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External Factors' Effect on CEO Overconfidence in Mergers and Acquisitions: Board Composition and Monitoring

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Abstract

Title:	External Factors' effect on CEO Overconfidence in Mergers and Acquisitions: Board Composition and Monitoring
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Five key words:	Overconfidence, Behavioral Finance, Monitoring, Cross-Sectional Regression, Corporate Governance
Purpose:	The purpose of this report is to examine the presence of CEO overconfidence in Sweden, and how monitoring of the board of directors affects the overconfidence in CEOs in Sweden..
Methodology:	Two proxies were used to measure overconfidence: OC1 which measured CEO insider trading, and OC2 which measured CEO portrayal in media. A multivariate regression using the ordinary least squares method was performed on the data sample.
Theoretical perspectives:	This study is influenced by previous published articles related to CEO overconfidence and the board of directors' role as a monitoring organ. These articles include the works of Malmendier & Tate, Doukas & Petmezas, Brown & Sarma and several others.
Empirical foundation:	A main sample consisting of 375 overconfident acquisitions was constructed from all acquisitions performed by Swedish companies during the time period 2000 to 2007. From this a sub sample was created of which 86 CEOs displaying overconfidence from at least one of the two proxies.
Conclusions:	This study shows that outside directors have a very effective mean of curtailing observed overconfidence in CEOs. The variables for the CEOs- and employee representatives' presence on the board of directors was found to be statistically insignificant and with a low effect on observed CEO overconfidence.

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1. Introduction

This study research the value destroying effect of overconfidence in mergers and acquisitions, and measures one can take to moderate the effect. This section presents a short introduction to the subject matter, followed by a positioning where we present our contribution to the field of overconfidence. The scope of this report, as well as the disposition, is also found in this section.

1.1 Introduction

During the period of 1980-2001 large companies destroyed $226 billion in shareholder value through acquisition activities in USA alone[1]. Still, mergers and acquisitions is a common investment method for companies. One explanation which can help explain this seemingly irrational behavior is overconfidence. Indeed, research has shown that management overconfidence is a prevalent issue in mergers & acquisitions[2,3,4]. This means that when managers are deciding on an acquisition or merger it often stems from possible overconfidence in themselves and the belief that they can create value for the company from the acquisition in the form of synergies or their ability to improve the business. This leads them to believe they can pay higher price premiums than is realistic, which in turn will destroy shareholder value.

Published articles states that managers' overconfidence increase the probability that managers will conduct a merger, and that overconfident managers are more likely to conduct an acquisition that will not create value[5]. Their overconfidence result in an overvaluation of the cash flow increase and synergy benefits in the company they are about to acquire, and therefore they are ready to pay an unduly high price premium. If managers then are unable to realize additional value-creating goals from merging the companies, this would result in a destruction of value.

[1] The National Bureau of Economic Research, *Big firms lose value in acquisitions*, Retrieved 2013-05-08, <http://www.nber.org/digest/aug03/w9523.html>
[2]Malmendier, U & Tate, G., 'Who makes Acquisitions? CEO Overconfidence and the Market's Reaction', *Journal of Financial Economics*, Issue 89, 2007.
[3]Kaplan, S., Mitchell, M. & Wruck, K., *A Clinical Exploration of Value Creation and Destruction in Acquisitions: Organizational Design, Incentives, and Internal Capital Markets*, Chicago, National Bureau of Economic Research, 2000.
[4]Doukas, J. & Petmezas, D.,'Acquisitions, Overconfident Managers and Self-attribution Bias', *European Financial Management*, vol. 13, no. 3, 2007, p. 531-577.
[5]Malmendier, U & Tate, G., 2007, p. 20.

Overconfidence as an underlying factor in mergers and acquisitions is in other words empirically proven. This paper will add to the field by researching methods and factors which can moderate this factor.

1.2 Positioning

The concept of overconfidence, previously largely a psychological concept, was introduced by Richard Roll in 1986 in his paper on the Hubris Hypothesis to the realm of economics. However, this paper was largely deductive, providing an alternative interpretation on data from a previous study by Jensen & Ruback (1983), in explaining the financial results of 40 previous papers. No quantifiable method to measure hubris was provided, and the theory was as yet unproven.

The quantifiable effect of overconfidence in mergers and acquisition has since then been empirically proven in studies such as Malmendier & Tate (2007) and Doukas & Petmezas (2007), who found different, but similar, methods to estimate overconfidence using option theory or insider trading activities to measure CEO estimations of future company growth.

However, these studies did little to explain the underlying motivators for overconfidence, focusing rather on characteristics of the behavior of the overconfident CEO. While the authors provide a statistically significant method of measuring overconfidence, they do not delve much further into the determinants that affect the result. However, other authors have tried identifying variables affecting the level of confidence. One such paper was published by Brown & Sarma in 2007, adding the "CEO Dominance" dimension, which gauges whether high CEO ownership stake in the firm has an effect on the levels of overconfidence. Still, research properly describing factors which will affect the level of overconfidence is still lacking, or in factors which would curtail overconfidence.

Furthermore, much of the current research is performed on quite homogenous data samples, as they are collected from Anglo-Saxon companies, meaning USA, U.K. and Australia. These countries have similar social systems and corporate governance, which calls to question whether managerial overconfidence can be taken as a universal concept afflicting businesses regardless of geographical location, or whether it is a symptom of certain corporate structures.

This study instead uses a Swedish sample, which will allow for comparison between the Scandinavian control structure and regulation, and the previously studied Anglo-Saxon systems. One notable difference is the composition of the board of directors, where the Anglo-Saxon model uses a one tier model with the CEO almost always having a directors' seat, and often CEO and President dual titles. Furthermore, this system has a relatively high number of insider directors. Sweden instead utilizes a two tier system, with the board of directors acting as a supervisory board, consisting of higher number of outsiders, and the CEO presence being notably lower. Furthermore, labor unions have a very strong presence in Sweden. Previous research has found strong indication of a relation between board composition and overconfidence. These differences, which can be measured in a Swedish sample, are the motivation in choosing three factors of board composition, and they are outsiders on the board of directors, CEO presence on the board of directors, and employee representatives on the board of directors.

During the studied time period the board of directors in American firms consists on average 79 % of "independent outsiders" depending on the industry[6]. Meanwhile, Swedish boards consist of a larger percentage of external outsider directors, and may also include union representatives, as this study proves. Our study will discern whether these differences will have an impact on the level of overconfidence.

This paper will largely be based on the methodology of prior research, mainly Doukas & Petmezas, but will also utilize models and compare results with recently published papers written by Malmendier & Tate, Brown & Sarma, Fama & Jensen and Hayward & Hambrick, who all contributed to overconfidence theory. Our paper will test the CEO overconfidence hypothesis on acquisitions performed on the Swedish stock market, and compare and contrast the results to prior research.

This paper will further separate overconfidence into two categories; base overconfidence and observed overconfidence. Observed overconfidence is the net base overconfidence level after the impact of all affecting external factors. This paper will focus on the three previously mentioned possible determinants which can affect observed overconfidence. The purpose of these variables is to study whether the levels

[6] SpencerStuart, 'Spencer Stuart Board Index 2012', *SpencerStuart,* 2012, p. 10.

of these factors in the board composition has an impact on overconfidence levels in the CEO, and ensure that ventures undertaken are rational, and potentially value creating.

Previous research has mainly used acquisition frequency or similar measurements as the dependent variable, and used overconfidence as an independent variable explaining acquisition patterns. This study will further the understanding of overconfidence in economics by instead using overconfidence as the dependent variable, and test the impact of the aforementioned independent variables of board composition, or controlling variables such as CEO remuneration.

The motivation for closely following the methodology of prior research is to enable comparison between our study and prior research without making the comparison subject to translation bias. It will also moderate the risk of errors in measuring overconfidence.

1.3 Problem Discussion

Since we are basing our research on previous overconfidence theory, it is important to take a closer look at the shortcomings of these theories so that we are aware of their limitations. The hubris hypothesis has several limitations which has been corrected by the work of other authors over time, such as Malmendier & Tate and Doukas & Petmezas[7,8,9].

By comparing the three articles, it is apparent that they generally support each others' claims but are not completely consistent in their findings. All three articles find evidence of managerial overconfidence by different means and in different geografical locations. Malmendier & Tate studied the US market and used options, while Doukas & Petmezas studied the UK market and used acquisition frequency and insider trading activity[10,11]. Their findings all support the overconfidence theory and in turn the hubris hypothesis.

[7] Roll, R., 'The Hubris Hypothesis of Corporate Takeovers', *Journal of Business*, vol. 59, No.2, 2002.
[8]Malmendier, U & Tate, G., 2007.
[9]Doukas, J. & Petmezas, D., 2007.
[10]*Ibid.*
[11]Malmendier, U & Tate, G., 2007, p. 23.

