answering these questions, both shareholders and management teams may receive a better understanding of what type of factors have an impact on a stock. Does the market have a preferred method of payment, if so, how does it vary?

1.4 Purpose

The Aim of this study is to examine the relationship between major stake acquisition announcements by Swedish companies listed on the Swedish stock exchanges, and the resulting acquiror CAR observed on the day of the announcement. The study will focus on Swedish public companies making acquisitions, and their choice of payment, either through stock or cash. This paper will explore how various control variables affect the magnitude and direction of the acquiror CAR, and whether the acquiror CAR differentiate for different methods of payment as well as when acquisitions are either

domestic or cross border. Furthermore, it will examine the extent to which information asymmetry plays a role in driving the acquiror CAR, with the expectation that higher information asymmetry will lead to larger acquiror CAR.

Our thesis aims to contribute to the already existing academic literature on the subject by focusing on the Swedish public M&A market. Furthermore, we aim to contribute by differentiating our analysis of the targets in the transaction to domestic and foreign. By analysing these two fairly unexplored angles together, we hope to contribute to the present and future literature within the space.

2. Theoretical Background & Literature Review

2.1 Payment Methods

This study will handle transactions financed by cash payments and stock-based payments. Constraining deal financing to these two payment methods, the M&A transaction can be paid for by a broad set of combinations between cash and stock payments, or solely one of the two. This study will focus on deals where 100% of the deal value is paid for by one of the two payment methods.

When the acquiror is evaluating whether to pay the deal by cash or by stocks, there are several aspects that need to be considered to decide what method is the most advantageous. On the other side of the deal, the seller will aim to get paid by the payment method that is most favourable from their view.

2.1.1 Stock Payment

Issuing new stocks is, all else equal, shareholder value destroying as the stake of the current shareholders is diluted. According to an article by Golubov et al. (2016), a rational acquiror will therefore only issue stocks when they believe the stock is overvalued by the market and is thus a stronger currency than the domestic currency. This is commonly referred to as “cheap equity financing”. By issuing shares the company sends the signal to the market that they believe the stock is overvalued, and the response from an effective market should be to trade down the shares on such announcement. Taking the sellers view of this reasoning, accepting share-based compensation as a method of payment is not ideal as that is equal to an initially shrinking deal value.

Another aspect behind issuing shares to finance an M&A deal is to limit the information asymmetry, by making the seller's stakeholders in the acquiror, described by Hansen (1987). However, by issuing

shares and making the sellers a minor shareholder of the acquiror, the seller will have incentives for the acquiror's shares to perform well. This might reduce information asymmetry, as the seller will have incentives to reveal information relevant for the acquiring company, as well as its shares, to perform well. Without making the seller a stakeholder, it would not have the same incentives to reveal the same amount of information, and information asymmetry would thus be larger.

2.1.2 Cash Payment

In the previous section, stocks as a method of payment were discussed. Acquirors deciding to finance M&A transactions with newly issued stocks are believed to view their own shares as overvalued. The opposite to stock-based compensation is to finance the deal with cash. By not choosing to pay with own shares, which is the case if the deal is financed with cash, it can be assumed that the acquiror does not view its own shares as overvalued. In such cases, the acquiror does instead believe its shares are undervalued, or possibly fair valued (Hansen, 1987).

Remember the case of stock financed deals, where the market could be expected to trade down shares upon the deal announcement. By taking an opposite view to the case of stock financed deals, the market can be expected to trade up the shares of the acquiror in the case of a cash only deal.

2.2 Information Asymmetry Theory

The information asymmetry theory is a theory that sellers in a market tend to have more relevant information than the buyers. This information asymmetry will create an imbalance in the market, as sellers will have more information relevant to the specific deal and is thus believed to have better conditions than the seller to know the true fair value.

2.2.1 Market for Lemons

One of the first papers introducing and analysing the theory is *The Market for "Lemons": Quality Uncertainty and the Market Mechanism*, written by Akerlof (1970). Akerlof describes the market dynamics of information asymmetry using the used car market as an example. In the used cars market, there are two types of cars for sale. There are good cars, called peaches, and there are those with all different sorts of problems, called lemons. The problem for the buyer is that visually, all cars look the same and very few of the mechanical issues can be identified by the human eye. As the sellers of the used cars are assumed to have knowledge of the issues, there is an information asymmetry in the market. Akerlof argues that the buyer will not know beforehand whether the car in fact is a peach or a lemon, since all cars visually look similar, and the possible faults will be discovered first after a

sale. The implication on the market is that the market price will be lower than the fair value of a good car, which will make sellers of the good cars stay out of the market. Left is the lemons, meaning that the information asymmetry reduces the overall quality of the market.

2.2.2 Adverse selection

The lemon problem illustrated by Akerlof is an illustration of what is also called adverse selection and is describing how information asymmetry can lead to adverse selection. Adverse selection is a situation caused by information asymmetry in a market. It occurs when buyers and sellers have different levels of information, and the part that has the advantage of more information can select what transaction to take part in. This leads to a skewed market where the part of the market sitting on more information will only participate in the transactions favouring themselves. As the opposite part of the market realises this, they will be less keen on taking part in transactions since they are likely to make a bad deal. The larger the information asymmetry, the more severe the adverse selection is.

2.3 Summary of Relevant Articles and Research

There have been several previous studies examining the public M&A field. A majority of the research today is focused on the US market, with American acquirors listed on a US stock exchange.

Starting by looking at the choice of method of payment, several of the previous studies find that an acquiror more often chooses to pay with stocks if they find their own shares to be overvalued (Nelson, 1959; Boone, Lie & Liu, 2014). Golubov, Petmezas & Travlos (2016) examine if stock-financed acquisitions destroy value for the acquiror, and how it affects the performance post-transaction. One hypothesis being discussed is known as the “agency costs of overvalued equity”. More specifically, cheap equity financing, and how an overvalued stock influences management to make investments, good or bad, just because it is cheaper. According to the authors, this should result in acquisitions made with stock should be inferior to those made with cash. However, the authors find that stock acquisitions do not destroy value for the acquiror, and that the method of payment has no explanatory power of acquiror CAR.

A different view that can be taken on this subject is to measure the long run abnormal acquiror stock market returns, as studied by Agrawal and Jaffe (2000). The paper reviews previous work on the subject and summarises present findings about long run abnormal returns following mergers. They conclude that while the initial reaction might generate positive short term abnormal returns, the long

run performance is negative. One of the reviewed studies that is breaking down this pattern is a paper by Rau and Vermaelen (1998), where they present their performance extrapolation hypothesis. According to Rau and Vermaelen, a reasonable way to explain it starts with a pattern that acquirors tend to extrapolate financial performance when determining value of acquisitions and announcing them to the market. This sends a positively skewed picture to the market about the values involved in the transaction, which makes the shares of the acquiror trade at levels considered to be overvalued. Short term, this leads to good share performance (positive abnormal return) and signals to the market that the company is doing well. As time goes and new financial performance is released to the market, the quality of the company is reassessed as more complete information is announced to the market. For acquirors paying for acquisitions with stock, the previously mentioned theory of the company itself believing the stock to be overvalued comes into play. Since these companies are believed to be initially overvalued, the effect of the market reassessing the view of the company should be negative long term abnormal performance.

Regarding acquirors using stock as a method of payment when their stock is believed to be overvalued, several studies have examined the general timing of mergers and acquisition, as well as the timing of choosing stock as method of payment. Nelson (1959) examined the American M&A field during the time period of 1896-1956 and found that the business cycle is important for the M&A activity, leading to M&A activity being highly concentrated in time. Andrade et al. (2001) examines the time period of 1973-1998 and like Nelson, they find that M&A activity tends to go up and down in waves, as business cycles within industries vary.

