Stockholm School of Economics

Bachelors thesis

Company revaluation after failed takeover bids
- A study of the Nordic stock markets between 1985 and 2015

Authors:
Patrik Edberg
edberg.patik@gmail.com

Tutors:
Cristian Huse

Abstract

This thesis analyses the revaluation of targets of failed takeover bids in Sweden, Finland, Norway and Denmark under the period of 1985 until 2015. The findings in this thesis is that the offers made with cash rather than with stock resulted in a significant positive revaluation of an average of 13% while the stock offers resulted in a significantly lower revaluation with a mean of -10% total revaluation. These findings have in the thesis been hypothesised to be due to fundamental bidding rationale when choosing payment method and also how a bid changes the perception of the demand for a certain stock.

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Section 1.5 describes the Scope and the limitations of the thesis
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1.1 Relevance of the thesis

Mergers and Acquisitions are one of the biggest corporate actions there is so naturally it is a subject where the actors want to understand the processes as rigorously as possible and any finding within this field is of interest. During the period between 2007 and 2013 there was a total 163 offers in Sweden, Norway, Finland and Denmark and the average premium paid for Swedish companies in 2013 was at 31%. [1] The actors of this market is ranging from management of firms interesting in acquiring a company via advisors to management of targeted firm unto finally the current and prospective shareholders of the target company. In recent years the bidding processes effect on smaller shareholder has been increasingly debated and whether they are traditionally to a higher extent "squeezed out" of their position in an unfavourable way.

This study will focus on the revaluation of companies that has been the target of failed takeover bids. The previous literature has been mainly focused on the U.S. stock market and the results there has been slightly different in different reports and also their explanation of the driving factors behind these results have differed. This report aims toward supplying a detailed analysis of the Nordic (Sweden, Denmark, Norway and Finland) market. Both to further analyse and test the revaluation of targets of failed takeover bids and to find out whether the previous research that has been done in the American context is applicable for the Nordic context as well. This has so far never been tested and the outcome of this thesis will give a greater certainty for future deal making in the Nordic region.

1.2 Background

A public takeover attempt is when a company tries to takeover another company. In this project we have defined it as when a bid is placed on a target company that all the shareholders of the target company get to respond to. The takeover bid is usually higher then the current market price of the share as the company will need to bid higher in order to get as many shares as possible. To completely takeover a company the acquirer needs to buy at least 90% of the available stock in a it, if the acquirer reaches this share of ownership it can expropriate the remaining shares for the same price it paid for the other stocks and thereby gain complete ownership of the target company. When an acquirer tries to takeover a company it is often only interested in gaining complete ownership of the company and therefore adds a clause to the bid that the this is only binding if the acquirer gets at least 90% of shares after the bid.

1. Introduction

When an offer has been made on a target then usually the market value of the company rises as it becomes obvious that someone values the shares higher then they are currently valued at, and that the chance to sell it for that value is available. After the bid has been made each shareholder get a stipulated time period to answer the acquirer if the shareholder is willing to sell or not. If the acquirer does not get the share of ownership the acquirer was looking for then the bid can be withdrawn. The bid might also be raised or the time period for answering might be increased. Another reason for a bid to be withdrawn is that a second acquirer comes in and places a higher bid that the first acquirer is not willing to top.

If the bid is not withdrawn and the acquirer ultimately ends up with complete ownership of the target, then the takeover attempt is considered successful as the takeover has been completed. The shareholders have then gained the direct profit from the premium paid by the acquirer compared to the market value before the bid was placed. If the takeover attempt is not successful, then the acquirer can withdraw his bid and the attempt is thereby over for that time. But what happens to the value or the target when the takeover is not successful? That is what this thesis aims to answer and to discuss the reasons behind why this happens.

1.3 Purpose

The purpose of the thesis is to better understand how takeover attempts affect the valuation of the target of the takeover. To get a deeper understanding of the statistical results of the valuation this thesis will also try to argue about the possible factors that can drive this revaluation or lack of revaluation. This is of interest for a lot of reasons but first and foremost it can be a good indication on how well functioning the stock market is before and after a takeover attempt, as the revaluation does not necessarily being brought by new fundamentals about the company.

In practice, the results from this thesis may be used by professionals involved in takeover attempts to deeper understand how their actions may affect the target company. It is also of interest as this is a geographical expansion of previous work studying the revaluation of failed takeover targets from the U.S. The comparison of these results might also bring revelations on differences over the country boarders.

1.4 Problem statement

To investigate the revaluations of failed takeover targets, the thesis has been working to answer the following research questions:

 How do companies that are the target of failed takeover attempts get revaluated after the attempt?

The thesis also aims towards providing some explanation to why this revaluation is present or not and the question posed in this aspect can be formulated as follows:

Why or why not do targets of failed takeover attempts get revaluated?

Answering these two questions will give a comprehensive view over failed takeover attempts implications on the targets valuation. This in return is interesting both from a strategic point of view for both the acquirer and target when estimating the risks of a failed takeover attempt. It also might be able to discover and explore tendencies of market inefficiencies.

1.5 Limitations

The thesis has three limitations that have been put into place to make its focus sharper and to better reach the above stated purpose.

The first limitation is the geographic aspect which has been limited to Swedish targets. This is due to the fact that different countries have different rules and legal aspects for takeover attempts, studying the revaluation in only one country should give better results as the legal aspect can be ignored.

The second limitation is that the thesis will only look at targets that are publically traded on a Swedish stock exchange. This is essential to be able to determine in an easy way how the market value of the company changes, as taking in non public companies would be almost impossible to get a comprehensive market value on and would at least be excessively time consuming. Therefore, these companies will be excluded from the data.

The last limitation is the time aspect which has been chosen to study all the failed takeover attempts that have been announced from 1985 and withdrawn before the end of 2015. This is chosen to get a big enough sample and the oldest aggregated data available is from 1985, and we choose the end of 2015 to get stock data even after the withdrawal of the takeover bid.

1.6 Report disposition

2. **Qualitative Method** describes how the literature study has been conducted within the field of bid revaluation and how this will be used to analyse the potential findings in the quantitative parts of the thesis.

3. **Theoretical Reference** describes the theory behind placing a takeover bid and what aspects there are of this. It also does a summarization of the previous studies that has been made within the field of failed bid revaluation. The last part of the the chapter describes the mathematical methods used in the project and its literature

4. *Quantitative method* describes in its first part how the data of the project was gathered and what configurations that had to be made to the data to make it reliable for testing. The second part of the chapter describes the statistical methods used to come up with the results and what tests that were made on it.