Doukas & Petmezas' proxies for overconfidence differ from those used by Malmendier & Tate. This is explained to be partly because the option proxy was not applicable to the UK market. Doukas & Petmezas also criticize the option proxy stating that it may not be reasonable to use as a proxy for overconfidence as it does not capture the overconfidence for the merger at hand, but instead captures the manager's overconfidence for all the future performance of the company[12]. Furthermore, there are various reasons why a manager might exercise his options late other than to make a profit, such as positive inside information, signaling, board pressure, risk tolerance, taxes, and procrastination etc.[13]

An issue common to previous studies, is that overconfidence is measured through proxies, as there is no practical way to accurately and directly measure CEO overconfidence. This creates a bias as it is difficult to ascertain which proxy most accurately captures overconfidence.

From what we have presented in this section, we can discern that there is a need for continuous research in the field of overconfidence. All previous major published studies on the subject research how prevalent overconfidence is in mergers and acquisitions. We deem there is a need to research the potential factors that can affect the level of overconfidence of the CEO in order to better understand overconfidence.

Furthermore, as most research has been conducted in countries such as the US and the UK, which uses the Anglo-Saxon corporate governance model, there is a need to research how overconfidence affects managers in widely different countries with different social systems. This includes the difference in labor union presence and the two tier corporate governance system in Sweden which has resulted in higher degree of outsider directors and lower degree of CEO presence on the board.

We have chosen to study Sweden because of the geographical differences between Sweden and previously studied countries. Sweden differs from countries such as the U.S. or U.K. by not being an Anglo-Saxon country. Therefore performing the current study on data consisting of Swedish companies, this study will help explain whether

[12]Doukas, J. & Petmezas, D., 2007, p. 538-539.
[13]Malmendier, U & Tate, G., 2007, p.24.

overconfidence is influenced by geographic factors. Furthermore, as stock options as rewards for managers were not very popular in Sweden during our selected time period, being as low as 5% of companies in 2003[14], it is an appropriate target for applying the same proxies that Doukas & Petmezas used. Because of these differences we theorize that our paper will continue to add to the overconfidence theory.

We will follow Doukas & Petmezas' work by using their insider dealings proxy over Malmendier & Tates option proxy, not only because stock purchase is more relevant on the Swedish market, but also because that proxy is criticized as too broad a measurement[15]. Furthermore, the insider dealing proxy more effectively compensates for empire building which the option proxy does not.

1.4 Purpose

The purpose of this report is to examine how monitoring by the board of directors affects the overconfidence in CEOs in Sweden. We will measure overconfidence in acquisitions or mergers conducted by Swedish companies following the method of published journals. This report will add upon the published journals a dimension of 'managerial influence' measured through: CEOs presence on supervisory board, board of director composition in terms of insiders and outsiders, and union representatives on the board of directors. These factors would either increase or decrease the influence of the CEO, which in turn would enable or prohibit him from acting upon his overconfidence.

We specifically chose to examine Sweden because of the differences that exist between Swedish and American board member structure. It is not legal in Sweden for the CEO to also act as the chairman of the board, while it is legal and quite usual in the U.S.A.[16]. In Sweden, and most of Europe, the board of directors mostly consists of outsiders that monitor the performance of the CEO. Meanwhile, in America the boards mostly consist

[14]Aktiemarknadsnämnden, *Incitamentsprogram-något om rättsutvecklingen samt olika program- och hedgestrukturer över tid*, Retreived 2013-04-05, <http://www.aktiemarknadsnamnden.se/UserFiles/AMN25ar_kap08_medKOM_kap08-165x242%20%282%29.pdf>, p. 108.
[15]Doukas, J. &Petmezas, D., 2007, p. 539-540.
[16]SpencerStuart, 2012.

of insiders[17]. Furthermore, the presence of employee- or union representatives is possible in Swedish companies, where unions have a strong influence.

The questions we wish to answer are therefore two-fold, and formulated as follows:

- Is overconfidence an underlying factor to acquisitions in Sweden, and if so, is it as common a phenomenon in Sweden as in previously studied countries, such as the U.S.A.?
- Can the observed overconfidence level of the CEO be influenced through certain factors, such as CEO board presence or outsiders and employee representatives on the board of directors?

1.5 Definitions and Scope

1.5.1 Definitions

TABLE 1.1 – DEFINITIONS OF KEYWORDS IN REPORT

Overconfidence	Overconfidence is defined as irrational belief in one's own ability to create value for the company and shareholders, or synergies, exceeding the general consensus' estimates.
Base Overconfidence	The inherent overconfidence of a CEO prior to any external influences or effects. This variable is defined as the intercept of the regression equation.
Observed overconfidence	The overconfidence observed through the proxies used in this study. It is the dependent variable of the regression equation. It defined as the net overconfidence, meaning the overconfidence after all external influences or effects.
Insider	Insiders in this study refer to a director of the board of directors' relationship to the company. A director is defined as an insider when (s)he is a manager or other employee of the company, or a family member to the CEO. This also includes the union or employee representatives who are employed by the company.
Outsider	This study defines an outsider director as a board member who does not fulfill any of the criterions of being an insider.

[17]Denis, D. & McConnell, J., 'International corporate governance', *Journal of Financial and Quantitative Analysis,* vol. 38, Issue 01, 2003, p. 2-4.

1.5.2 Scope

The first delimitation we make in this report is that we only include companies that have completed an acquisition or merger within the specified timeframe. Since previous studies have already empirically proven that an overconfident manager is more likely to perform an acquisition, we do not consider acquisition frequency relevant to our questions. We will instead only investigate whether overconfidence has been a motivator in Swedish acquisitions. The next delimitation is to limit the sample to acquisitions conducted by Swedish companies. This is to ensure that we can answer the first question posited in our purpose section, and in order to be able to gather relevant data.

We have also excluded all financial companies, utility companies, and companies owned by government departments and municipalities from the sample. Financial and utility companies were removed due to higher restrictions in the industry. Companies owned by the government were removed due to the fact that financial gain might be a secondary or non-existent goal of the company, and will therefore have other incentives behind the acquisitions.

1.7 Disposition

In the second section, the relevant theory to this report will be presented. We will initially research overconfidence and the theories it is based on. We will then add the theory which is the bases for our three hypotheses, such as monitoring and division of decision making and decision control. Finally, with this theory foundation, we present our three hypotheses which will be the basis for the regression analysis.

In the third section we will detail our methodology in creating this report. First we will describe the method used to create the proxies for measuring overconfidence. Secondly we will explain how we design the regression analysis, and the relevant variables. Here we also list the assumptions we make when creating the regression. We will here explain how we model our study after Malmendier & Tate, and Doukas & Petmezas, and what differences and additions we will have along with the predictions we have for our variables. Finally, we will list the data sources and databases used for our data, and the criterion of the sample construction.

In the fourth section we will present the data collected. We show the company sample and subsample in the descriptive statistics subsection, and we present the results from our regressions.

In the fifth section we will interpret the results from the descriptive statistics as well as the performance of the different variables in the regressions. Furthermore, we will also compare our findings with Malmendier & Tate and Doukas & Petmezas work as well as comparing possible geographical differences.

In the sixth and final section we will present the conclusions that we will have drawn based on the results and analysis in sections four and five, while suggesting possible future fields of study.

2. Theory

In this section the findings of previous research is presented in order to give a theoretical foundation to the study's purpose. First, the three major papers in the field are explained. This is followed by a theoretical foundation for monitoring and board vigilance. Finally, we present our three hypotheses and our empirical predictions of the results of our study.

2.1 Definition History

In the article "The Hubris Hypothesis of Corporate Takeovers", the author, Richard Roll, argues that the reason that some company's conducts mergers and acquisitions that are in fact value destroying is because of hubris in the management[18]. In this paper Roll coins the hubris hypothesis, which can be considered to be one of the cornerstones in behavioral finance theory.

The merger or acquisition of a target company is done primarily to increase the value of the buying company, and enable a growth speed higher than the company's organic growth. The management of the buying company will before placing a bid on a target company conduct a valuation of the target. This valuation will include not only the value of the assets but also any possible synergy effects that can be obtained. The value that is calculated is then compared to the market price. If the calculated value is less than the market value the acquisition is abandoned as there will be no value increase with going through with the acquisition. If the calculated value is greater than the market value then the acquisition can lead to an increase in the value of the firm and a bid is thus made on the target company.

Roll explains that when a manager bids on a target firm, (s)he does so with some amount of hubris [19]. This hubris can convince the manager there are synergy opportunities to seize, even if in reality there are none. This, in addition with inflated cash flow projections based on an overconfident estimate of ability to increase revenues of the target company, can lead to incorrect valuations. In the article, Roll explains that if an acquisition has no synergy gains the result will have three effects:

[18]Roll, R., 1986.
[19]Roll, R., 1986, p.199-200.

1. The combined value of the bidder and the target company will be slightly less than before the acquisition.
2. The value of the bidding firm will decrease when the bid is announced.
3. The value of the target firm will increase when the bid is announced.

The first effect can be explained by the second and third effect. The decrease in the bidding firms' value will usually be larger than the increase in the target firm. The reason for the second and third effect is the result of market expectations. This implies that there is no gain from acquisitions if there are no synergy effects.