Boone, Lie & Liu (2014) also found that acquirors more frequently tend to use stocks as a method of payment when stocks are overvalued. In their study they focused on mixed payments during the time period 1985-2013 and found that the use of stock payments peaked in the late 1990s, and contrarily the use of cash bottomed during the same period. From their sample of deals it is also clear that the M&A activity peaked during the same time, which is again in accordance with the previous papers presented. Putting the results of Boone, Lie & Liu (2014) in comparison to the S&P500 index, which also reached its peak levels in the late 90s, there is a clear correlation between both stock valuations and M&A activity, as well as between stock valuations and stocks as method of payment. This paper will examine similar correlations, but instead focus on the Swedish market.

A key theory in this study is the information asymmetry theory, and how adverse selection affects the choice of payment method by the acquiror. As Hansen (1987) presents in his model, there are several aspects that explain choice of payment method in an M&A transaction. However, for this study, it is

primarily information asymmetry and adverse selection that are relevant and hence will be focused on. Hansen presents the signals that the two parts of a transaction send when offering and accepting a certain payment method. Regarding the acquiror, the article argues that the offered method of payment signals the company's view of the valuation of its own shares. Similar to what Golubov et al discussed, when the acquiror offers shares as payment, they are believed to view their shares as overvalued. Hansen describes it as an equilibrium, where stock payment is the preferred payment method when stocks are overvalued, and cash the preferred payment method otherwise. According to the theory of equilibrium presented, stocks are considered to be either over- or undervalued if not found in equilibrium, and stock payment will only be used if stocks are found to be overvalued.

The article also highlights information asymmetry for the other part of the transaction, the target, and how that affects what offers the selling part will accept. Where there is information asymmetry for the acquiror regarding the target company, there is also information asymmetry for the seller regarding the acquiring company. Starting with stock payments, the acquiror is believed to be the part with the best knowledge about its stock's fair value. The larger the information asymmetry around the acquiring firm is, the harder it will be for outsiders, including the target company, to determine whether the stocks are overvalued or not. Thus, the larger the information asymmetry is, the target will be less likely to accept stocks as payment. This creates what Hansen calls a double Lemon problem, where both parts of the potential deal have adverse selection. The two-sided information asymmetry is supported by Samuelson (1984), who found that the optimal strategy maximise payoff in a deal includes analysing what the opponents' offer talks about its adverse selection.

Another interesting article is that written by Schleifer and Vishny, "*Stock market driven acquisitions*" (2003). The authors introduce a new model within the space of behavioural corporate finance, that sees corporate policies such as debt- and equity issuance and investments as a response to market mispricing. Their paper disregards well-used theories such as efficient market hypothesis (EMH), since market mispricing's mean the market is inefficient. Shleifer and Vishny argue, along with their model, that the management of a company is able to exploit so-called arbitrage opportunities generated by these mispricing's. One way of utilising these arbitrage opportunities according to their article, is to use overvalued stock as a method of payment for investments and acquisitions. Similar to previous listed research, Schleifer and Vishny find support in their model that the level M&A-action among listed companies tend to correlate positively with the general stock markets valuation. This is where their paper becomes interesting for ours, looking at [Table 7 below under section 4.4](#) from our sample we can see a pattern of behavioural corporate finance supported by the findings of

Schleifer and Vishny. But that is as far as this paper touches the space of behavioural corporate finance and leaves that discussion for other papers to pick up on.

Schleifer and Vishny further discuss how trend waves of M&A can be used as a way of diversifying business groups. One wave they highlight is one from the 1960's in the USA, where American public companies seized arbitrage opportunities and used their overvalued stock to acquire undervalued businesses in other industries to that of their own. Another aspect highlighted by their paper is that overvaluation in the market tends to be an industry specific phenomenon, where the stock valuation of peers within the same industry are valued similar to each other. The conclusion here is that when some industries are overvalued, others are undervalued, and it can be observed by looking at the number of cross-industry acquisitions made.

Although this paper is not related to the behavioural finance space, similar conclusions can be drawn based on Schleifer and Vishny's findings.

Based on the reviewed literature, this study expects to find a significant difference in acquiror CAR following stock-based acquisitions and cash-based acquisitions. Cash acquiror CAR is expected to be larger than the equivalent for stock-based acquisitions.

Furthermore, the study expects to find a significant difference in acquiror CAR following acquisitions abroad and domestic acquisitions. Acquiror CAR regarding domestic acquisitions is expected to be larger than for foreign acquisitions. Stock based payments are expected to be more common for foreign targets, which leads to an expected smaller acquiror CAR.

3. Research Design & Method

3.1 Method for Data Collection

This paper will apply a quantitative method, where we will observe historical data from primary sources. These primary sources will consist of public announcement of M&A action and the intraday return on the day of the announcement. From the gathered data the "M&A-Sample" will be created. Our M&A-Sample comes from Refinitiv Eikon and covers the period from January 1, 2002, to December 31, 2022. And to be included in our M&A-Sample the transaction has to satisfy our set criteria and qualify as "pure".

1. Bidder/Acquiror is a publicly traded Swedish Company.

2. The deal is completed.
3. The bidder acquires at least 50% ($\geq 50\%$) of the target company.
4. The method of payment is either 100% stock or 100% cash. Mixed offers will not be considered pure, and therefore be excluded from our M&A-Sample in order to conduct a clean and correct experiment.

Once the M&A-Sample is concluded, this paper has analysed, and determined the acquiror CAR by measuring the difference between actual return and market return for announcement day. Using the method shown above in [section 2.4](#), we get acquiror CAR. This approach will enable us to test our hypothesis and identify any positive or negative correlations between payment methods and acquiror CAR, together with our control variables.

In order to determine and identify factors of significant impact this paper has used an OLS Regression, together with our setup of both control- and dummy variables. All regressions and tests conducted in Stata, will be at a 10% level of significance.

3.2 Cumulative Abnormal Return (CAR)

CAR is a way to measure the abnormal returns on a stock. An abnormal return is the return that exceeds that would have been expected, i.e., the expected normal return. CAR is defined as the difference between the expected return and the actual return and is commonly used to study impact of news and announcements (Nasdaq Glossary, 2023). By doing this, our study removes noise regarding potential liquidity issues in the acquirors stock that could affect the reaction significantly.

The “normal- or expected return” will be represented by OMXS30 and will be considered as the market's portfolio and normal/expected return denoted ER.

$$CAR_i = R_a - ER_a$$

where:

R=Return

ER=Expected Return

a=Day of the Announcement

i=stock

Some publicly traded companies have two listed stocks, one with voting rights, often denoted “A-stock”, and one without. Our M&A-sample contains samples with two listed stocks. To be consequent

with what stocks we measure, this thesis has chosen the stock (out of the options) that has the highest liquidity. By doing this, we aim to get a more justified comparison and capture more of the market's reaction. As a stock with less liquidity has a higher risk of being manipulated, it is easier to control the price of a stock if fewer actors are present.

The "A-stock" tends to have less liquidity than that of the B/C/D-stock. And thus, create a less trustworthy market, in terms of observed reaction (Nasdaq OMX Nordic, 2023).

3.2.1 OMXS30

As explained previously above, in order to observe acquiror CAR it has to be measured against something. This paper has chosen the OMXS30 index as the base of measurement, and as the Expected Return (ER). OMXS30 is often used as a benchmark for Swedish equities. It is the largest index in Sweden on all levels except number of companies included. The index consists of the 30 most actively traded stocks on the Stockholm Stock Exchange (Nasdaq OMXS30 Overview, 2023).

Since this paper's M&A-sample consists of publicly traded Swedish companies, an all-cap index can arguably be more representative of our sample. However, our sample data covers a 20-year period (2002-2022), and no Swedish all cap index covers our entire period. OMXS30 does, it dates back all the way to the 1980's and is therefore considered a better fit, since it covers our entire time period and can provide sufficient data.

Using an index instead of a forecast as the normal return for our CAR equation, is believed to be faster and more accurate than a forecasting method. The index return for that specific date is already observed and recorded.

3.3 Variable Descriptions

Table 1 - Variable description for our model.