5. *Result* describes the results of the regression and models described in method

6. **Discussion** takes up the authors comments on the results and its significance. It also aims to explain the possible reasons for the result. It is then rounded off with discussing the credibility of the thesis findings and reliability

7. **Suggestions for further research** brings forward suggestions on subject where the thesis sees clear possibilities to deepen the research on revaluation of stocks.

8. **Conclusion** summarizes what the thesis authors sees as key takeaways from this project.

2. Qualitative method

> Section 2.1 describes how the literature study about fundamentals behind bid revaluations and reasons for failed bids work.
> Section 2.2 describes how information from the literature study is used to analyse the quantitative results.

The methods used in this thesis have been separated into two types of methods. First we have the qualitative method which focuses on the financial and economical aspects of the thesis. The second one is the quantitative method which focuses on the statistical and mathematical part of the thesis. This qualitative part is focused on finding a theoretical frame of reference that will be used to understand and draw conclusions from the quantitative part.

2.1 Literature study

To describe the fundamentals behind takeover bids and to describe possible reasons for a potential revaluation, a literature study is undertaken. The purpose of this literature study is to create a solid foundation for understanding the fundamental parts in a takeover attempt and in the markets valuation of this attempt.

For the lowest foundation general introductory literature in the field of corporate finance and company valuation is studied. This gives a broad knowledge that gives the opportunity to understand what aspects are good to research further and to know what is relevant for the project and what is not.

The next step undertaken in this project is to have a look at relevant articles written in the specific field of takeover bidding and revaluation. Many of the Swedish takeover studies conducted have been focused on the value created for the acquiring company when it has taken over a target. Several of them also covers the premium paid and fundamental factors for this. These Swedish studies have been generally analysed to understand the fundamental factors in play for the Swedish takeover market.

Previous studies on the revaluation in the U.S. are also examined both as a way to find the appropriate method to use for this project but also as a reference object for discussion when looking at our project's quantitative results. From these studies, their references, more modern studies built upon them that have also been studied. When it comes to specific rules for takeover, the Swedish law and the stock exchanges rules have been studied.

The literature search has been performed using sources in both Swedish and English and the Swedish searches yielded the best answer to the rule based questions and to some of the Sweden specific research on the takeover field whereas the English sources where more general. The literature study was conducted using mostly Google Scholar and Science Direct but complementary searches have been done via the stock exchanges websites and through Swedish law websites.

The requirement for the literature used has been that it has been published by academic press or by an academic institute.

2.2 Analysis of the revaluation of failed takeover attempt targets

The analysis of the revaluation of failed takeover attempt targets is, because of its analytical nature, put in the discussion section of this thesis. The analysis is based of the econometric results from the quantitative part as well as the theory that were found through the literature study. This theory based analysis is the core of this project and answers the final question on why the companies get revaluated.

2.2 Analysis of the revaluation of failed takeover attempt targets

3. Theoretical reference

> Section 3.1 describes the underlying factors that might motivate a bid.
>
> Section 3.2 states the rules involved when placing bids on Nasdaq OMX Stockholm.
>
> Section 3.3 gives the key takeaways from previous studies on revaluations after a bid.
>
> Section 3.4 describes the fundamental theory of statistics involved in this project.

3.1 Bid fundamentals

To understand why and how failed bids can lead to company revaluations it is important to understand the fundamentals behind the takeover attempts and why these attempts are undertaken.

3.1.1 Types of Acquisitions

The acquisition type is primarily defined through who the acquirer is and what its relationship with the target is. There are four main classifications of acquisitions: [2]

- Horizontal
  - The horizontal acquisition happens when both the target and the acquirer are in the same industry [2] like for example Royal Dutch Shell with BG Group. In these types of acquisitions, the possibilities for synergy effects are most likely to appear as both companies will have functions performing similar tasks.
- Vertical
  - Vertical Acquisitions are when the acquirer and target are in businesses that are in different steps of the same value chain for example eBay and PayPal. These types of acquisitions can also show synergy effects by getting a bigger part of the value chain
- Conglomerate
  - Conglomerates are when the target and the acquirers' businesses are completely unrelated business areas.
- Management Buyout
  - Management buyout happens when the current management of a company buys the company, most likely with the help of financial sponsors.

3.1.2 Value of a company

"Value is a particularly helpful measure of performance because it takes into account the long-term interests of all the stakeholders in a company, not just the shareholders" [3]

The value of a company can be calculated in numerous ways but one of the most widely used and that has the strongest logical drivers is the Discounted Cash flow Model. [3] This model uses the assumption that the value of a company is the current value of future cash created by a company which is a fundamental way of valuing most other investment like for example bonds. The "current value" is usually said to be a discount using the cost of capital which is the weighted average cost of capital (WACC) which includes such factors as the opportunity cost of risk free investments and a risk premium for the risk one is taking. [4]

There are, according to these assumptions, two ways in which the perception of the value of a company can differ. The first one is that the expectations of the future cash generated by the company differs and the second one is that the perception on the risk of the company differs. In an acquisition situation these variables might also be tied to factors that will only happen if two companies merge like synergy effects. [3]

3.1.3 Reasons for an Acquisition
The reasons for a bid should be to create a bigger value then the sum of the separate companies would do, i.e. to create synergy effects. These synergy effects can be of different types but are most often categorized into four types. [2]

- Revenue-Enhancement
- Cost Reduction
- Tax Gains
- Reduced Capital Requirements

These are typical reasons that would change the expected cash flow of the future merged entity of business. But there are also other reasons that are sometimes used as an argument for acquisitions, but these are often classified by researchers as dubious as they might not actually create any value. [2]

- Diversification or risk reduction
- Pure Accretive Acquisition (Growth in earnings)

The argument against the first one is that shareholders who wish to diversify or reduce their risk, in a cheaper and easier way, can do that simply by buying a stake in another company. [2] The argument against growth of earnings as a reason for acquisition is that if there is no synergy effect then then it is only an illusion of benefit. [5]

3.1.4 Determinates of a successful bid
To determine whether a bid will be successful or not has been a subject that a lot of research has been put into, because of the negative consequences of the unsuccessful bids, found under the form of wasted time and resources in the acquisition attempt [6] This research has been mostly located on the US market and the first and most important factor that was discovered was, not surprisingly, that the bid premium size had significant impact on the results. [7] Later studies have also shown that there are increased chances of success if the acquirer is in the same industry as the target, if there are termination fees and if they already have a toehold in the company. The chances can be decreased by resistance from the target and competing bids [6]. When deciding which are the most determinant, the four explanatory variables has been found. [8]

- Arbitrage spread
- Resistance of target
- Payment method
- Size of transaction

3.1.5 Motivation of payment method

The decision on which type of payment to offer in a takeover bid is complicated and has been researched in several studies. There are a couple of main variables identified to what weighs into the decision off payment in cash, stock or a mixture of these.