The Hubris hypothesis explains the behavior of the manager when (s)he chooses to go through with an acquisition even though the value gain is in question. The average manager has the opportunity to make only a few takeover offers during his career. Even if the manager has learned from his past mistakes of making bad bids, (s)he is unlikely to refrain from bidding on an acquisition as the number of average acquisitions that (s)he will be able to make is limited and small. Other than this, it is the fact that managers might convince themselves that the valuation of the firm is correct and that the market price does not include the value that will arise from synergy effects if the companies are combined. This is what causes the overvaluation in the acquisition.

Roll also notes that not all takeovers are fueled by hubris. If all takeovers resulted in a loss and so all takeovers were prompted by hubris, then shareholders could stop these actions by forbidding managers from making any acquisition bids on anything. Since this is not the case in the real world, then not all acquisitions are based on hubris.

There have been various studies striving to explain this behavior in management. One study explains management overconfidence with factors such as illusion of control, bias in predicting financial outcome, and self-enhancement tendencies, which mean an exaggerated belief in performance improvements stemming from personal expertise[20]. Further research has also linked illusion of control with optimism. Kahneman & Ripe explains the phenomenon with optimists underestimating role of chance in their dealings, holding on to an illusion of control, which will make them underestimate risk,

[20]De Bondt, W., Tversky, A. & Wood, A., *Behavioral Finance and Decision Theory in Investment Management*, AIMR, Charlottesville, 1995.

and exaggerate their belief in their ability to control events[21]. These findings help explain Malmendier & Tate's results in a 2007 paper where they found overconfident managers being more likely to go through with an acquisition, regardless if it in reality was value destroying or not, if perceived synergies are high[22].

2.2 Overconfidence in Mergers & Acquisitions

Rather than hubris, further research into the subject use the term CEO overconfidence to describe the hubris in CEOs in acquiring firms. In a paper from 2007, Malmendier & Tate present findings of their empirical data and conclusions regarding how overconfidence in CEOs and managers results in overpayment of target companies in mergers and acquisitions which in turn leads to a reduction in shareholder wealth[23].

Some of the work is based on Roll's hubris hypothesis, and Malmendier & Tate develops this notion and states that CEOs overestimates their ability to generate returns which leads to them overestimating the return they can generate from taking over a company[24]. This in turn leads to overpaying when acquiring another company, which is value destroying. In the article we learn that by comparing overconfident managers with regular managers, we find that overconfident managers are more likely to conduct mergers and acquisitions as they see more opportunities for profitable acquisitions compared to a regular manager who will refrain from acquisitions as they believe that synergies are hard to take advantage of.

Not only does the manager overestimate the return they can generate internally, but they also believe that outside investors undervalue their company. Because overconfident managers believe that their company is undervalued, issuing equity or debt will not be profitable, and instead they prefer internal financing as this is cheaper and avoids the undervaluation problem. Malmendier & Tate also found that managers might even forgo an acquisition or merger completely if external financing is necessary.

[21]Kahneman, D. & Riepe, M. W., 'Aspects of investor psychology', *Journal of Portfolio Management*, 1998, Vol. 24, p. 55.
[22]Malmendier, U & Tate, G., 2007, p.22, 42.
[23]*Ibid*, p.42
[24]*Ibid*, p.26.

In the article, Malmendier & Tate uses two proxies to determine if a manager is overconfident or not. The first proxy for overconfidence is tested by monitoring the personal portfolio of CEOs and how they change with the belief of the company's future performance. A CEO's wealth is undiversified, as his compensation is partly based on equity, as well as a majority of his wealth being tied to his occupation[25]. Because of this (s)he should be risk averse and should try to reduce his exposure to company specific risk. This is achieved through exercising company stock options which the manager owns prior to their expiration, provided that the option is in the money, as keeping the options until expiration would imply that the manager is willing to take on more risk for a higher reward[26]. If the CEO keeps the options until expiration, it can be interpreted as the manager being overconfident by overestimating the firm's future returns.

Malmendier & Tate found that CEOs who does not diversify their portfolios, but rather keeps their options until expiration, are significantly more likely to conduct a merger at any point. This effect is largest in companies with large amounts of internal funds, which show that managers do in fact prefer internal funding over external. These results helped Malmendier & Tate to confirm that their overconfidence hypothesis was correct[27]. From their study, Malmendier & Tate found that investors react more negatively to merger bids conducted by longholder CEOs[28], where longholders are defined as CEOs who opt to keep their options to their year of expiration, while the option is 40% or more in-the-money[29]. This can partly be explained by the announcement effect as investors are aware of how overconfidence can negatively affect mergers. This effect is similar to how the value of the bidder is affected when the bid is announced in Rolls article[30].

Another discovery in Malmendier & Tate's study is that overconfident managers are more likely to undergo with a diversifying acquisition. This is explained with

[25]Jen, F., O'Connor, P. & Ogden, J., *Advanced Corporate Finance: Policies and Strategies*, New Jersey, Pearson Education, 2002, p 86.
[26]Lambert, R., Larcker, D., &Verrecchia, R., 'Portfolio considerations in valuing executive compensation', *Journal of Accounting Research*, Vol. 29, 1991, p. 129–149.
[27]Malmendier, U & Tate, G., 2007, p.42.
[28]*Ibid*, p. 34.
[29]*Ibid*, p. 24.
[30]Roll, R., 1986. p.201-202.

overconfident CEO's overestimate the synergies they can create from the acquisition, even though the companies operates in different industries. It is important to differentiate diversifying mergers arising from agency costs and from overconfidence. As explained in Brown & Sarma, an overconfident manager believes that the investment is in the interest of the shareholders, whereas the diversifying acquisition stemming from agency costs is a mean to misuse corporate resources in order to lower risk level[31]. Which of the two categories the acquisition falls into can be measured by using the first proxy, which uses the portfolio investment patterns of the CEO. In the case of agency costs the CEO will lean towards divesting in the own company, as (s)he is aware that it is a value destroying activity, whereas the overconfident CEO will further invest in the company.

Malmendier & Tate also presented several alternative explanations for managers to hold their options until expiration. These alternatives included taxes & dividends, board pressure, past performance, CEO preference and CEOs beliefs of the future. However, many of the alternatives are found to be irrelevant or disproven, and it is concluded that the relation between option exercise and mergers is the proxy most consistent with overconfidence[32].

The second proxy that Malmendier & Tate use for determining overconfidence is how CEOs are covered by the press[33]. By examining business presses, Malmendier & Tate collected data on how CEOs were characterized. The characteristics used were "confident", "optimistic" versus "reliable", "cautious", "conservative", "practical", "frugal" and "steady". The characteristics "confident" and "optimistic" were found to be correlated positively with optimistic beliefs of future company performance.

The media coverage proxy is based on trait theory from the field of psychology. Relying on personality traits in common language has been studied thoroughly by many researchers who have all come to the same conclusion, which is that all personal traits

[31]Brown, R. & Sarma, N., 'CEO Overconfidence, CEO Dominance and Corporate Acquisitions', *Journal of Economics and Business,* vol. 59, 2007, p. 360.
[32]Malmendier, U & Tate, G., 2007, p. 34-36.
[33]Malmendier, U & Tate, G., 2007, p.21

can be divided into five distinct categories that are universal across cultures[34]. These five categories are usually called “the big five”, coined by Lewis Goldberg, or commonly termed the five factor model. The five personality factors are: openness, conscientiousness, extroversion, agreeableness and neuroticism[35]. Since personality traits can be identified in common language, it is reasonable to believe that overconfidence can be identified by examining what a CEO says or how (s)he is portrayed by others in the media. Authors such as Brown & Sarma also utilize a media coverage proxy similar to Malmendier & Tates which adds further credibility to the proxy.

It was also revealed that if an overconfident CEO has access to cheap resources such as internal funds, that CEO is more likely to conduct acquisitions of a lower quality, than if there are no cheap funds available. The empirical analysis performed by Malmendier & Tate in the article confirmed their two overconfidence predictions. The first prediction was “In firms with abundant internal resources, overconfident CEOs are more likely to conduct acquisitions than non-overconfident CEOs[36]”. The second prediction was "If overconfident CEOs do more mergers than rational CEOs, then the average value created in mergers is lower for overconfident than for rational CEOs[37].

Further studies by Doukas & Petmezas has researched whether managerial overconfidence has any important effects on the short- and long term abnormal returns for shareholders in the acquiring firm after the firm performs a mergers[38]. Furthermore, from this they address whether or not overconfident managers act in the interest of the shareholders when they perform mergers as most mergers does in fact not result in positive returns for the shareholders of the acquiring firm. Based on the methodology of Malmendier & Tate, they also introduce two new proxies for measuring overconfidence; (1) high order acquisition deals, and (2) insider dealings.

[34]Brown, R. & Sarma, N., 2007, Page 362.
[35]Srivastava, S, University of Oregon, *Measuring the Big Five Personality Factors*, Retrieved *2013-03-21*, <http://psdlab.uoregon.edu/bigfive.html>.
[36]Malmendier, U & Tate, G., 2007, p. 22.
[37]*Ibid*, p. 23.
[38]Doukas, J. &Petmezas, D., 2007, p.531.