	Variable	Description
Dependent Variables	CAR	Cumulative Abnormal Return
Independent Variables	aBVPS aCash aIndustry aNation aND aTA dealValue pMethod stake tIndustry tNation year	Acquiror Book Value Per Share Acquiror Cash Acquiror Industry Acquiror Nation Acquiror Net Debt Acquiror Total Assets Value of acquisition measured in MSEK Payment Method Percentage of target acquired Target Industry Target Nation Year of acquisition announcement
Dummy Variables	CAR_cash CAR_CB CAR_domestic CAR_stock cash_dummy CrossBorder domestic industry_dummy stock_dummy stockCB StockIV Year Effect	CAR filtered for only 100% Cash acquisitions, CAR*cash_dummy CAR filtered for only Cross border acquisitions, CAR*CrossBorder CAR filtered for only domestic acquisitions, CAR*domestic CAR filtered for only 100% stock acquisition, CAR*stock_dummy Cash dummy, 100% Cash = 1 Cross border dummy, aNation≠tNation domestic dummy, aNation=tNation industry dummy, aIndustry=tIndustry Stock dummy, 100% Stock = 1 Stock and Cross border dummy, stock_dummy*CrossBorder Stock and Industry Variable dummy, stock_dummy*industry_dummy Yes

3.4 OLS Regression

To determine to what extent the different control variables chosen to affect the acquiror CAR, and if significant in explaining, an OLS regression based on cross-sectional data will be conducted. The OLS regression is a test that is estimating linear relationships between the included variables and minimises the sum of the squared differences between observed and predicted variables (Stock & Watson, 2020). The OLS has many areas of use but will in this thesis mainly be used for hypothesis tests and to test the strength of which the chosen explanatory variables affect the response variable. In addition, it will also be useful to determine the significance of chosen models and variables.

3.4.1 OLS Set-up

Setting up our OLS regression requires a dependent variable (DV) along with dummy variables in order to test our thesis. Acquiror CAR, measured as a percentage, is selected as the DV for this study.

3.4.2 Variance Inflation Factor (VIF)

The Variance Inflation Factor (VIF) is a statistical measure used to assess multicollinearity in regression analysis. It quantifies the extent to which the variance of the estimated regression coefficient is inflated due to the correlation between predictor variables in a multiple regression model. A high VIF indicates a high degree of multicollinearity, suggesting that the predictor variables are highly correlated and may lead to unstable or unreliable regression results.

Previous research generally uses a threshold value (such as $VIF > 5$ or 10) to identify problematic levels of multicollinearity and consider potential remedies, such as removing correlated variables or using dimensionality reduction techniques. In this study, a threshold value of 10 is used (Carlos & Black, 2012).

3.5 T-Test

A simple and useful test to determine if two populations differ with statistical significance, is the t test (Carlos & Black, 2012). A t test is conducted by calculating the value of the test statistic, called t-statistic. The t-statistic has a corresponding p value, which is compared to the tests chosen significance level, and that way it is possible to decide whether to reject or not reject the null hypothesis of the test. In this thesis a t-test will be conducted to test the third research question which is whether the acquiror CAR differs between stock financed and cash financed acquisitions.

4. Data

4.1 Data Collection

Table 2 below, prints the filters used in the Eikon Database that resulted, in combination with the search criteria listed in section [3.1 Method for Data Collection](#), with our M&A-sample. Table 2 can also prove useful for any academics or scholars looking to recreate this, or a similar study.

Table 2 - Our screen setting for Eikon M&A-search, along with their description.

Screen setting	Description
Nation Classification (Acquiror)	Nation of acquiror HQ - set to Sweden
Nation Classification (Target)	Nation of target, including all nations
M&A Type	Sorting type of transaction, including Disclosed dollar value deals and stake purchases
Date Announced	Date when the deal was announced, including deals between 1st of January 2002 and 31st of December 2022
Deal Status	Status of the deal, sample including completed deals only
Deal Value at Effective Date (SEK,Millions,Do Not Keep N/A)	Deal value of the deal measured in million SEK
Acquiror Total Assets Last 12 Months (USD,Millions,Do Not Keep N/A)	Total assets of the acquiror last 12 months before the deal, measured in million SEK
Acquiror Cash Last 12 Months (SEK,Millions,Do Not Keep N/A)	Cash and cash equivalents of the acquiror last 12 months before the deal, measured in million SEK
Public Status (Acquiror)	Set to include only public companies as acquirors
Public Status (Target)	Set to include both public and private companies as targets
Acquiror Stock Price on Announcement Day (USD,Do Not Keep N/A)	Acquiror stock price on announcement date
Acquiror Book Value per Share Last 12 Months (USD,Millions,Do Not Keep N/A)	Acquiror book value per share last 12 months before the deal, excluding deals where data is incomplete
Acquiror Closing Price 1 Day Prior to Date of Most Recent Terms(USD,Do Not Keep N/A)	Stock price of acquiror on the day prior to deal announcement

Percentage of Shares Acquired in Transaction	Percentage of shares acquired, set to include only deals where more than 50% was acquired
Number of Consideration Types Offered	Number of consideration types in deal, set to include only deals where number of consideration types equals one (1)

4.2 Sample Screening

The sample is collected through a screening in Refinitiv Eikon database and covers M&A deals closed and announced in the period between 1st of January 2002 and 31st of December 2022. This section has 3 tables connected to it, table 3, 4 and 5, which all can be found in the [appendix](#) starting on page 36.

By using the filters presented above under [4.1. Data Collection](#), our study ended up with a sample size of 687 completed M&A transactions. Out of which, 554 are 100% cash, and the remaining 133 are 100% stock financed. Some of the transactions are made with ordinary shares, but the majority (89) are made of newly issued ordinary shares.

The reason why the screening resulted in such a small sample for stock financed transactions is believed to be rooted in its uncommon nature of paying 100% through stocks. A combination payment with potential earnouts is more commonly found.

Out of our sample of 687 transactions, all are contained within 13 unique industries, which the majority are within “High Technology”. When it comes to acquisitions in Sweden vs. Abroad the sample is much more satisfying and balanced. 335 (45.85%) acquisitions are within Sweden, i.e., the target company is Swedish. And 372 (54.15%) acquisitions are abroad, i.e., the target company is outside Sweden. This balance would allow for an unbiased conclusion when testing for differences in acquiror CAR between acquisitions domestic and foreign acquisitions.

Table 4, which can be found on page 37 in the appendix, depicts how our sample is divided throughout our selected time period (2002-2022). Looking at how cash is the predominant choice of payment throughout the period, some outliers are noticeable. One factor that aligns with the theory explained in [2.1.1 Stock Payment](#), companies will prefer to use stock payment when their share is overvalued.

This can also be interpreted as companies will avoid using stock-based acquisitions when their stock is undervalued.

This becomes evident when looking at years of financial crises, and the years of “recovery” after. During the crash of 2008 our sample shows that only 7.14% of acquisitions made were 100% stock financed. And the recovery year of 2009, where indices across the world rose, 45.00% of the acquisitions were financed with stocks. This is also the case for the more recent “pandemic-period”, 2020-21, where stock financed acquisitions amounted to 30.95% and 20.69% respectively. And the recession year of 2022 only amounted to 9.30%.

4.3 Cleaning the Data

The initial data received from Refinitiv Eikon, displayed in tables above, contained multiple corporations that have either become bankrupt or unlisted, i.e., removed themselves from the public stock market. This causes a lot of implications when trying to receive stock prices and other metrics and variables. Therefore, some data cleaning was needed.

In order to reach our final sample, some simple measures were taken. Using Capital IQ (CIQ) to source for stock prices during announcement days for given stocks some cells resulted in an error, looking into all of our errors it was made clear all of them where either unlisted or had filed for bankruptcy. This left us with two options, either remove them from our sample or manually fill out all of our missing numbers. The second option would result in a high probability of human error since we have to look for stock market prices for specific dates, both on announcement day and one day prior. Therefore, the decision was made to remove them completely resulting in a clean data set.