- *Asymmetric information;* If the acquirer deems its shares to be overvalued then the acquirer would prefer to pay with them and the other way around. [9] This has also afterwards been empirically verified [10]
- *Size:* If the target is a big firm it might be hard to get enough cash to pay for the whole acquisition like that. [11]
- *Risk Sharing:* If an acquisition is made with shares, that results in the target also having a stake in the merged entity, and thereby, they both share the synergy created and share the risk that the synergy will not occur.
- *Taxation:* For share transaction normally there are no taxation since no realisation of profit have been made. Therefore, naturally, investors in the target would prefer stock option since they thereby can defer their taxes longer. [12]
- *Managerial control:* If the acquirer has a strong investor or group of investors owning a majority share by a slim margin, then they would risk loosing this position if they offered newly issued shares as payment. [13]
- *Growth potential:* If the acquirer expects a high growth rate in the coming years, they might prefer stock payment as they need their cash to grow their business.

All these factors together with takeover premium paid need to weighed in to the decision on payment method, as the negativity or positivity with any of these factors can be weighed up by a lower or higher premium for the target. [14]

The mix of cash and stock as a method of payment might be relevant as a way to assure both parties of the seriousness in a transaction. The buyer, who might be uncertain of the economic value of the target assets, can get partially insured towards the information risk, by issuing new shares, so the target also bears the risk. The seller who might question the synergy possibilities will get partially insured by getting some payment up front. [15]

3.1.6 Takeover Tactics

To take control of a company, different methods and tactics are being used based on the situations for both the acquirer and the target.

- *The friendly approach:* In the Friendly approach the Management of the target is approached with an invite to start takeover negotiations. If this is not completely discharged, then often a standstill agreement is signed giving them time to discuss it in a friendly manner without any risk of hostile actions from the acquirer. A deal supported by management is then either reached or not. [16]
- *The Bear Hug:* Sends an offer to the management of a company without beforehand warning or negotiations. Often it is made public that the management received this offer to put pressure on the management. [16]
- *Proxy contest:* A proxy contest is used to switch out the part of the management that is against the bid that has been placed. This is done by convincing other shareholders to vote for the pro-bid candidates for the board. [16]

- *Hostile tender offer:* Hostile tender offers are when the acquirer directly approaches the targets shareholders with their offer. This can very well be combined with toehold positions in the company i.e. that the acquirer owns a share of the target before the bid announcement is made. [16]
- *Open market purchase:* The open market purchase is the act of simply buying the shares on the stock exchange. With this tactic no extra premium is paid for the company but it is hard to receive a larger share of the company and it is also hard to do secretively because of need to disclose when certain ownership share has been reached. [16]

3.1.7 Bid resistance

3.1.7.1 Pre Bid Defences

- *Poison pills:* The issuance of rights to the shareholders that is triggered by a takeover action. An example might be to buy a newly issued share at a high discount, if someone buys more than 10% of the shares. [16]
- *Shark repellents:* A number of corporate actions that can be taken to decrease the risk of takeover. This can, for example, be setting the board up in a way that only one third is elected each year, making it harder for the acquirer to do a proxy contest. [16] This is a broad word that sometimes also includes Poison pill. [17]
- *Golden Parachutes:* Setting up severance packages that are to be paid out to certain employees in the event of takeover. This will increase the cost of the acquirer and has been criticised as a defence since it incentives management to accept offers. [16]

3.1.7.2 Post Bid Defences

- *Greenmail:* A greenmail, metaphrase from blackmail, is when a target company offers to buy back the shares that an acquirer has acquired at a premium, and at the same time signing a deal preventing the acquirer to buy more stock of the target. [16]
- *White knight:* A white knight is a company that according to current shareholders and management, is better suited to takeover the company and might do so under more favourable conditions then other bidders. [16]

3.1.8 Takeover rumours

Rumours often circulate around takeover attempts, sometimes they are false and sometimes they are true. This often leads to a run-up period before the announcement of a takeover attempt where stock prices increase due to this rumour. These rumours can be classified according to credibility and trading on these rumours can be profitable. [18] The run-up period usually begins somewhere within 21 days before the acquisition proposal is made public. [19]

3.2 Takeover governing

The process of takeover is not an easy one and is governed by both Law and the rules put up by the stock exchange that it is noted on. In this section focus has been put on the rules of Swedish companies that are noted on the Nasdaq OMX Stockholm. This is to give an example of the rules governing the process, and the example is motivated by the fact that the sample has a majority of Swedish companies and most of them are noted on the Nasdaq OMX Stockholm.

The most applicable Swedish law regarding public takeover bids is the law, Lag (2006:451) om offentliga uppköpserbjudanden på aktiemarknaden, (Law (2006:451) about public takeover

proposals on the stock market). This dictates a couple of obligations that the acquirer must do in case of a public takeover bid. Some of the most important ones are: [20]

- Following the rules of the stock exchange where the target is noted on.
- Send in applications for the bid to Finansinspektionen (Finance inspection)

The law also dictates certain levels of ownership where an acquirer who reaches this must go out with a public offer. This rule is also accompanied by the duty to give a recommendation from the board regarding the offer.

Apart from Law (2006:451) there are also some relevant regulations in Aktiebolagslag (2005:551) that govern limited liability companies. One in particular is the right to expropriate the minority shares if one shareholder owns 90% or more of a company. [20] This is the reason why many public tender offers are conditioned upon receiving a 90% ownership share or more.