The first proxy, high order acquisition deals, means that Doukas & Petmezas chose to consider a manager that performed five or more acquisitions within a time period of three years as overconfident. The reasoning used for this measure is based on several other articles that consider the undertaking of multiple acquisitions within a very short time period as a reckless and poor investment strategy which would indicate overconfidence in the manager[39,40,41]. This theory is also confirmed by Malmendier & Tate, who found that overconfident managers perform more acquisitions.

The second proxy Doukas & Petmezas use is the insider dealings of managers in the acquiring company. This proxy is based on the stock option proxy used by Malmendier and Tate. However, instead of using in-the-money stock options as a measure of managerial overconfidence, Doukas and Petmezas chose to use the purchase of company shares when the firm is close to a merger, as a measure for overconfidence[42]. The reason for using this proxy is the assumption that managers, because they are overconfident, will want to increase their share of the company close to a merger which they believe will be profitable, in order to increase their own wealth, as the stock will be more valuable after the acquisition. This alternative proxy is more apt to company cultures where stock option programs are not as common. Furthermore, Doukas & Petmezas argue that the in-the-money option proxy measures overconfidence for the entire future performance of the company and not just the merger, which means that this proxy might not always indicate overconfidence[43]. In countries where stock option bonuses are infrequent, such as the UK, which is the studied country in their article, it is more fitting to use the similar overconfidence proxy of insider trading.

Doukas & Petmezas found that the insider trading accurately describes managerial overconfidence. Furthermore they also found evidence of overconfidence in managers through their buying habits around mergers.

[39]Malmendier, U & Tate, G., 2007, p.534.
[40]Baker, M. P. & Wurgler, J., 'Market timing and capital structure', *Journal of Finance*, Vol. 57, 2002, p. 1–32.
[41]Jenter, D. C., 'Market timing and managerial portfolio decisions', *Journal of Finance*, Vol. 60, 2005, p. 1903-49.
[42] Doukas, J. & Petmezas, D., 2007, p.535.
[43]*Ibid*, p. 539.

When creating a model for measuring CEO overconfidence through stock- or option purchases, one has to take into account the possibility of empire building. Both Malmendier & Tate and Doukas & Petmezas state that they compensate for the possibility of empire building in their research by separating intentionally value destroying behavior and behavior brought on by overconfidence[44],[45]. Malmendier & Tate's option proxy is supposed to remove the empire building factor from consideration by the reasoning that CEOs who exercise their options late are acting in what they believe are the best interest of the shareholders. Furthermore, the managers are also personally investing in the company which is in direct opposite to the actions of an empire building manager.

Doukas & Petmezas compensate for the possibility of empire building in a different way from Malmendier & Tate. By using a different proxy, insider dealings, they circumvent the problem of empire building by examining not only how much stock that is purchased after the merger, but also how much is sold before the merger. An empire building CEO will most likely sell his shares before any merger while (s)he cannot exercise his options until the exercise date.

As previous research has shown overconfidence is a problem which can negatively affect a company in similar manners such as moral hazard or agency costs. There is therefore a need to remove or in the least moderate the impact of CEO overconfidence. Our study has chosen to research the impact of board composition as a means to moderate CEO overconfidence.

2.3 Monitoring & Board Composition

In a paper by Hayward & Hambrick (1997), the authors found that various factors can have an impact on the level of overconfidence in the CEO[46]. One of these factors is board vigilance and monitoring[47], which is the focus of this paper.

[44]Malmendier, U & Tate, G., 2007, p. 30.
[45]Doukas, J. & Petmezas, D., 2007, p. 538-539.
[46] Hayward, M. & Hambrick, D., 'Explaining the premiums paid for large acquisitions: evidence of CEO hubris', *Administrative Science Quarterly*, Vol. 42, No. 1, 1997.
[47] *Ibid*, p. 109.

2.3.1 Monitoring

There is a natural conflict of interest between the stakeholders of a company and the manager, which is explained by agency theory. The manager will try to maximize his remuneration for as little effort as possible while the stakeholders will want to maximize their returns for as little cost as possible. As managers have access to the company's net cash flow, they have the possibility to use this for their own private benefits such as extracting private rents, or perks, which are value destroying for the stakeholders. To reduce the moral hazard of the managers, the stakeholders can implement monitoring[48].

Myers lists two specific reasons for monitoring[49]. The first is to confirm that actual investments have been made. This means that actual goods or services for the company has been bought, and not just reported, which would exclude the possibility of managers taking private rents. The second is to not only confirm transactions, but also block certain investments that could give the manager private gains, or be value destroying for shareholders[50].

Because of the conflict of interest the stakeholders will want to monitor the behavior of the managers. Stakeholders cannot perfectly monitor the behavior of managers as information is not symmetrical and thus must incur a cost, either in the way of time, money or both, to increase their information of the agent[51]. This means that should the cost of monitoring exceed the loss from unmonitored practices, a stakeholder might choose not to monitor. This is often the case with smaller stakeholders, who instead rely on the larger stakeholders monitoring at their own expense, and is called the Freeriding Problem, and is often the case in American companies, where the ownership is wide. Monitoring can be divided into external and internal monitoring and ranges from behavioral contracts, debt issuance, dividends, the capital market, board of directors etc. In this report we will focus on the aspect of monitoring by the board through the member composition.

[48]Jen, F., O'Connor, P. & Ogden, J., 2002. p.426.
[49]Myers, S., 'Outside Equity', *The Journal of Finance*, Vol. 55, No. 3, 2000.
[50]Myers, S., 2000, p. 37-38.
[51]Meckling, H. & Jensen, C., 'Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure', *Journal of Financial Economics*, Vol. 3, No. 4, 1976.

2.3.2 CEO on Board of Directors

Some methods of monitoring are regulated, such as the guidelines for financial statements in a public company. However, there are other means of monitoring, such as board composition and monitoring management. Fama & Jensen found that the board of directors can be an effective monitoring solution, depending on the incentives of the board members[52]. They argue that a successful company often separate decision making, from decision control[53]. This would imply that having a CEO, who is in charge of initiating and implement decisions such as acquisitions, on the board would have a negative impact on monitoring from the board of directors. This argues that a split leadership structure would result in the CEO performing less value destroying actions or make investments which would not be in the shareholders' interest.

In another article Fama & Jensen address the issue of the separation of decision maker and risk taker[54]. Unless there is proper monitoring, the CEO can feel incentivized to take on risky investments, as it is the shareholders that hold the risk, which gives rise to agency costs. However, this is not a one sided issue, as there are also benefits of having a CEO on the board of directors. While it would lower the amount of monitoring, it would also limit the CEO's authority and ability to perform[55].

2.3.3 Outsiders vs. Insiders on Board of Directors

Fama & Jensen also look at board composition, and has found that outsider board members have a higher incentive to monitor managers and curtail managerial discretion[56]. This is motivated by the fact that outsider directives have less incentive to bend to CEO pressure, but rather value personal reputation as an efficient and skilled independent decision maker. Furthermore, it would stand to reason that an insider would feel more pressure to follow CEO decisions, as they might feel disagreeing with

[52]Fama, E., & Jensen, M., 'Agency problems and Residual Claims', *Journal of Law and Economics*, vol. 26, No. 2, 1983, p. 345.
[53]Fama, E., & Jensen, M., 1983, p. 345
[54]Fama, E., & Jensen, M., 'Separation of Ownership and Control', *Journal of Law and Economics*, vol. 26, No. 2, 1983, p. 301-302.
[55]Allen, M., Renner, C. & Schooley, D., 'Shareholder Proposals, Board Composition, and Leadership Structure', *Journal of managerial issues*, Vol. 22, 2010, No. 2.
[56]Fama, E., & Jensen, M., 1983. p.516.

the CEO will negatively impact their career opportunities within the company. This would make outsider board members better at challenging CEO decision.

Malmendier & Tate address the importance of the board of directors and their influence on the CEO. Overconfident CEOs respond to financial constraints put down by the board of directors as this will limit the cash available for mergers and acquisitions[57]. This means that the board of directors can counteract overconfidence in managers by enforcing a limiting capital structure. Malmendier & Tate also notes that independent directors can and should take on more active roles because they possess the possibility to control overconfident CEOs. Hayward & Hambrick also found that inside directors likely are pressured by the CEO, or might even share his hubris, when performing acquisitions, which would lower board vigilance[58].

The theory that an independent board has a positive effect on financial performance has further been empirically proven by various studies[59]. However, there are also contradicting studies, which states that there are no correlation between composition and financial performance, or in some cases that outsiders might actually lead to worse performance[60]. This data is based on the theory that increasing the amount of outsiders on the board of directors will, while providing higher monitoring, lower the insight and intimate knowledge of the company[61]. This would indicate that there is a trade-off between lowering agency costs through monitoring and having high competence on the board of directors.

[57]Malmendier, U & Tate, G., 2007, p.30.
[58]Hayward, M. & Hambrick, D., 1997, p. 121.
[59]Booth, Millon Cornette & Tehranian (2002) - Baysinger and Butler, 1985; Brickley and James, 1987; Byrd and Hickman, 1992; Lee et al., 1992; Mayers et al., 1997; Rosenstein and Wyatt, 1990 and Shivdasani, 1993.
[60]Bhagat, S., & Black, B., 'The uncertain Relationship Between Board Composition and Firm Performance', *Business Lawyer*, 1999, Vol. 54.
[61]Allen, M., Renner, C. & Schooley, D., 2010. p.154.