Our original sample resulted in 687 recorded transactions, but after cleaning we are left with 512 observations, resulting in the removal of 175 observations. And as shown in tables in the section below, it has impacted both the cash and stock acquisitions. Figure 1 and 2 depicts the change from the original sample to the cleaned sample visually. Table 1 can be found on the next page, and table 2 on page 18.

Figure 1 - Change in sample per industry.

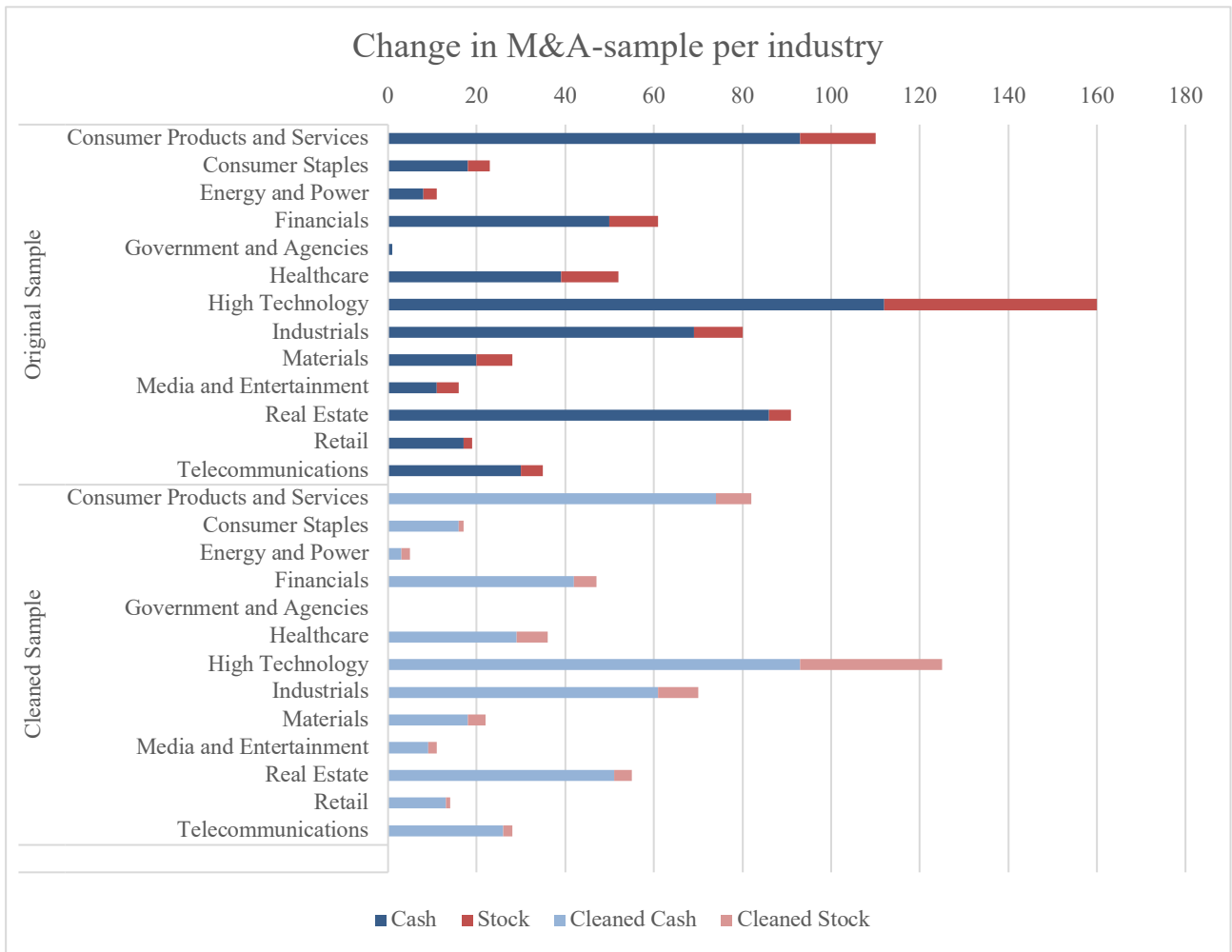


Figure 1 details the number of observations collected per acquiror industry. It displays the sample size before and after the cleaning process. Original sample is represented by the blue data, and the cleaned by red.

Figure 2 - Change in sample per year.

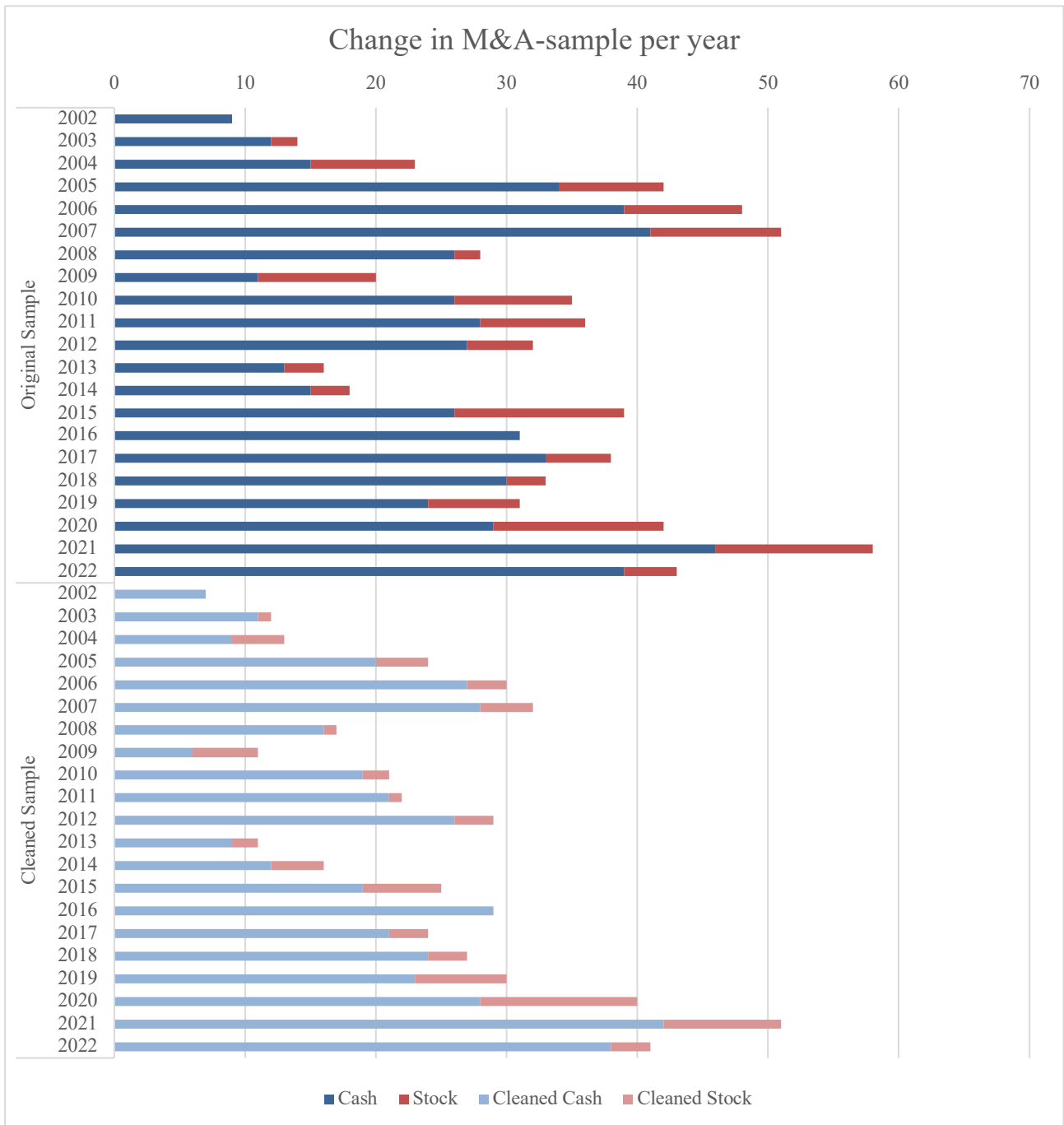


Figure 2 details the number of observations collected per year. It displays the sample size before and after the cleaning process.