3.3 Previous research in company revaluation

3.3.1 Dodd and Ruback 1978

One of the first papers to investigate the issue of company revaluations is the Dodd and Ruback paper from 1978. In this paper they investigate the market reaction to tender offers both successful and unsuccessful. Their data was based on observations for the period 1958 to 1975 and included targets of 36 unsuccessful tender offers. They test whether the companies in the period after the takeover attempt month +14 to +73 is higher then the period before the takeover attempt -73 to -14. This is tested using a regression on the market model with dummy variable for the period after the attempt. Their results regarding the unsuccessful targets are that they realize abnormal returns for the period after the failed takeover attempt. [21]

3.3.2 Dodd, 1980

This study looks at the revaluation of stocks subject to failed takeover bids and the effect of the revaluation dependant on if the management veto´s the takeover or not. Their findings state that if the deal fails due to management veto then the company experience a lower price reduction at failure than if they did not. This, according to Dodd, results in a permanently positive revaluation of the target if the management veto´s but for other type of failures there is no significant revaluation present. [22]

3.3.3 Bradley Desai 1983

This study investigates the positive revaluation of targets of unsuccessful offers suggested by Dodd and Ruback 1977 and finds that the revaluation is primarily due to the anticipation of another bid that would ultimately lead to a transfer of control of the targets assets. Based on this they conclude that the acquisitions are not adding more information to the value of a company but rather information about potential synergies. [23]

3.3.4 Huang, Walking, 1987

This study explores how the revaluation of stocks after failed takeover bids are dependant on the payment type and resistance from target. Their findings are consissitant with previous findings while they do not get significant results for the resistance they have unsignificant results that claim that higher returns are received if the failed offer was resisted. The failed Cash offers gives the target a significantly higher revaluation than failed stock offers. [24]

3.3.5 Fabozzi, Ferri, Fabozzi, Tucker 1988

This study studies the returns over the whole year after an unsuccessful bid, this shows that if the target did not get another tender offer in the year after the failed one the excess returns in the post failure year is zero. Fabozzi et al. note that this is dependant on the cause of the tender offers failures. [25]

3.3.6 Davidson, Dutia, Cheng, 1989

This papers investigate the revaluation of firms that has been target of unsuccessful takeover bids dependant on if they are involved in merger activities after the first unsuccessful bid or not. Their sample are over the period of 1976-1985 in the U.S. The results are that the firms that after the first process is involved in another process experience positive return while those not involved in mergers experience no abnormal return. These results are in this study independent on which party cancels the transaction [26]

3.3.7 Malmendier, Opp and Saidi 2015

Malmendier, Opp and Saidi's paper aims towards investigating the difference in company revaluation, after failed takeover bids, between the offers with payment in stock or cash. The data used is made out of failed bids in the US between 1980 and 2008. Their empirical results are based on the 25 days before the announcement until 25 days past the failure over which they calculate the Cumulative abnormal return. Their results are that the targets of cash offers are generally revalued positively with 15% and those subject to stock offers are generally not revalued. [27]

3.4 Statistical theory

3.4.1 Cumulative abnormal Return

To evaluate the differences in return for companies that have been subject to a failed takeover bid, compared to the market return, the project needs to estimate the cumulative abnormal return. The way this is done over short periods of time is by summing up the differences in return between individual companies' stock and the market. [27] This is also depicted in the formula below.

$$CAR_{it} = \sum_{j=1}^{t} (r_{ij} - r_{mj}) \quad where\ i\ is\ the\ company\ and\ m\ is\ the\ market\ and\ t\ the\ time$$

This can be used independently of the time in between announcement and withdrawal date as the event window is relatively short. [28]

4. Quantitative method

Section 4.1 describes the data used in this project.
Section 4.2 Describes the regression methods used in the project and the quality tests applied to test the results.

4.1 Data

The data used in the project is the data over unsuccessful mergers in the Nordic Countries (Denmark, Finland, Norway and Sweden) that was announced from 1985 to 2015. The data has been collected from Thomson Reuters SDC Platinum database. In order to be able to evaluate the revaluation of the company, we also limit our sample to those who are public. Our sample is also limited to companies that have a daily closing price available through Datastream for at least 25 days before the announcement, and 30 days after. The time before is crucial because of the run-up period mentioned in the theory section where the run-up usually starts within 21 days before the announcement. This gives us our main sample for this project, and consists of 147 deals out of which 108 are cash deals and 39 are stock swap deals.

In order not to let our sample be corrected by potential effects of other bidders, we also exclude deals which have more than one bidder, to not catch potential revaluations for the next bid. This leaves the sample with 98 deals in total. To not take in extreme premiums paid, we exclude those deals which pay a premium compared to the price 4 weeks before by more then 150% or less than 0%. This takes the sample down to 83 deals. The final selection step for our working data will be whether it is a Leverage buyout. This is relevant as management, often, to a higher degree is involved in Leverage buyouts and therefore it has a higher signalling value than pure deals from the outside. This takes the final working data down to 77 deals out of which 19 are stock swap deals and 59 are cash deals.

As a market comparing index, the Stockholm OMX index has been chosen, as it is the one that most closely reflects our sample and has been in place over our entire sample period.

4.2 Comparison of mean results

To create an overview of the results of this thesis, the project takes forward the graph of the mean market performance of failed takeover target stocks for the period of 25 days before the announcement until 30 days after. This is done in order to to be able to identify trends and interesting aspects that then can be further tested. Our main focus here will be how the stocks are valued after the bid has been withdrawn.

4.2.1 Calculating the abnormal return

To calculate the abnormal return of each company, the Cumulative Abnormal Return formula presented in the theory section is used. To have all the stock prices starting at the same value, they are indexed together with the market return to start at 100. The further return is calculated by removing the market return from the stock price return to clearly see if it over or underperforms the market. This is done for each day during the event period. If the stock price index on last day would be 100 it would mean that the stock has performed in parity to the market conditions.

4.2.2. Calculating the mean of the stock returns

To calculate the mean of the stock returns for the run-up period and the period after the withdraw, the simple arithmetic mean is taken for each company's return. For the consideration period, the period between the announcement date and the withdrawal date, calculating the mean is slightly harder as the number of days between these days varies. To handle this issue, the consideration period has been divided into ten equal parts, so that the first period represents the first 10% of the days and the second period represents the next 10%. To calculate this, each observation of a company is classified in which period it is going to be in. Next, the observations mean is taken for all the company's observation within one period and merged into one observation that gets to represent the whole period. Over these merged observations, a mean is calculated over all the companies.

4.3 Regression

To calculate the statistic significance of observable anomalies in the comparison of the mean results a regression is run on the anomaly. The one anomaly that we beforehand know that we want to test, is whether companies that receive failed takeover bids in general get revaluated or not. The way that this will be done is to run a regression on the abnormal return on the 30th day after the withdrawal. This will include only the constant term, but if it shows a significant difference from zero, then that would mean the hypothesis that revaluation is present is significant.