2.4 Hypothesis and Empirical Results

2.4.1 Hypothesis 1 – CEO Presence on Board of Directors

In Sweden roughly 45% of the CEOs are also present on the board of directors[62]. However, in the sample of overconfident CEOs presence on the board of directors is 66%, as is shown in section 4.1 of this study. While there are signs that having the CEO as a member on the board does not impact financial performance[63], our hypothesis is that a CEO who sits on the board can exert influence on decision making, such as undertaking an acquisitions, to a higher degree compared to a CEO who is not. (S)he would also be able to counteract monitoring performed by the board of directors as mentioned in previous section. Should the CEO be overconfident, (s)he would have more ability to act upon it if the board vigilance is compromised.

Hypothesis 1, H1: CEO Presence on the board of directors will increase observed overconfidence.

2.4.2 Hypothesis 2 – Outsider Monitoring Effect on Board of Directors

As described in previous section, unaffiliated board members are more likely to question CEO decision making if it is deemed value destroying. As they are not employees of the firm itself, but rather employed by the shareholders to govern the company, they act as a monitoring device to spot fraudulent or value destroying activities. Our second hypothesis is therefore that the higher quota of outsider board of directors, the more vigilant the monitoring will be, which would moderate the CEOs overconfidence.

H2: An increase in outsiders on the board of directors will decrease the observed overconfidence.

2.4.3 Hypothesis 3 – Employee Representatives on Board of Directors.

Our third hypothesis is based on union or employee representation of the board of directors. This hypothesis is based on the fact that an overconfident manager may destroy value with an unprofitable acquisition or merger. This would in turn adversely

[62]Sjätte AP-fondens styrelseprogram, *Vd I styrelsen – nej tack!*, Retreived 2013-05-08, <http://www.apfond6.se/sv/Nyhetsbrev-Styrelseutveckling/Vd-i-styrelsen--nej-tack/>
[63]Malmendier, U & Tate, G., 2007, p. 25.

affect the work force of the company. This could take shape in different forms, such as cash restrictions from an unprofitable acquisition resulting in a freeze of wages increases, or even lay-offs. Therefore it would be in the interest of the unions and employees to monitor the CEO activities and investments to ensure that they will not result in a worsening of working conditions. Our sample consists of Swedish companies, where unions have a strong presence, and 37% of the sample boards have employee representation. Therefore the power to affect managerial decision-making, and deter value destroying activities.

H3: An increase in employee representatives on the board of directors will decrease the observed overconfidence.

2.4.4 Empirical Prediction of Results

In this report we follow the methodology of Malmendier & Tate and Doukas & Petmezas, allowing us to compare our results with theirs to find measurable differences[64,65]. In the case of Malmendier & Tate the data of CEO presence on the board of directors is that 38% of their CEO sample sits on the board[66]. However, this number measures when (s)he has accumulated all three titles of CEO, President and Chairman. Other statistics indicate that the CEO is almost always present on the board of directors in USA, and also holds the title of chairman in 57% of companies per 2012[67]. Following Hypothesis 1 of this report, this should result in a lower level of overconfidence in Swedish acquisitions, as the CEO presence in this study's sample is 66%.

The two earlier studies do not touch upon insiders and outsiders in their sample, and we cannot directly compare this variable. However, as studies indicate, ownership composition and other factors have resulted in a higher amount of outsider board members in Europe[68,69]. The total number of outsiders on the board of directors in USA

[64]Malmendier, U. & Tate, G., 2007.
[65]Doukas, J. &Petmezas, D., 2007.
[66]Malmendier, U. & Tate, G., 2007, p. 25.
[67] SpencerStuart, 2012, p. 10.
[68]Enriques, L. & Volpin, P., 'Corporate governance reforms in continental Europe', *Journal of Economic Perspectives*, vol. 21, no.1, 2007, p.117.
[69]Denis, D. & McConnell, J., 2003, p. 2-4.

is 59.1%[70], whereas this study's sample has a mean of 83%. Therefore following Hypothesis 2, we predict that we will see a lower prevalence of overconfidence in mergers and acquisition activity in Sweden. Finally, for our third hypothesis there is no prior research to base our prediction on.

[70] Booth, J., Cornett, M., & Tehranian H., 'Boards of Directors, Ownership, and Regulation', *Journal of Banking & Finance*, vol. 26, 2002, page 1980.

3. Data & Methodology

In this section we present our methodology and the two proxies that we have chosen for determining overconfidence. The first proxy utilizes the CEOs insider trading activities, whereas the second proxy utilizes media coverage of the CEO. This is followed by an explanation of our independent variables and the regression and its components. The final section presents data collection methodology and data sources used.

3.1 Measuring Overconfidence

This paper will use two proxies when measuring overconfidence. The first proxy for overconfidence, OC1, will be based on an alternative measure for overconfidence developed by Doukas & Petmezas. This proxy is based on insider trading by the CEO around the time of the acquisition. This data will be collected on insynsregistret's database as detailed in section 3.5.3. This proxy will be based on the net acquisition of shares during the time span of six months prior to the acquisition announcement, up to two months following. By net acquisition the net value of transactions performed during the time is referred to. Should the CEO buy shares in his company for a value of 5000 SEK, and then proceed to sell shares for 2000 SEK, the net acquisition will be 3000 SEK. In cases where the CEO has an insider position it other companies apart from the acquiring company only transactions on shares of the acquiring company will be counted. Following the theory of an overconfident CEO detailed in section 2, a CEO would believe (s)he creates value with his investments, and thereby increase the share price. As a rational investor, the overconfident CEO would therefore have a higher net investment rate. To adjust for differing wealth between CEOs, we have created a value which adjusts for his salary, meaning that the CEO annual remuneration is used as a simplifying proxy for the total CEO wealth. The first proxy is based on net acquisition as a part of his annual salary, and the equation for OC1 is as follows:

OC1 = Net acquisition value/Annual salary

The second proxy is based on 'Trait Theory' and use the aforementioned Five Factor model as a basis. The method for using this theory is derived from Hayward &

Hambrick (1997), who provides three proxies for measuring CEO hubris[71]. The one this paper will utilize is media coverage. Initially, data is collected as described in section 3.5, where mentions of specific keywords are collected. The construction of this variable will then be based on the equation in Brown & Sarma (2007), which allows adjustment for number of mentions.

The variable to measure OC2, the second component of our overconfidence integer, is as follows:

$$OC2 = \frac{\left(\left(A_1 + (A_2 \times 2)\right) + \left(B_1 + (B_2 \times 2)\right)\right)}{\left(1 + (C_1 + (C_2 \times 2) + \left({}^{D}/_{10}\right)\right)}$$

A is the number of articles which mention keywords in column A in Table 3.1. The inclusion of A_1 and A_2 is made to allow for different weights of the keyword used in the article. For example if the keyword *självsäker* is used in passing or loosely it is placed in column A_1, and if the keyword is signaling strong overconfidence, it is placed in column A_2. B is the number of articles using the keywords in column B, and C the number of articles mentioning keywords in table C, and both groups follow the same weight rules as group A. D, the last variable in the equation is the total number of article mentions of the CEO within the timeframe. In the data that we collected, the number of articles that mention the CEO is much larger than the number of articles that mention keywords. This resulted in very small numbers that might be tough to grasp from a quick inspection. Furthermore, it would not be appropriate to give the same weight to the keywords in column C, as they are clear indicators of lack of overconfidence, whereas column D simply signifies lack of evidence either supporting or denouncing overconfidence. To counteract this, and to make the results easier to interpret, we decided to divide the D group by 10.

Following the delimitations of Hayward & Hambrick and Malmendier & Tate, we will limit articles to three years prior to the first acquisition. Secondly, we will only collect articles up until the announcement date. This is done in order to counteract a flaw in this proxy, where the proxy results are colored by the journalist's personal opinion and

[71]Hayward, M. & Hambrick, D., 1997, p. 113-114.

focus of content. An announcement of a merger or acquisition gives signals to the press, which the journalist might interpret as overconfidence or hubris, even though this might not necessarily be the case. This will in turn affect the content of the articles, and the proxy results. In cases where the CEO has performed multiple acquisitions during the period, only articles up until the first acquisitions will be utilized, rather than individual three year samples prior to each acquisition. One important delimitation of this approach is that the data is limited to our sample. This means that there is a possibility that the CEO has performed acquisitions prior to our sample period of 2000-2005, which would affect article writers' opinions. This delimitation is performed due to lack of resources, and that we are measuring the current hubris of the CEO, meaning that historic behavior are of less importance to our paper than current events.

This proxy is subject to certain bias, as is covered in Malmendier & Tate (2007). First, there is a possibility that the CEO shows a false sense of confidence to representatives of the media in order to boost the stock price. However, as is noted, this is a method that does not hold over time, as it would hurt the CEO and company integrity and reliability. The second bias mentioned is that the CEO might be trying to create a hype surrounding the acquisition, and thus increasing chances of a positive outcome of the investment. This bias is counteracted by including the keywords in column C, and also measuring the amount of mentions in newspapers over time[72].