4.4 Descriptive Statistics

Our cleaned data set contains a total of 512 observations, out of which 435 and 77 are cash- and stock transactions respectively. Table 6 and 7 covers the number of observations and its characteristics, such as mean deal size, and table 8 shows highest and lowest deal per cash and stock transaction. The

tables also help with getting a quick overview of the characteristics of our cleaned M&A-sample. It covers the number of total observations, split up into Cash and Stock and displays a percentage of total number of observations.

Table 6 - Displays our M&A-sample divided into acquiror's industry, and how many of them are made with cash or stock for the cleaned sample.

Acquiror Macro Industry	N	%	Cash	% (Cash)	Stock	% (Stock)
Consumer Products and Services	82	16,02%	74	17,01%	8	10,39%
Consumer Staples	17	3,32%	16	3,68%	1	1,30%
Energy and Power	5	0,98%	3	0,69%	2	2,60%
Financials	47	9,18%	42	9,66%	5	6,49%
Government and Agencies	0	0,00%	0	0,00%	0	0,00%
Healthcare	36	7,03%	29	6,67%	7	9,09%
High Technology	125	24,41%	93	21,38%	32	41,56%
Industrials	70	13,67%	61	14,02%	9	11,69%
Materials	22	4,30%	18	4,14%	4	5,19%
Media and Entertainment	11	2,15%	9	2,07%	2	2,60%
Real Estate	55	10,74%	51	11,72%	4	5,19%
Retail	14	2,73%	13	2,99%	1	1,30%
Telecommunications	28	5,47%	26	5,98%	2	2,60%
SUM:	512	100,00%	435	84,96%	77	15,04%

Comparing table 6 and 7 with table 3 and 4 (table 3 and 4 can both be found in the appendix), we observe that 119 cash based-, and 56 stock based acquisitions were dropped in accordance with the previous section [4.3 Cleaning the Data](#).

Table 7 - Displays the number of acquisitions made in each sample year, along with how many of them are stock or cash made for the cleaned sample.

Acquisiton Year	N	Cash (n)	Cash (%)	Stock (n)	Stock (%)
2002	7	7	100,00%	0	0,00%
2003	12	11	91,67%	1	8,33%
2004	13	9	69,23%	4	30,77%
2005	24	20	83,33%	4	16,67%
2006	30	27	90,00%	3	10,00%
2007	32	28	87,50%	4	12,50%
2008	17	16	94,12%	1	5,88%
2009	11	6	54,55%	5	45,45%
2010	21	19	90,48%	2	9,52%
2011	22	21	95,45%	1	4,55%
2012	29	26	89,66%	3	10,34%
2013	11	9	81,82%	2	18,18%
2014	16	12	75,00%	4	25,00%
2015	25	19	76,00%	6	24,00%
2016	29	29	100,00%	0	0,00%
2017	24	21	87,50%	3	12,50%
2018	27	24	88,89%	3	11,11%
2019	30	23	76,67%	7	23,33%
2020	40	28	70,00%	12	30,00%
2021	51	42	82,35%	9	17,65%
2022	41	38	92,68%	3	7,32%
SUM:	512	435	84,96%	77	15,04%

Table 8 - Displays the average Deal Size made in both Cash and Stock in MSEK from our M&A-sample, combined with highest and lowest unique transaction for the cleaned sample.

	Cash Value(MSEK)	Stock Value(MSEK)
Avg. Deal Size	466,23	480,97
High	16 128,96	8 413,07
Low	0,08	0,35

Figure 3 provides a visual confirmation that stock-based acquisitions are more common during years of recovery after a financial crisis. During the bust, we observe a low number of acquisitions paid with stocks and a higher one with cash. But the year following, or during a boom, we can observe that stocks become overrepresented.

Figure 3 - Displays how the choice of payment fluctuates per year.

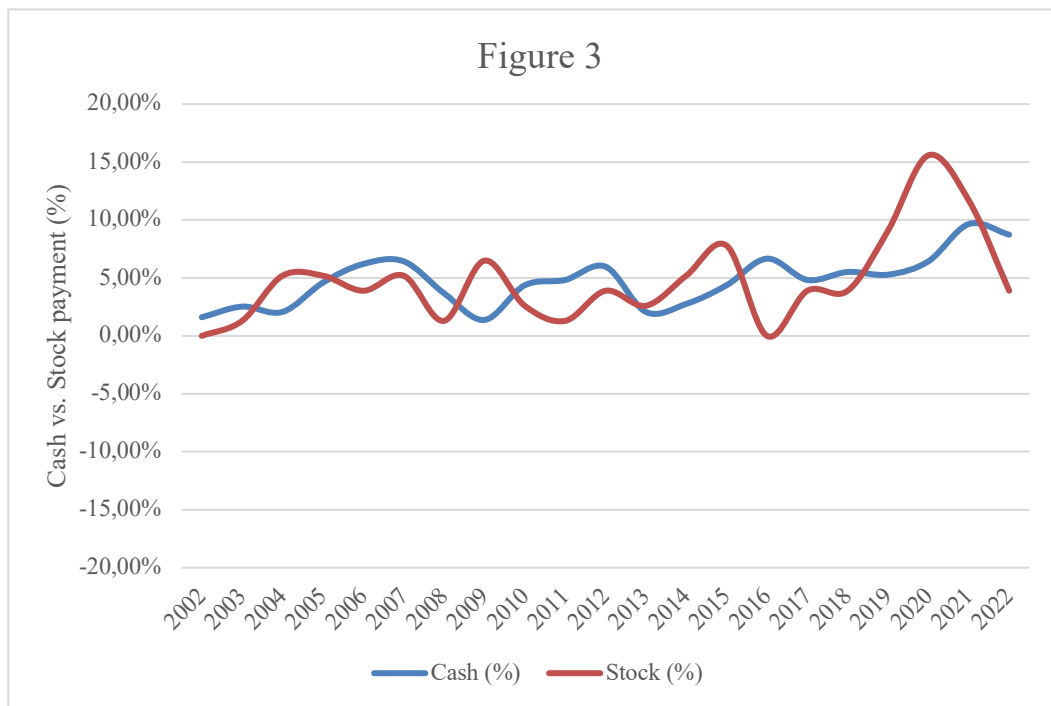


Figure 3 details how the method of payment is distributed year to year as a percentage of total number of cash and stock-based observations respectively. The blue line represents cash-based acquisitions, and the red line represents stock-based acquisitions.

To further prove this point, we have fitted figure 3 with OMXS30 yearly returns during the same time period as our sample. This is displayed in figure 4 on the next page.

Figure 4 - Figure 3 combined with OMXS30 annual returns between the period 2002-2022.