The regression equation that is to be estimated in this thesis is

$$Abnormal\ return\ over\ period\ =\ \beta_0 + \beta_1 * Stockswap$$

where stockswap is a dummy variable that is one if it is a stock offer rather than cash option. The β_0 variable in this equation will be the revaluation of the cash bids. If this is significant then there is a significant revaluation of cash bids and if this is positive than it is a positive revaluation compared to the initial value, this variable is expected to be positive of around 15% in order to be consistent with previous American studies. The β_1 variable in this equation will be the stock offers relative revaluation compared to the cash offers. This is expected to be negative of around 25% if the results are consistent with the previous American studies.

4.3.1 Residual plot

To see whether the residuals of the the regression follows a normal distribution, as assumed by the standard OLS estimation of a regression, the q-q plot of the residuals after a OLS regression compared to the normal distribution is made. This will give a good view on whether the residuals are normally distributed or not. If they are not, then the White's consistent covariance estimator will be applied to create robust error terms.

5. **Results**

Section 5 describes the results of the regression and models described in method

5.1 Adjustment of data

The adjustments of the data were made according to how it was described in the quantitative method. The motivation behind all of the adjustments was based on the fact that it might have a clear fundamental value to the stock. A graph can be found below describing the effects on the mean of the sample for each time period. It is important to keep in mind that these are not independent samples, but merely sub samples of the previous ones, so repeating random patterns between them might not be surprising if the underlying pattern is present in the lowest sub sample.

The first and most significant adjustment to remove bidding processes with more than one bidder is most obvious since, if someone else is biding higher, then of course the first bid will fail, but the value of the company would still be high. As seen below this adjustment changes down the total return over the period with around 10% points on average. There is also a run up period before the bid is withdrawn which is probably due to fact that a rivalling, higher bid is often placed in this period.

The rest of the adjustments also lowers the total return further, but for logical reasons, as the bid premium cap lowers, the average premium paid and the removal of LBO remove the signalling effect that those might bring with them. The results of these adjustments show that they had a significant impact on the raw data result and as long as the motivations for doing them are sound, then they are important to make.
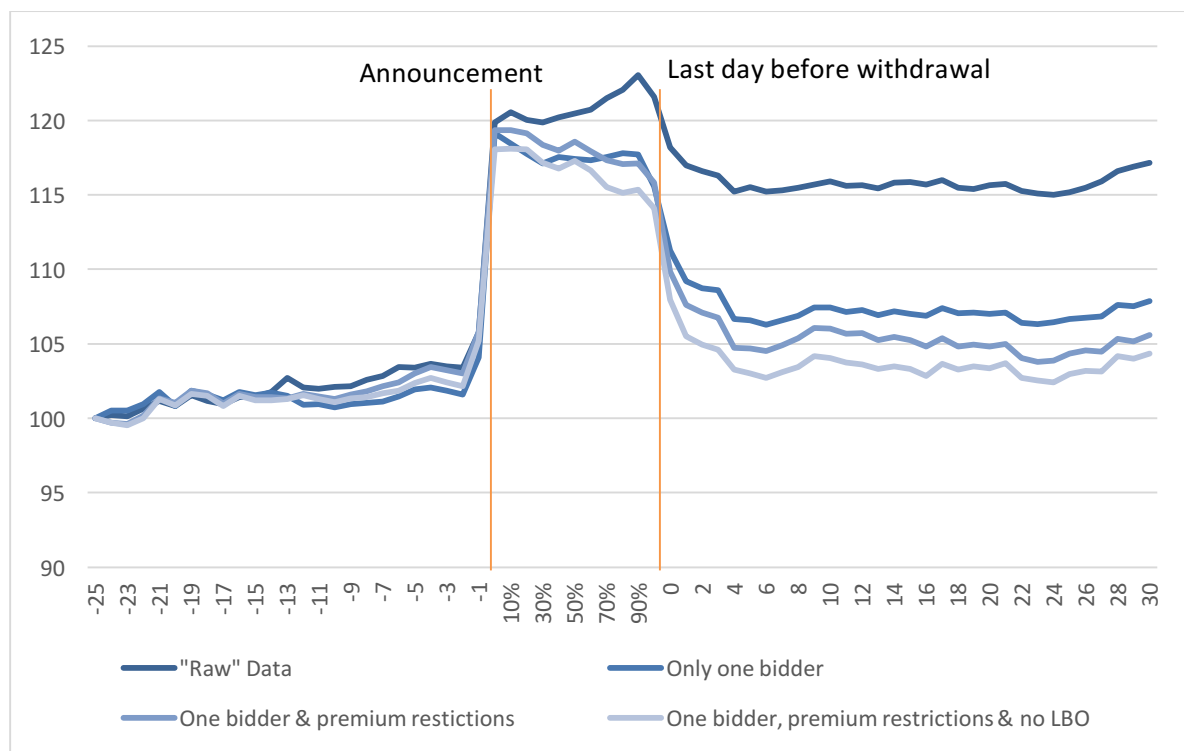

Figure 1: Mean abnormal return for the unadjusted data over the total bidding period

5.2. General observations of total mean of data

Our sample now consists of 77 bids out of which 58 are cash deals. Looking at the mean of the graph there are several interesting things to observe. The first and most obvious one is that the stock price is clearly higher during the "consideration period", between the bid and the withdrawal of the bid. The stock price jumps clearly as the bid is placed, which is natural due to the premium offered in the bids and that the premium is achievable to lock in if enough stockowners accept the offer. During the consideration period the price then slowly declines until the bid is finally withdrawn, so keep in mind that this is a sample that only contains bids that will fail. A probable reason for this would be the fact that the bid will be unsuccessful that is generally either rumoured or gradually becoming clearer as time passes.

After the bid is finally withdrawn the price goes down although not as much as for the announcement. This time it jumps from around 15% total abnormal return over the period down to 7% on the day of withdrawal. It then, over the next couple of days (around four), precedes to decline until it stabilises around 3-5% premium over the remaining of the period. This means that over the total time period, even after the bid is withdrawn, the valuation for the stocks is higher than it was 25 days prior to the bid announcement.