3.2 Measuring Independent Variables

The variable corresponding to hypothesis 1, CEO presence on the board of directors, is named *CEOBoard.* It is a binary variable, with the variable taking the value of 0 when the CEO is not on the board, and 1 when the CEO has a seat on the board.

The second variable, outsiders on the board of directors, is called *Outs* and is a variable that will take on a value between 0 to 1 according to the percentage of outsiders on the board of directors.

[72]Malmendier, U. & Tate, G., 2007, p. 40.

The third independent variable is called *Workrep* and is a variable that will take on a value between 0 and 1 according to the percentage of employee representatives on the board.

3.3 Regression Analysis

The method to be used to test our hypotheses is performing a multivariate regression using the ordinary least squares method. The regression formula is formulated as follow, and variables are presented in table 3.1. In addition to the three previously introduced independent variables, four controlling variables are also included. Further explanation of chosen variables and null hypotheses are presented in section 3.4.

$$OC_{1+2} = \beta_1 + \beta_2 CEOBoard + \beta_3 Outs + \beta_4 WorkRep + \beta_5 M2B + \beta_6 Size + \beta_7 CF + \beta_8 CEOcomp + \varepsilon$$

TABLE 3.1 EXPLANATIONS OF REGRESSION VARIABLES

Variable	Description
OC_1	Overconfidence proxy measured through the CEO's net acquisition of company stock divided by his annual salary.
OC_2	Overconfidence proxy measured through mentions of keywords listed in Table 3.2.
CEOBoard	Binary variable taking the value 0 if the CEO does not have a seat on the board, and 1 if (s)he does.
Outs	The percent of outsider directors on the board of directors.
WorkRep	The percent of employee representatives, through unions or otherwise, on the board of directors.
Size	Size of the company as measured by average shares outstanding multiplied by the share value one day prior to acquisition announcement date.
CF	Cash flows as defined by the year's result plus depreciation added back.
M2B	The ratio market to book value of equity for the company.
CEOcomp	Annual salary and remuneration (excluding pensions) for the year of the acquisition.

To test the validity of the regression outputs a series of tests will be performed. The first test to be performed on our data samples is a Jarque-Bera test on our overconfidence subsample. This in order to test whether the sample data is standard distributed. This is of importance as standard distributed data is a prerequisite for performing an OLS (ordinary least squares) regression. The Jarque-Bera test uses the data's kurtosis and skewedness in order to gauge whether the data has an acceptable level of deviation from standard distribution.

Furthermore, a multicollinearity test called Variance Inflation Factors will be performed. Finally, robustness tests will be performed on the data, to ascertain if the independent variables can withstand modification. Two robustness tests have been constructed, each modifying one of the two proxies.

The first robustness test will remove the impact of CEO compensation from the formula. Compensation for CEO remuneration was added in order to account for different levels of wealth in the CEOs. This makes the assumption that a large portion of the wealth is gained from his salary. Should however CEOs wealth be more diversified, and the managers be independently wealthy, this assumption is erroneous. The robustness test will assess this by simply using net acquisition value as a proxy for OC1.

The second robustness test is performed on the media coverage proxy. The current formula is constructed as such, that one mention of a keyword in column A or B will automatically categorize the CEO as overconfident, regardless of the number of mentions of keywords in column C. This gives a higher weight to mentions of keywords signaling optimism or overconfidence compared to keywords signaling the opposite. We have therefore constructed an alternative formula which allows mentions of keywords in column C to cancel out A and B keywords. The new formula is:

$$OC2 = \frac{\left(\left(A_1 + (A_2 \times 2)\right) + \left(B_1 + (B_2 \times 2)\right) - (C_1 + (C_2 \times 2)\right)}{\left({}^{D}/_{10}\right)}$$

Constructing the formula in this manner will redefine a CEO as being overconfident only when (s)he has a *net overconfidence mentions*, meaning that (s)he has a higher mention of keywords signaling overconfidence than keywords signaling lack thereof.

3.4 Remarks Regarding chosen overconfidence variables

3.4.1. OC1: CEO Net Acquisition

Many published articles measure overconfidence partly by using a proxy that reflects the CEOs personal projections of the outcome of the impending merger or acquisition. Malmendier & Tate measure this by observing how long a CEO holds his stock options, while Doukas & Petmezas used insider trading as a similar proxy.

We chose to use our own version of the insider trading proxy for several reasons. As stated in section 1, the insider trading proxy more effectively compensate for the possibility of empire building through the CEO venturing his personal wealth by buying shares which could severely drop in price, compared to stock options which are relatively risk-free. Furthermore, since stock option remunerations were infrequent in Sweden during our time frame (as stated in section 1.3), the net acquisition of company shares is a better choice for this proxy.

Doukas & Petmezas also pointed out several flaws with the option proxy that the insider dealings proxy does not suffer from. We already presented this criticism in section 1.3 but examples include that the overconfidence measured from the holding of the options might be the overconfidence of an upcoming merger and not the merger at hand.

Due to of the similarity of this study's proxy with previously published articles, a comparison will be possible, as the output data will take on similar form, provided that overconfidence is a prevalent issue in Sweden.

3.4.2 OC2: Press Coverage

Measuring overconfidence through a proxy for how a CEO is portrayed in public or how a CEO acts in public is a method used by published articles written by authors that we base a large portion of our work upon, namely Malmendier & Tate, Hayward & Hambrick and Brown & Sarma.

The fundamental theory, as described in section 2.2, is that personality traits can be identified in common language and that the words used either by the observer to describe the person or the person himself talking about himself or his situation, can be used as a proxy for how overconfident this person is.

There is little difference between the proxy used by Malmendier & Tate, which they call "press coverage" and the proxy used by Brown & Sarma, which they call "Media praise". Both proxies identify keywords in articles related to each CEO in their sample during their sample time. Our press coverage proxy is designed in the same way but utilizes a different calculation for deriving the overconfidence proxy. While Brown & Sarma compensates for some CEOs being mentioned more than others by dividing the data points by the number of articles, we included several other compensations as presented in section 3.1. Similarly to OC1, the similarity of this proxy to previous published articles will enable us to compare results with other data sets.

3.4.3 β_1, Base Overconfidence

The variable β_1 in this study's regression is explained as base overconfidence. This value is the inherent overconfidence value, as measured by our proxies, before the effect of our controlling variables, and is therefore termed as *base overconfidence.* This variable works under the simplifying assumption that there is a standard value of overconfidence that all overconfident managers share, which in turn is individually affected by external factors and unique circumstances.

Null hypothesis 1, N_1: There is no coherent base overconfidence value.

3.4.4 β_2, CEO on Board of Directors

Hayward & Hambrick theorized in their published article in 1997 that the vigilance of the board of directors is lower when the CEO is chairman of the board. Using their findings, we believe that the presence of the CEO on the board of directors will be enough to affect the boards' decisions, including decisions regarding acquisitions. We chose to include this independent variable due to the legal difference between the USA and Sweden in regards to the CEOs position on the board. In Sweden, a CEO may sit on the board of directors but may not be elected chairman. Meanwhile in the USA one may, and usually is, both hold titles of CEO and as the chairman on the board of directors[73]. The variable is binary, taking the value 1 if the CEO has a director's seat and 0 if (s)he is not present on the board of directors.

[73] Denis, D. & McConnell, J., 2003, p. 2.

N_2: CEO presence on the board has a negative or no correlation to observed overconfidence.

3.4.5 β_3, Outsiders

Hayward & Hambrick theorized in their article published in 1997, that the greater the percentage of insiders on the board of directors, the greater the amount of hubris the CEO has. Their results concluded that the greater the percentage of insiders was, the more the effects of hubris had on acquisitions. Fama & Jensen also conducted research on board composition, as described in section 2.3.3 in this article, and they found that outside board members have a higher incentive to monitor managers.

We also chose to include outsiders on the board as an independent variable due to the difference between board composition between typical American and European boards. In general, US ownership is widely dispersed while European ownership consists of fewer, larger block holders[74]. As share ownership is dispersed in the US, the small stock owners have a low incentive to monitor the company by themselves, and due to this the free-rider problem and monitoring suffers. Adding this with the fact that CEOs may sit as chairman on the board, this results in fewer outsiders on the board of directors in U.S. companies[75]. As Europe has large block holders as owners, they have a larger incentive to exhaust resources to monitor the board of directors. This result in more outsiders on the board of directors in Europe compared to the U.S[76].

As mentioned earlier, the variable is constructed to take on a value between 0 and 1. The value is derived by calculating $\frac{Outsiders}{Total\ Board\ Members}$.

N_3: Percentage of outsiders on the board of directors has a positive or no correlation to observed overconfidence.