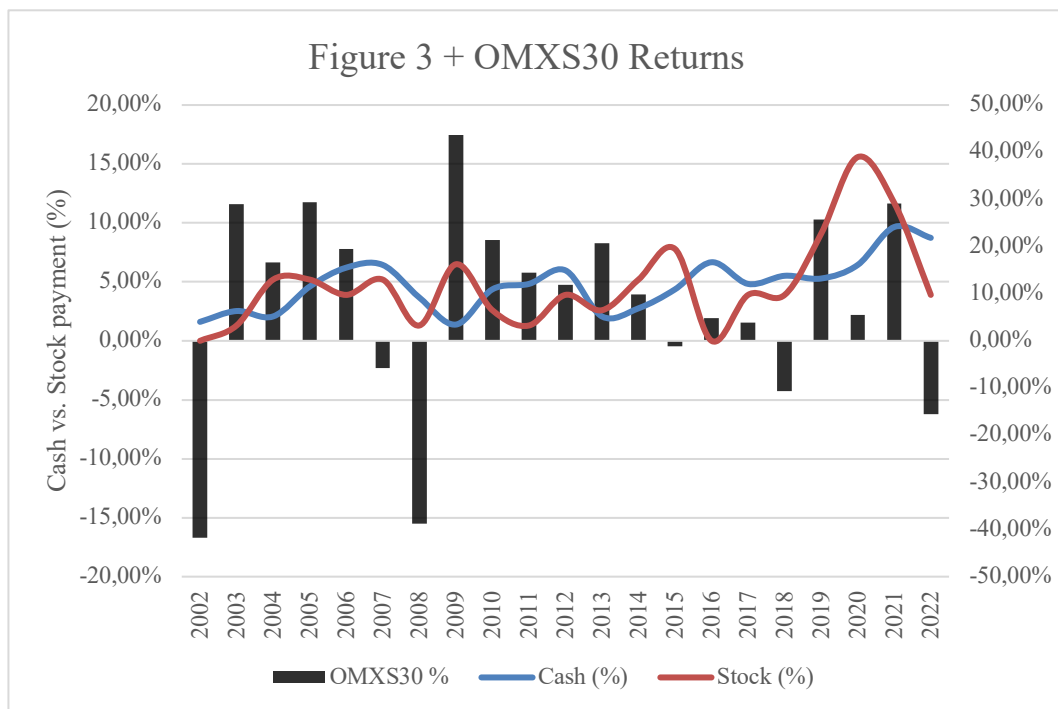


Figure 4 displays figure 3 combined with the index OMXS30 annual returns the time period 2002-2022. The left side Y-axis represents cash vs. stock payments in percent, and the right most Y-axis OMXS30 returns.

As explained earlier in the paper, this study requires a multitude of dummy variables to successfully estimate the effect of various factors. Table 1 under [3.3 Variable Description](#) will provide an in-depth description and explanation of said variables. Please note that understanding our variables will be necessary to fully comprehend what this paper is testing, and the results of our OLS regression and T-tests.

5. Empirical Results

5.1 Model

For the OLS regressions, three models were constructed. The models were all constructed with acquiror CAR as the dependent variable, with different explanatory variables. An additional three models were then constructed, where the original three models were extended with the dummy variables created in Stata, in order to control for time.

5.2 Final Results

5.2.1 OLS Regression Results

The first regression run was the model testing how the “firm specific” variables only affect the acquiror CAR. The results are presented in OLS model 1 below:

OLS model 1

Variables	CAR	
	Coef (Std.Error)	t (p-value)
aBVPS	-1.49e-06 (4.44e-06)	-0.33 (0.738)
aCash	-7.02e-07 (4.94e-07)	-1.42 (0.156)
aND	7.55e-09 (6.73e-08)	0.11 (0.911)
aTA	-9.63e-09 (2.27e-08)	-0.42 (0.672)
dealValue	3.35e-06 (2.69e-06)	1.25 (0.213)
stake	.000568 (.00273)	2.08 (0.038)**
cons	-.0342414 (.0262257)	-1.31 (0.192)
N	512	
R2	0.0167	
Max VIF	10.17	

(*) Significant at 10% level, (**) significant at 5% level, (***) significant at 1% level.

The output shows that the chosen explanatory variables explain 1.67% of the variance in acquiror CAR. At a 10% significance level, it is only the stake variable that is individually significant in explaining acquiror CAR, and the coefficient shows a very weak positive relation.

The second regression run is an extended version of the first model, where a stock dummy has been added in order to control for the method of payment in the transaction. The outputs are shown in OLS model 2 on the next page:

OLS model 2

Variables	CAR	
	Coef (Std.Error)	t (p-value)
stock_dummy	.0306602 (.0097869)	3.13 (0.002)**
aBVPS	-1.49e-06 (4.41e-06)	-0.34 (0.736)
aCash	-5.52e-07 (4.92e-07)	-1.12 (0.263)
aND	7.08e-09 (6.67e-08)	0.11 (0.915)
aTA	-7.97e-09 (2.25e-08)	-0.35 (0.724)
dealValue	3.06e-06 (2.67e-06)	1.15 (0.252)
stake	.0005115 (.0002713)	1.89 (0.060)*
_cons	-.0337618 (.0260002)	-1.30 (0.195)
N	512	
R2	0.0355	
Max VIF	10.17	

(*) Significant at 10% level, (**) significant at 5% level, (***) significant at 1% level.

The output shows that the explanatory variables explain 3.55% of the variance in acquiror CAR. At a 10% significance level, no non dummy explanatory variables are individually significant in this model.

The third regression run is a changed version of the second model, where the dummy variable has been changed to one that is controlling for both methods of payment as well as the origin of the target company. The output is presented below in OLS model 3:

OLS model 3

Variables	CAR	
	Coef (Std.Error)	t (p-value)
stockCB	.0295149 (.0168886)	1.75 (0.081)*
aBVPS	-1.72e-06 (4.44e-06)	-0.39 (0.699)
aCash	-6.69e-07 (4.94e-07)	-1.39 (0.176)
aND	7.29e-09 (6.72e-08)	0.11 (0.914)
aTA	-9.14e-09 (2.27e-08)	-0.40 (0.687)
dealValue	3.34e-06 (2.69e-06)	1.27 (0.203)
stake	.0005479 (.0002727)	2.01 (0.045)**
_cons	-.0337701 (.0261739)	-1.29 (0.198)
N	512	
R2	0.0226	
Max VIF	10.17	

(*) Significant at 10% level, (**) significant at 5% level, (***) significant at 1% level.

The output shows that the explanatory variables explain 2.26% of the variance in acquiror CAR. At a 10% significance level, the stake variable is individually significant, and the coefficient shows a weak positive relationship in explaining acquiror CAR.

The fourth regression run is built on the same acquiror firm specific variables as the previous models. In addition, a dummy variable controlling for method of payment and industry has been added, as well as dummy variables controlling for the year of acquisition. The output is presented in OLS model 4 below:

OLS model 4

Variables	CAR	
	Coef (Std.Error)	t (p-value)
stockIV	.0122779 (.0117053)	1.05 (0.295)
aBVPS	-5.59e-07 (4.44e-06)	-0.13 (0.900)
aCash	-4.70e-07 (4.98e-07)	-0.94 (0.345)
aND	1.38e-08 (6.76e-08)	0.20 (0.838)
aTA	-5.91e-09 (2.28e-08)	-0.26 (0.796)
dealValue	2.58e-06 (2.68e-06)	0.96 (0.336)
stake	.0005998 (.0002706)	2.22 (0.027)**
_cons	-.0485222 (.0374531)	-1.30 (0.196)
Year Effect	Yes	
N	512	
R2	0.1083	
Max VIF	10.85	

(*) Significant at 10% level, (**) significant at 5% level, (***) significant at 1% level.

The output shows that the chosen explanatory variables explain 10.83% of the variance in acquiror CAR. At a 10% significance level, the stake variable is the only non-dummy variable that is significant in explaining acquiror CAR. The coefficient shows a weak positive relation between stake and acquiror CAR.

The fifth regression run is an extended version of Model 1, where dummies have been added to control for time. The output is presented in OLS model 5 on the next page.

OLS model 5.

Variables	CAR	
	Coef (Std.Error)	t (p-value)
aBVPS	-6.14e-07 (4.44e-06)	-0.14 (0.890)
aCash	-5.11e-07 (4.97e-07)	-1.03 (0.304)
aND	1.33e-08 (6.76e-08)	0.20 (0.844)
aTA	-6.25e-09 (2.28e-08)	-0.27 (0.784)
dealValue	2.69e-06 (2.67e-06)	1.01 (0.314)
stake	.0006164 (.0002701)	2.28 (0.023)**
_cons	-.0498593 (.0374352)	-1.33 (0.184)
Year Effect	Yes	
N		512
R2		0.1062
Max VIF		10.86

(*) Significant at 10% level, (**) significant at 5% level, (***) significant at 1% level.