In the sample it can also be seen that there is an abnormal return even in the running up period before the announcement is made. This is a fact that has been heavily investigated in other reports and is left outside the scope of this project to investigate, but it is still interesting to notice.
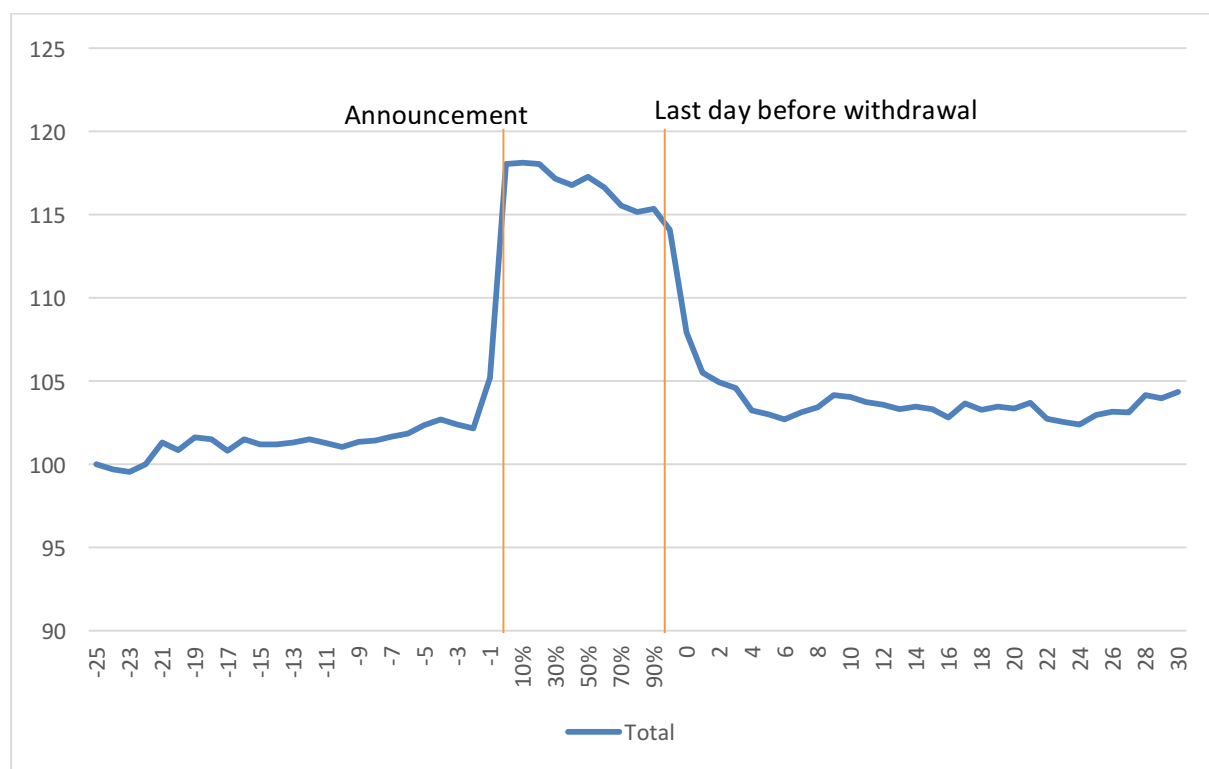

Figure 2: Mean total abnormal return for the adjusted data over the bidding time period

5.3 Mean difference between cash and stock deals

Looking at the difference between the Cash deals and the Stock deals, it can clearly be seen that the failed cash deals have a much higher revaluation of the stock after the bidding process. Most notably in our sample, the stock deals seem to have an overall negative effect of the value of the stock compared to before. This fact has not been noted in previous studies in which the stock deals have generated around 0% abnormal return. The cash deals on the other hand end at around +10% revaluation even after the bid has failed. This comes after a temporary dip or overreaction, down to +6% a few days after the bid is withdrawn.

It is also noteworthy that stock deals in general also result in lower valuation during the consideration period and that the stock price decline before the withdrawal is much steeper than for the cash deals.
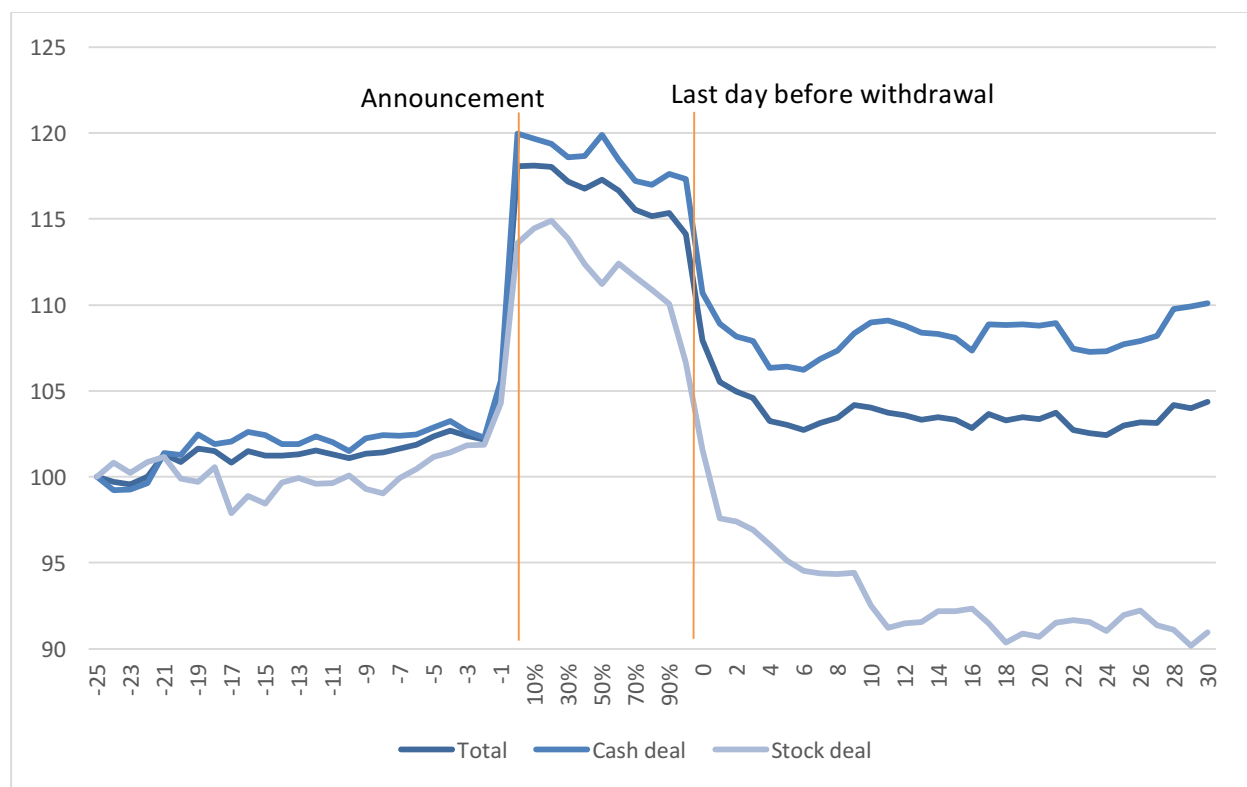