[74]Enriques, L. & Volpin, P., 2007.
[75]Denis, D. & McConnell, J., 2003, p. 2-4.
[76]*Ibid.*

3.4.6 β_4, Employee Representatives

A Swedish law gives the employees of a company the right to appoint a minimum of employee representatives in a company's board of directors[77]. This variable will take on a value between 0 and 1, and similarly to the outsiders' variable it is calculated as follows: $\frac{Workers' Representatives}{Total\ Board\ Members}$.

N_4: Percentage of employee representatives on the board of directors has a positive or no correlation to observed overconfidence.

3.4.7 β_5, Market-to-Book Value (M2B)

We defined the book value of equity as the year end value of equity as described in each company's annual report for the year of the acquisition. We defined the market value of equity as the average number of outstanding shares times the stock price at the time, divided by the book value of equity.

We theorize that a company with a larger market to book value will have a more overconfident CEO. Malmendier & Tate proves in their study that overconfident managers with cheap access to internal funds are more likely to perform acquisitions. When the market to book value is high, a CEO could utilize overpriced shares and use them as payment method for more mergers and acquisitions.

3.4.8 β_6, Size

Several published articles on overconfidence include size as a control variable including Malmendier & Tate and Brown & Sarma who reference Moeller, Schlingemann and Stulz which argued that agency problems and hubris in CEOs might be more common in larger companies[78]. This study will therefore include the size as well in order to enable comparison of results.

[77]PTK, *Det säger lagen om styrelserepresentation,* Retrieved 2013-03-28, <http://www.ptk.se/sv/Roller/Bolagsstyrelseledamot/Nyheter/Det-sager-lagen-om-styrelserepresentation/>

[78]Moeller, S., Schlingemann, F., & Stulz, R., 'Firm size and the gains from acquisitions', *Journal of Financial Economics, 73,* 2004, p. 201–228.

3.4.9 $\beta_{7,}$ Cash flow

The third controlling variable in the regression is cash flow. This variable is defined by the year's result as shown in the annual report with fiscal items such as depreciation added back. The reason to include this variable is that previous research has proven a correlation between available internal funds and overconfident acquisition behavior patterns. The annual result is also a proxy of how well the company is performing, and adding it will enable the regression to find one more explanation between difference between observed and base overconfidence.

3.4.10 $\beta_{8,}$ CEO Compensation

We chose to include the CEOs salary and bonus compensation as a control variable. We defined CEO compensation as the sum of annual salary, performance bonuses and other remunerations that was paid out in cash or by other means to the CEO for the year when the acquisition was completed. We excluded all social payments such as pensions.

This variable, too, was included in order to enable comparison to previous research. One publication which includes CEO remuneration is Hayward & Hambrick, where they found there was a correlation between CEO relative pay and acquisition premiums, one of their overconfidence proxies[79].

3.5 Data Sources

3.5.1 Creating the M&A Sample

We created the merger and acquisition data sample necessary for analyzing our proxies by extracting acquisition event information from Thomson Reuter's software program Eikon. The M&A data criterion are based on Doukas and Petmezas' sample criteria but differ on some occasions.

The criteria for this study's M&A sample are:

1) The acquirer is a Swedish firm that was at the time publicly trading on the Stockholm stock exchange (Nasdaq OMX Nordic), or having a registered headquarter located in Sweden, and have return data around the takeover

[79]Hayward, M. & Hambrick, D., 1997, p. 117.

announcement date on the “Thomson Reuters Eikon” Database and is marked as "Complete".

2) The acquisition was completed between the dates 2000-01-01 and 2007-12-31.
3) The acquirer purchases at least 50% of the targets shares as a result of the takeover within a time period of 6 months.
4) The deal value of the acquisition is no less than one million dollars. This is to make sure that the acquisitions are not to include to small acquisitions which would not be made by overconfident CEOs.
5) Financial and utility (e.g. power suppliers) companies are excluded from the sample as these firms can be considered to be regulated in their performance. This would probably affect our finding and distort the level of overconfidence.

The data needed for the independent and controlling variables was collected manually from each company’s annual report for the year of the merger or acquisition. We defined an outsider as a person on the board that is not currently employed in that company and that is not a family member to the CEO, consistent with Brown & Sarma’s definition with the exception of the family ties[80]. The complete definition of outsiders and insiders can be found in section 1.5.1. To determine which board members that were outsiders, we investigated each company board member separately by reviewing board of director reports in financial reports collected through *Retriever Business* or the companies’ publications on their own web pages. In cases where complete detail of director’s employment and other assignments was not forthcoming, we manually researched the individuals in Thomson Reuter’s Eikon database, on Insynsregistret’s database, or on Retriever Business.

3.5.2 Creating the Media Coverage Sample

Following Brown & Sarma we measured media coverage of the CEO as a variable for overconfidence[81]. For this purpose we used *Retriever Monitor* database and limit our scope to *Affärsvärlden, Aftonbladet, Dagens Nyheter, Dagens Industri, Expressen, PrivataAffärer and Svenska Dagbladet*. We selected these news presses as they can be

[80]Brown, R. & Sarma, N., 2007, p. 367.
[81]Brown, R. & Sarma, N., 2007, p. 363.

considered leading business presses in Sweden. We then collected data on: (1) the number of articles. (2) Number of articles containing keywords listed in table 3.2.

TABLE 3.2 – CATEGORIES FOR KEYWORDS IN OC2 PROXY

Category A	Category B	Category C
Självsäker	Optimist	Försiktig
Handlingskraftig	Optimism	Praktisk
Ambitiös	Optimistisk	Konservativ
		Konservativt
		Inte Självsäker
		Inte optimistisk
		Ansvarsfull
		Sparsam

The timeframe for collecting the articles were three years prior to the first acquisition the CEO had performed during the timeframe 2000-2007. The string used when searching on Retriever Monitor is:

"CEO_NAME" AND (självsäker or Handlingskraftig or ambitiös or optimist or optimism or optimistisk or försiktig or praktisk or konservativ or konservativt or ansvarsfull or sparsam)

Following this we hand-checked the articles collected to ensure the keywords describe the CEO.

3.5.3 Creating the Net Acquisition Sample

For the net acquisition sample we collected data on the net stock purchase for each CEO by using insynsregistret's webpage. This webpage allowed us to gather data on the number of shares that a CEO purchased or bought during their time as a CEO. To find the value of the trades, we gathered data on stock price from by using Thomson Reuter's DataStream software.

As stated previously, net stock purchase is derived from the CEOs purchase and sales of the company's stock during the timeframe of six months prior to the announcement of an acquisition and two months post the announcement of the acquisition. Only completed acquisitions and mergers are included in any sample. The timeframe of six

months prior and two months post acquisition was chosen to mirror the methodology in Doukas & Petmezas (2007). In this study they used a time-frame of 3 months prior and 1 month post acquisition[82]. For this study we however doubled the timeframe both before and after acquisition, as we believed that this timeframe was too narrow to capture the overconfidence.

Due to the time frame, some acquisitions will overlap which might result in purchases and sales of shares to be counted twice. We took into account that if two acquisitions done by the same CEO was in close proximity time wise, then we did not count his stock purchase twice.

We defined stock purchase as the purchase of Swedish A or B shares. We did not include any kind of stock option in the net acquisition, as the proxy only use the investment or divestment in company stock. All other kinds of stock events such as splits or remuneration from company bonus programs were not included as they do not represent the CEO using his personal wealth to increase his risk exposure. Furthermore, we also included any purchase or sale of stock by the CEO which was then given to family members, as being a part of the sample since it is reasonable to believe that this net acquisition is in the CEOs personal interest.

[82]Doukas, J & Petmezas, D., 2007, p. 570.

4. Empirical Results

This section starts with a presentation of the descriptive statistics, and then proceeds to present the results of the two regressions performed. This is followed by tests designed to examine the reliability of the data.

4.1 Descriptive Statistics

When collecting our sample data following previously detailed methodology, we collected a sample of 375 acquisitions ranging over 8 years. The descriptive statistics of the full sample for the period of 2000-2005 is presented in table 4.1.

TABLE 4.1 – DESCRIPTIVE STATISTICS OF FULL SAMPLE

	CEO-Board	Outs	Work-Rep	M2B	Size (MSEK)	CF (MSEK)	CEOComp (MSEK)	Board Members
Mean	0.76	0.80	0.09	6.58	35800	952	3.71	7.33
Median	1.00	0.83	0.00	1.25	1510	126	2.01	7.00
Maximum	1.00	1.00	0.57	127.98	2070000	33700	26.55	20.00
Minimum	0.00	0.00	0.00	0.00	22	-1070	0.00	2.00
Std, Dev,	0.43	0.17	0.15	19.18	244000	3530	4.91	3.07
Skewness	-1.22	-1.52	1.43	4.93	8.17	8.01	2.85	1.25
Kurtosis	2.48	6.90	3.80	28.46	68.39	73.23	11.35	5.56
Jarque-Bera	26.78	104.90	38.22	2194.19	13628.56	22267.78	378.6	62.51
Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Obs.	104	103	104	69	72	103	87	104

The CEO presence on the board of directors was as can be seen in table 4.1 76%, which is decidedly higher as compared to the 45% of all Swedish listed companies. This strongly indicates a connection between CEO presence on the board of directors and acquisition frequency. Furthermore, as predicted, the number of outsiders on the board is higher compared to previous studies, with a mean of 80% outsiders, and a median of 83%. Meanwhile, the mean for employee representatives is 9%, and a median of 0, suggesting that a majority of the boards do not have employee representation. From this we created one subsample where the there were indications of overconfidence from at least one of our two proxies. In order not to eschew the data, we have removed multiple acquisitions by the same CEO. The subsample instead consists of overconfident CEOs, rather than overconfident mergers and acquisitions. The table 4.2 details the descriptive statistics of this subsample.