The output shows that the explanatory variables explain 10.62% of the variance in acquiror CAR. At a 10% significance level, the stake variable is the only non-dummy variable that is significant in explaining acquiror CAR. The stake coefficient shows a weak positive relationship in explaining acquiror CAR.

The sixth regression run is an extended version of Model 2, where dummies have been added to control for time. The output is presented in OLS model 6 on the next page.

OLS model 6

Variables	CAR	
	Coef (Std.Error)	t (p-value)
stock_dummy	.034313 (.0099549)	3.45 (0.001)***
aBVPS	-6.36e-07 (4.39e-06)	-0.14 (0.885)
aCash	-3.40e-07 (4.94e-07)	-0.69 (0.491)
aND	1.83e-08 (6.69e-08)	0.27 (0.784)
aTA	-5.88e-09 (2.26e-08)	-0.26 (0.795)
dealValue	2.54e-06 (2.64e-06)	0.96 (0.337)
stake	.0005593 (.0002677)	2.09 (0.037)**
_cons	-.0454859 (.037044)	-1.26 (0.220)
Year Effect	Yes	
N	512	
R2	0.1276	
Max VIF	10.85	

(*) Significant at 10% level, (**) significant at 5% level, (***) significant at 1% level.

The output shows that explanatory variables explain 12.76% of the variance in acquiror CAR. At a 10% significance level, the stake variable is the only non-dummy variable that is significant in explaining acquiror CAR. The stake coefficient shows a weak positive relationship in explaining acquiror CAR.

5.2.2 T Test Results

To answer the research question about differences in acquiror CAR for different methods of payments used in acquisitions, a t-test was conducted. For acquisition where cash was the method of payment, a value of 1 has been given. For acquisitions where stock was the method of payment, a value of 0 has been given. The results of the t test are presented in t-test 1 below:

T-test 1

Group	Cash Vs. Stock (cash=1)	
	N	Mean (Std.Error)
1	435	.0140235 (.0021007)
0	77	.0477285 (.0198372)
Combined	512	.0190924 (.0035029)
p-value	0.0006	

The t-test returned a p-value of 0.0006, and the H_0 is thus rejected. At a significance level of 10%, it tells us that the acquiror CAR is significantly different between the two different methods of payment.

T-test for cross border

To answer the research question about differences in acquiror CAR between domestic acquisitions and acquisitions abroad, another t-test was conducted. For acquisitions where the target was foreign, a value of 1 has been given. For acquisitions where the target was domestic, a value of 0 has been given. The results are presented in t-test 2 below:

T-test 2

Domestic Vs. Abroad (Abroad=1)		
Group	N	Mean (Std.Error)
1	304	.0164832 (.0027468)
0	208	.0229058 (.0076355)
Combined	512	.0190924 (.0035029)
p-value	0.3684	

The t test returned a p-value of 0.3684. At a significance level of 10%, the H_0 cannot be rejected. At the significance level, it cannot be determined that there is a difference in acquiror CAR between acquisitions abroad and domestic acquisitions.

T-test for cross border stock payments

To investigate whether acquisitions with a foreign target are more common to be stock based, a third t-test was conducted with a sample consisting of stock-based payments only. For acquisitions where the target was foreign, a value of 1 has been given. For acquisitions where the target was domestic, a value of 0 was given. The results are presented in t-test 3 below:

T-test 3

StockCB Vs. Domestic (StockCB=1)		
Group	N	Mean (Std.Error)
1	23	.0496014 (.0196994)
0	54	.0469307 (.0271289)
Combined	77	.0477285 (.0198372)
p-value	0.9514	

The t test returned a p-value of 0.9514. At a significance level of 10%, the H_0 cannot be rejected. At the significance level, it cannot be determined that there is a difference in acquiror CAR between stock acquisitions abroad and domestic stock acquisitions.

6. Discussion

6.1 The Results

The results of our t-test show that there is a significant difference in the acquiror CAR on the day of the announcement between acquisitions paid with cash and stocks. While it is according to our expectations that there was going to be a significant difference between the two, we did expect the acquiror CAR for cash acquisitions to be larger than the acquiror CAR for stock acquisitions. Our t test returned a result implying that the acquiror CAR for stock-based acquisitions were larger, which is an unexpected result. Relating it to the literature and theories, one of the main reasons for acquirors issuing stock is because the company's management believes the stock is overvalued. As previously discussed, that should, *ceteris paribus*, send the signal to the market that the stock is overvalued and hence trade it down.

One datapoint that might explain this unexpected result is the fact that the use of stocks as a method of payment is overrepresented during short periods of very strong stock market development. As we presented in Figure 3 under the data section in [4.4 Descriptive Statistics](#), the observed acquisitions in our sample where stock was the method of payment are clustered around certain years, as seen in Figure 3. The clusters appear to be correlated with outlying years of strong market performance. This correlation might explain why the acquiror CAR is unexpectedly large for the observations in our sample. It might be reasonable to assume that reactions in general were larger during these years, and that the clustered data points make the results skewed.

Another way of viewing the results is by applying the performance extrapolation hypothesis by Rau and Vermaelen (1998). Applying their theory of initially good abnormal returns, but long term negative abnormal returns, our expected results still make sense while the observed returns can be explained as well. As they describe in their theory, it is not uncommon that the announcement of acquisitions initially is received by a positive acquiror CAR, since the acquiror often extrapolates performance and builds a story that makes the quality of the company overestimated by the market. Adapting this theory to our results, it could explain the measured acquiror CAR which this study found unexpected. While the results are unexpected, applying the performance extrapolation hypothesis, the reasoning behind the expectations would still be relevant as the stocks used as method of payment would still be overvalued in accordance with expectations. The main difference, which is explained by the performance extrapolation hypothesis, is that the process of the market going from

overvaluing the shares to valuing them closer to fair value, takes more time than anticipated in the study's expected results.

As concluded in the paragraphs above, the stock acquisitions are clustered into periods characterised by abnormal yearly returns. This is also evident by looking at Figure 4. However, this has proven not to be the case for cash acquisitions. Looking at the observed acquisitions in our sample where cash was the method of payment, there were more observations than for stock as the method of payment. The cash observations were also more evenly distributed than the stock observations, as observed by the flatter blue line in figure 3 & 4. The distribution is not unexpected. As we presented in section [2.3 Summary of Relevant Articles and Research](#), the popularity of using stock as the method of payment has been going in waves, timing the top of business cycles for the past hundred years. Cash as a payment method is not as "cyclical" as stock, although stock has become the preferred method of payment according to previous research, including Hansen (1987) and Boone, Lie & Liu (2014), cash as a payment method used both in bull and bear markets. Looking at Figure 4, the blue line, represented by cash-based acquisitions, is not as volatile as the red line displaying stock-based acquisitions. This is also backed up by Faccio & Masulis (2005), where they concluded that cash is the predominant method of payment.

Since the observed reaction in our models prove that the acquiror CAR, on average, is larger for acquisitions where stock is the selected method of payment. This result is believed to be rooted in how evenly distributed cash acquisitions are over our time period. Companies announcing acquisitions in bear markets receive a worse reaction than in a bull market, similarly, concluded by Edvall and Höjlind (2020), which results in the mean being weighed down in bear markets due to an increased standard deviation in the market return.

Although this discussion touches base on behavioural finance, people are more prone to hype up stocks and thus create a larger reaction to announcements during bull markets. Since it is considered to have an impact on the result of acquiror CAR between Cash and stock. Since stock as a method of payment is more clustered around years where abnormal yearly returns are present, it would explain why the mean reaction measured in acquiror CAR is larger for stock than cash.

Moving to comparing the acquiror CAR for acquisitions where the target is domestic and foreign, neither of our tests returned results that allowed us to reject the null hypotheses. That is, we cannot say that there is a significant difference in acquiror CAR between acquisitions of foreign and domestic

targets. This is for both the entire sample as well as for the created sub sample, comparing stock acquisitions only. Our M&A-sample contained only 77 stock observations, of which only 23 were foreign targets. This can be considered to be too small to be able to make any proper conclusions, hence T-test 3 will not be discussed further.