Figure 3: Difference in abnormal return of cash and stock offers over the total bidding period

5.4 Regression results

To test the significance of the results that have been observed in the mean graphs, regression is run on the abnormal return between 25 days before announcement and 30 days after the withdrawal of the bid. To test this, each observation of total abnormal return after the period is used as a dependant variable and the dummy variable stockswap, which is 1 if stock deal, was used to test the difference between stock and cash deals.

The result of the regression was, as seen in the printout below, that the cash deals (_cons) have a significantly positive revaluation and with a mean of 13%, and that the stock deals have a significantly lower revaluation with an average of 25% lower.

Source	SS	df	MS			
				Number of obs =	77	
				F(1, 75) =	5.33	
Model	8942.90059	1	8942.90059	Prob > F =	0.0237	
Residual	125758.082	75	1676.77443	R-squared =	0.0664	
				Adj R-squared =	0.0539	
Total	134700.983	76	1772.38136	Root MSE =	40.948	

startindex	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
stockswap	-24.99734	10.8241	-2.31	0.024	-46.56006	-3.434621
_cons	113.3288	5.376793	21.08	0.000	102.6177	124.04

Figure 4: Regression results for total return over bidding period for cash vs. stock offers

To test the fit with an assumed normal distribution a QQ-plot of the residuals is studied, which can be seen below. In this it follows the Normal distribution seemingly well, but has a slight indication of heavy tails. This is not seen as significant and no adjustment of the regression is deemed to be needed. It can also be said that the results with White´s Consistent Variance Estimator, the main results, are the same.
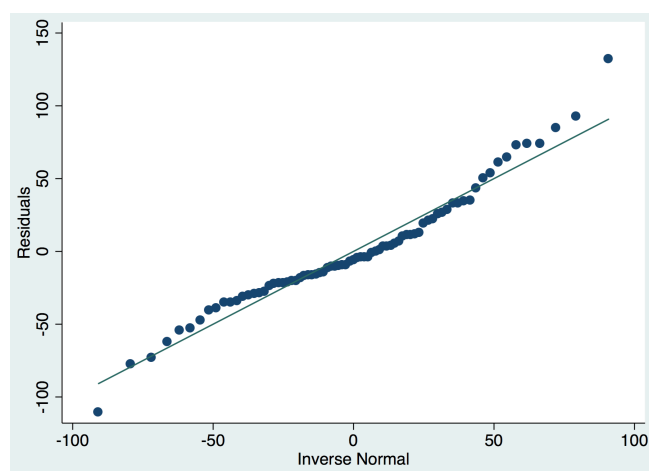

Figure 5: QQ-plot of regression residuals against normal distribution

5.5 Robustness of results

To check the robustness of the results two main actions has been undertaken. The first oneis to compare various control variables that might impact the outcome of a bid. The tested variables has been Time until completion/withdrawal of the bid, Deal value in 2015 money, Sought ownership and premium paid. For comparability all data is straight from SDC platinum so even though, for example premium paid is available for the projects main sample through Datastream but this has not been used. The control group is made up of all successful bids in the SDC database in Sweden from 1985 up until 2015.

As can be seen in the table below the mean and standard deviation of the Successful and unsuccessful bids varies quite a bit but in none of the cases a significant difference can be found as the standard deviation is too high. The difference in means are interesting and could explain underlying fundamentals on why some bids are successful and not, this however is outside the scope of this project.

Table 1: Summary statistics successful and unsuccessful bids

	Successful Swedish bid			Unsuccessful bids		
Variable	#Obs	Mean	Std. dev	#Obs	Mean	Std. dev
Time until completion/ withdrawal	3227	51,57	147,90	75	92,97	218,98
Deal Value m$ 2015	3227	178,63	951,37	75	1328,79	5332,47
Sought share of ownership	3184	91,83	19,71	75	83,65	24,91
Premium compared to 4 weeks before	310	43,64	126,41	55	35,04	28,17

The results where also found to be robust to the CAPM model of which the regression results can be seen below.

```
      Source |       SS       df       MS                  Number of obs =      77
-------------+------------------------------              F(  1,    75) =    6.13
       Model | 9121.90539       1  9121.90539             Prob > F      =  0.0155
    Residual |  111565.73      75  1487.54307             R-squared     =  0.0756
-------------+------------------------------              Adj R-squared =  0.0633
       Total | 120687.635      76   1587.9952             Root MSE      =  38.569


   startindex |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    stockswap |  -25.24628   10.19505    -2.48   0.016    -45.55586   -4.936697
        _cons |   115.6567   5.064316    22.84   0.000     105.5681    125.7453
```

Figur 6: Regression results for total return over bidding period for cash vs. stock offers, under the CAPM model

6. Discussion

Section 6.1 discusses the significance of the result

Section 6.2 discusses the implications of these findings

Section 6.3 discusses the geographical differences

Section 6.4 discusses the credibility of the results

6.1 Implication the results

The results, of showing that revaluation exists for cash offers and that they are significantly lower for stock offers, should be of interest for both owners and advisors of acquirers as well as for owners and advisors in the targets. This significant revaluation after the bid is rejected means that, for the target, the alternative value should not be assumed to be its previous value but rather slightly higher if it is a cash offer and lower if it is a stock option. This will affect the target shareholder in the sense that the risk of the bid failing will be lower than perhaps previously estimated if it is a cash offer. On the other hand if the offer was made in stock then the risk should be considered to be higher.

For the acquirer this is useful for strategic reasons as the rationale behind choosing which payment method to use might be slightly changed. The offer with cash might seem more unattractive, as the incentive for going through with that kind of deal has been lowered for the target.

6.2 Possible reasons for the result

6.2.1 Rationale behind revaluation

The results clearly show that there is a revaluation of the cash offers that are made on the Nordic stock market. What is interesting with this are the potential underlying reasons behind it. This project has hypothesised three main causes of this difference that from the start may seem like an inefficiency of the market.

1. The most obvious reasons behind the revaluation of the stock is that the current stockowners as a collective have had a chance of selling at a higher price but for some reason not done it. If at least a share have rejected the bid that would mean that there are people who value it higher than the premium offered which itself could raise others valuation of the stock. It is important to note that the failed bid does not only have to be due to the shareholders rejecting it, but in any case, it will be an important part when looking at all the failed bids, as a fair share is due to rejection.

2. The second reason behind this might be that the bid indicates an external interest in buying the company, which one could hypothesize that it increases the likelihood of someone trying to acquire it in the future as well. As the acquisition, if it is successful, usually locks in a premium for the seller of the stock, that would be a logical reason for the revaluation. The previous studies done in this field also suggest that this is true, that a company that has been subject for a failed takeover bid is more likely to be taken over in the future than a company that had not been subject for a failed takeover bid.

3. The final hypothesis about the revaluation that this project has is that during a bidding process the companies would receive a very high amount of interest from all kind of actors. The fundamentals of the company would then, during this time, be more analysed and

understood, and some revaluations might be natural to make from this new diaphanoscopy. If the revaluations are positive than the bid is less likely to go through than if the revaluations are negative, then the bid will seem more appealing. The bids that are not successful are for that reason likely to be slightly tilted towards a positive revaluation.

6.2.2 Rationale behind the difference in valuation between stock and cash bids

The difference between revaluation between stock and cash is a finding that was in line with previous studies done at other geographical areas.

The hypothesis behind the difference in revaluation is based on several factors but most of them have their foundation in the rationale between choosing when to make a cash or stock offer. The most important factor in this project deems to be the one of risk sharing in synergy creating mergers. If a stock offer is made then the offer value will more likely be made up of potential future synergies which, if the merger does not go through, will not be achieved. Therefore the revaluation of these companies should not be as high as the cash bids, where the buyers do not rely on synergy effects to the same extent.

The second hypothesis of this project is based on the fundamental to use stock bids when you think your own stock is overvalued. This can implicate that the bid for a company is more a way to leverage your own overvaluation of stock rather than the fact that the target is significantly higher valued by the acquirer.

6.3 Geographical differences

When comparing the mean graphs for this Swedish sample with Malmendier et al.'s American sample one can see that it does not differ much in the final results. Both show a negative revaluation of stock bids and a positive revaluation for cash bids. The main difference is the higher revaluation during the consideration period which might be explained by the higher premiums offered in general as it, in this project sample, was 34% on average and in Malmendier et al's sample was 47% on average. The reason behind this might of course be interesting but not covered by the scope of this project.
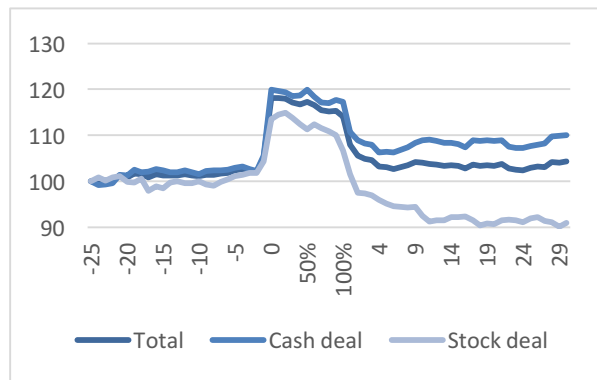

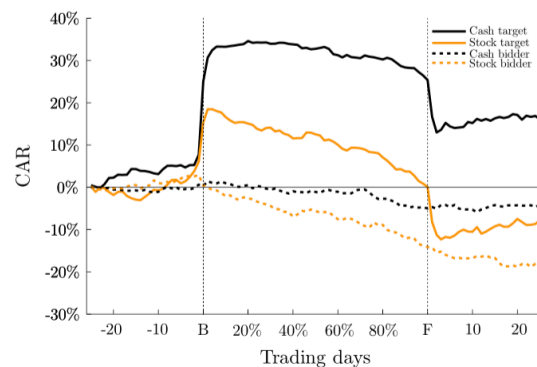**Figure 7: Difference in abnormal return of cash and stock offers over the total bidding period**

Figure 8: Malmendier et. al, Difference in abnormal return of cash and stock offers over the total bidding period

6.4 Results credibility

The results in this study have been statistically significant and can be deemed generally well underbuilt. The results presented in this thesis rely on sample of 77 failed takeover bids in the Nordics between 1985 and 2015. In this study these have been considered as an independent outcome of the same process. This means that if the process have changed over the time or if there are big differences between the countries then that might have affected the results and not be as reliable, but as the results of the Nordic sample was so similar to the Malmendier et al results the geographical problems can probably be seen as small. Here the time issue might pose a bigger problem then.

7. Suggestions for further research

> The chapter brings forward suggestions on subject where the thesis sees clear possibilities to deepen the research on revaluation of stocks.

In this thesis, the mean of the abnormal return during the bidding process in the Nordics, has been studied and reflected upon. The main focus of this project has been the total return over the period and if the stock is overall affected by the bid. For future studies it would be interesting to look closer at the decline during the consideration period and its factors. This could be a study of how bid's estimated success rate is evaluated during the process and maybe take forward a rolling model on the estimated success rate. This would naturally need to be conducted also on the successful bids to get both sides.

A second interesting subject would be to investigate what seems to be a slight overvaluation right after the bid is withdrawn. This could very much lead to a study in behavioural economics and should, if conducted, preferably also investigate whether the results are consistent over a wider area.

A third interesting subject is to look at if this abnormal return is equalised over a longer time period just like Malmadier, Opp, Saidi did.

8. Conclusion

This chapter summarizes what the thesis authors sees as key takeaways from this project.

This project has presented significant results for the revaluation of targets of failed takeover bids in Sweden, Finland, Norway and Denmark between 1985-2015. The result of this is that the bids made with cash are revaluated positively with a mean of 13% and stock bids are revaluated less than that and with a mean of -10% after the bid has failed. The project has also come up with the conclusion that this difference is likely to be due to the different motivations when choosing a bid method and most significantly the preference of stock offers when bigger synergy effects are present. The project has also stated three potential reasons behind the positive revaluation of cash offers

1. The collective knowledge that other value the stock higher than it was previously traded at
2. Higher possibilities for future bids as well
3. Deeper fundamental valuation during bidding process leading to positive revaluation bias in these new valuations.

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