The expected results comparing foreign and domestic acquisitions was that stocks were expected to be more common as the method of payment for foreign targets. This in order to reduce the information asymmetry, assumed to be larger when the target's operations are located further away from the acquiror, compared to when acquiring within the domestic borders. This has been hard to prove, since stock-based acquisitions have been concluded to be highly cyclical in relation to stock valuation. No pattern in Domestic vs. Abroad has been recognised in our M&A-sample.

Regarding the results from our OLS regression tables in [5.3.1 OLS Regression Results](#), the r-squared is generally low for all models, where model 4, 5 & 6 recorded the highest: 10.83%, 10.62% and 12.76% respectively. This means that the model's independent variables have a limited ability to explain the dependent variable, acquiror CAR, and the majority of the factors explaining acquiror CAR are not factored into our models. However, while the R-squared numbers might appear to be low, our findings are in line with previous research, such as Boone, Lie & Liu (2014). This type of study generates models with generally low r-squared, and ours is not an exception. The observed R-squared for these types of quantitative studies in the M&A field result in a value range of 3%-20% as seen in the article published by Masulis, Wang & Xie (2020).

Checking for the extent to which other independent variables affect the acquiror CAR, similar for all of our models, is that stake is the only non-dummy variable significant in explaining acquiror CAR at 10% significance. This significance implies that the percentage of target companies acquired has an impact on acquiror CAR. From our sample 436 out of 512, acquired 100% of the target. One conclusion that can be made is that higher stake has higher significance on acquiror CAR, although the recorded impact is low but positive. Stake also stands out on another metric, VIF. In all 4 models it returns a VIF on 1 or close to 1. Apart from this, no significant conclusions can be drawn from the conducted OLS regression since both the R-squared is low and the returned p-values are high, ruling out the variables as insignificant.

All variables except two display a satisfying VIF. As previously discussed in [section 3.4.2](#), a VIF greater or equal to 10 shows a multicollinearity problem, meaning the variable is highly correlated

with other variables. In our case, we exceed 10 on two variables, aTA and aND which if you break down are highly correlated. Acquiror Total Assets will have a direct impact on Acquiror Net Debt, due to the nature of its calculation. All other variables return a VIF less than 10 and some even sub-5, meaning no further multicollinearity issues.

6.2 The Limitations

As our results conclude, our model has provided answers to our research questions provided earlier. However, it is not flawless and while reading other papers and writing ours some limitations have appeared. From our M&A-sample we can see that a lot of the stock-made acquisitions have been made with “newly issued shares”. Our model has failed to separate the effect of the new stock issue and the acquisition announcement, making it difficult to conclude if the recognised acquiror CAR is solely impacted by the acquisition announcement.

For students or academics who would want to recreate this study, we would suggest separating the effect of the stock issue and acquisition announcement in accordance with the study published by Golubov, Petmezas & Travlos (2016). Their model managed to single out the effect by incorporating and using multiple CARs, and by tracking the Season Equity Offerings (SEOs).

An additional opportunity for further research is to dive deeper into more ways of stock acquisitions, including different ways of mixing the payment with both cash and stock. Including the mixed payment might enable a broader way of analysing the acquirors reasoning behind deciding method of payment.

7. Conclusion

To conclude our paper, the t-test results indicate a significant difference in the acquiror CAR on the day of the announcement between acquisition paid with 100% cash or 100% stocks. However, the observed results are contrary to expectations, as the acquiror CAR for stock acquisitions are larger than for cash acquisitions. This unexpected finding can be partly explained by the clustering of stock acquisitions around periods of strong stock market performance, perhaps leading to skewed results and larger acquiror CAR values. The performance extrapolation hypothesis suggests that initial positive abnormal returns may be followed by long-term negative abnormal returns supporting the expectation that stocks used as payment method when overvalued deletes shareholder value.

The distribution of cash and stock acquisitions differentiate, with cash acquisitions being more evenly distributed over the time period. Cash acquisitions do not appear as cyclical to market conditions as stock acquisitions, which tend to coincide with peaks in the stock market. The larger acquiror CAR for stock acquisitions may be influenced by the tendency of people hyping up the stock market during bull markets, resulting in a larger reaction to announcements. However, the mean acquiror CAR for cash acquisitions remains positive.

Comparing acquisitions for domestic and targets abroad, no significant difference in acquiror CAR is found. The sample size for targets cross borders is relatively small, limiting the ability to draw conclusions. The expectation that stock-based acquisition would be more common for cross border transactions to reduce information asymmetry is not supported by the findings.

The OLS regression models show low R-squared values, indicating that the independent variables have limited explanatory power for acquiror CAR. However, these results align with previous research, and no further investigation is needed. The variables denoted “stake”, percentage of the target company acquired, is the only significant non-dummy variable across the models, indicating a positive but small impact on acquiror CAR. Multicollinearity issues are present for two variables, (aTA and aND), which are highly correlated due to their relation on the balance sheet.

In summary, the study reveals expected results regarding the difference in acquiror CAR between cash and stock acquisitions, as well as an unexpected result of the lack of a significant difference between domestic and cross border. Our findings highlight the influence of market conditions, clustering of stock acquisitions, and the limitations and the limitations of the regression models explaining acquiror CAR.

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Appendix

Table 3 - Displays our M&A-sample divided into acquiror's industry, and how many of them are made with cash or stock for the original sample.

Acquiror Macro Industry	N	%	Cash (n)	Cash (%)	Stock (n)	Stock (%)
Consumer Products and Services	110	16,01%	93	16,79%	17	12,78%
Consumer Staples	23	3,35%	18	3,25%	5	3,76%
Energy and Power	11	1,60%	8	1,44%	3	2,26%
Financials	61	8,88%	50	9,03%	11	8,27%
Government and Agencies	1	0,15%	1	0,18%	0	0,00%
Healthcare	52	7,57%	39	7,04%	13	9,77%
High Technology	160	23,29%	112	20,22%	48	36,09%
Industrials	80	11,64%	69	12,45%	11	8,27%
Materials	28	4,08%	20	3,61%	8	6,02%
Media and Entertainment	16	2,33%	11	1,99%	5	3,76%
Real Estate	91	13,25%	86	15,52%	5	3,76%
Retail	19	2,77%	17	3,07%	2	1,50%
Telecommunications	35	5,09%	30	5,42%	5	3,76%
SUM:	687	100,00 %	554	80,64%	133	19,36%

Table 4 - Displays the number of acquisitions made in each sample year, along with how many of them are stock or cash made for the original sample.

Acquisition Year	N	Cash (n)	Cash (%)	Stock (n)	Stock (%)
2002	9	9	100,00%	0	0,00%
2003	14	12	85,71%	2	14,29%
2004	23	15	65,22%	8	34,78%
2005	42	34	80,95%	8	19,05%
2006	48	39	81,25%	9	18,75%
2007	51	41	80,39%	10	19,61%
2008	28	26	92,86%	2	7,14%
2009	20	11	55,00%	9	45,00%
2010	35	26	74,29%	9	25,71%
2011	36	28	77,78%	8	22,22%
2012	32	27	84,38%	5	15,63%
2013	16	13	81,25%	3	18,75%
2014	18	15	83,33%	3	16,67%
2015	39	26	66,67%	13	33,33%
2016	31	31	100,00%	0	0,00%
2017	38	33	86,84%	5	13,16%
2018	33	30	90,91%	3	9,09%
2019	31	24	77,42%	7	22,58%
2020	42	29	69,05%	13	30,95%
2021	58	46	79,31%	12	20,69%
2022	43	39	90,70%	4	9,30%
SUM:	687	554	80,64%	133	19,36%

Table 5 - Displays the average Deal Size made in both Cash and Stock in MSEK from our M&A-sample, combined with highest and lowest unique transaction for the original sample.

	Cash Value(MSEK)	Stock Value(MSEK)
Avg. Deal Size	414,87	390,80
High	16 128,96	8 413,07
Low	0,08	0,21