TABLE 4.2 – DESCRIPTIVE STATISTICS OC1+OC2

	OC1	OC2	CEO-Board	Outs	Work-rep	M2B	Size (MSEK)	CF (MSEK)	CEOComp (MSEK)	Board Members
Mean	0.71	0.17	0.66	0.84	0.12	2.44	41100	2390	6.44	8.24
Median	0.01	0.09	1.00	0.88	0.00	1.44	2590	536	4.07	8.00
Maximum	26.35	0.77	1.00	1.00	0.57	12.83	219038	33700	27.58	15.00
Minimum	-10.08	0.00	0.00	0.33	0.00	0.11	86	-862	0.00	4.00
Std. Dev.	3.36	0.21	0.48	0.13	0.15	2.81	225000	5410	6.06	2.35
Skewness	5.14	1.03	-0.69	-1.01	0.94	2.01	8.73	4.25	1.60	0.63
Kurtosis	42.35	3.00	1.47	4.36	2.92	6.89	79.27	22.72	5.17	3.40
Jarque-Bera	5927.70	15.08	15.14	21.08	12.70	112.39	21936	1651.76	53.48	6.23
Prob	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
Obs	86	86	86	86	86	86	86	86	86	86

From our data we find that approximately 66% of the CEOs in the overconfidence subsample sit on the board of directors. Another point of interest is the fact that the mean of *CEOBoard* is higher in the full sample, as compared to the overconfidence sample, by ten percentage points. This is counterintuitive to this study's hypothesis 1, which predicts that the CEO presence on the board of directors ought to be lower on the full sample, which contains the non-overconfident managers.

The mean for the percentage of outsiders on the board is 0.84, meaning that approximately 84% of board members are outsiders in the subsample. When comparing to the full sample it is evident that the overconfidence subsample has four percentage point higher outsider presence, which is counterintuitive to this study's second hypothesis. Employee representation is three percentage points higher in the subsample, which is counterintuitive to Hypothesis 3.

When looking at the controlling variables, one can see by a quick ocular inspection that they are largely in line with previous studies' findings. The size of the companies is slightly higher in the overconfidence subsample. Furthermore, the overconfident CEOs have access to markedly higher internal funds, measured through cash flows. The mean for CF is 151% higher in the subsample, and the median 325.4% higher. There is also a noticeable difference in CEO remuneration between the full sample and subsample. The average overconfident CEO has a 2.73 MSEK higher annual salary on average, and the

median overconfident CEO makes 2.06 MSEK more, a 102.5% increase. Market-to-book ratio, however, is lower in the subsample. However, while the mean is lower for the subsample, the median is higher, suggesting the difference in the mean is due to outliers in the full sample.

We chose to remove one outlier from the sample as we found it to be disruptive to the data. The outlier had an OC1 of 268 which disrupted the regression calculation for OC1. By removing the outlier the Jarque Bera test also improved for all variables.

When collecting the data we noticed a pattern of negative correlation between the two proxies through ocular inspection. When proceeding to testing the correlation, we found this phenomenon to be true, as there was a negative correlation of -0.105 between the two samples, with a probability of 0.471.

As the two proxies were meant to mirror the same trait in the CEO through different measurements, it is a very troubling finding to have negative correlation between the two. Our correlation can also be compared to Malmendier & Tates correlation between their longholder and media proxy, which is comparable to our net acquisition and press coverage proxy, which in their case resulted in a correlation of 0.10, which indicates that a positive correlation indeed is a possibility. The chosen method to cope with this is separating the two data sets to individually run two separate regressions and tests. This is in order to be able to analyze these results separately, and discern which, if any, of the two proxies properly describes overconfidence. These two final samples, which we used for our regressions and analysis, consisted of 49 observations in OC1, and 48 observations in OC2[83]. The regressions are as follows:

R1: $\boldsymbol{OC_1 = \beta_1 + \beta_2 CEOBoard + \beta_3 Outs + \beta_4 WorkRep + \beta_5 M2B + \beta_6 Size + \beta_7 CF + \beta_8 CEOcomp + \varepsilon}$

R2: $\boldsymbol{OC_2 = \beta_1 + \beta_2 CEOBoard + \beta_3 Outs + \beta_4 WorkRep + \beta_5 M2B + \beta_6 Size + \beta_7 CF + \beta_8 CEOcomp + \varepsilon}$

[83] The two subsamples OC1 and OC2 can be found in Appendix 1 and Appendix 2 respectively.

4.2 Results of Regressions

In this section the results of the regressions are presented. Two multivariate regressions were run on the two subsamples, both using OLS for estimations. An introductory ocular inspection of the regressions provides two observations. The first is the fact that no explanatory variable has statistical significance apart from the controlling variable *CEOComp* in the OC2 regression. Meanwhile none of our 3 hypotheses holds with statistical significance, the closest being Hypothesis 2 in OC2, with a Prob of 0.0730. The second observation is that the OC2 regression does provide a better explanatory power of the regression.

TABLE 4.3 – REGRESSION RESULTS FOR OC1 PROXY, INSIDER TRADING

$OC1 = \beta_1 + \beta_2 * CEOBOARD + \beta_3 * OUTS + \beta_4 * WORKREP + \beta_5 * M2B + \beta_6 * CEOCOMP + \beta_7 * SIZE + \beta_8 * CF$

	Coefficient	Std. Error	t-Statistic	Prob.
β_1	0.141362	4.436372	0.031864	0.9747
β_2	1.447208	1.555692	0.930266	0.3577
β_3	2.147178	4.884612	0.439580	0.6625
β_4	0.245848	1.556058	0.157994	0.8752
β_5	-0.152412	0.509709	-0.299018	0.7664
β_6	-2.25E-07	2.02E-07	-1.113960	0.2718
β_7	6.53E-20	1.03E-18	0.063531	0.9497
β_8	6.14E-11	2.01E-10	0.305339	0.7617

R-squared	0.057346	Mean dependent var	1.480110
Adjusted R-squared	-0.103594	S.D. dependent var	4.061980
S.E. of regression	4.267195	Akaike info criterion	5.888073
Sum squared resid	746.5672	Schwarz criterion	6.196942
Log likelihood	-136.2578	Hannan-Quinn criter.	6.005257
F-statistic	0.356320	Durbin-Watson stat	0.489238
Prob(F-statistic)	0.922070		

As can be observed in table 4.3, the explanatory power of the regression based on insider trading is severely lacking, with an F-statistic probability of rejecting the null hypothesis of 7.79%. Furthermore, R^2 indicates that the independent variables only explain 5.73% of the changes in OC2. Only the *CEOBoard* coefficient is in line with our hypotheses, and none of the probabilities are statistically significant. These statistics indicate that there is a low correlation between the dependent variable and the explanatory variables.

The base overconfidence has a value of 0.14, as denoted by the β_1 coefficient. However, there is statistical significance for the null hypothesis for this variable, indicating either that this figure is incorrect, or that base overconfidence is a variable, not a constant.

The β_3 and β_4 both have positive coefficients as well as the second. This is not in accordance with the second and third hypothesis, which posited that outsiders and employee representatives would decrease observed overconfidence through monitoring. However, the probability of the null hypothesis being true for these variables is 66.7%, and 87.5% respectively. The first two controlling variables, *M2B* and *CEOCOMP*, have negative correlations with overconfidence. The null hypotheses for these two variables were that there is no correlation between observed overconfidence and the variables. As can be gleaned from an ocular inspection, the *CEOCOMP* variable has the highest probability of rejecting the null hypothesis in the regression, with a rejection likelihood of 27.2%. The last two variables, *SIZE* and *CF*, both have higher probability of the null hypothesis being true, with probabilities of 95.0% and 76.17% respectively.

In table 4.4 an identical regression was run which instead uses the Media Coverage subsample.

TABLE 4.4 – REGRESSION RESULTS FOR OC2 PROXY, MEDIA COVERAGE

$OC2= \beta_1+ \beta_2*CEOBOARD+ \beta_3*OUTS+ \beta_4*WORKREP+ \beta_5*M2B + \beta_6*CEOCOMP+ \beta_7*SIZE+ \beta_8*CF$

	Coefficient	Std. Error	t-Statistic	Prob.
β_1	0.836855	0.261061	3.205588	0.0026
β_2	-0.001322	0.065480	-0.020184	0.9840
β_3	-0.510792	0.268626	-1.901498	0.0645
β_4	-0.085937	0.183808	-0.467539	0.6427
β_5	0.002971	0.008791	0.337952	0.7372
β_6	-1.07E-08	4.40E-09	-2.436869	0.0194
β_7	9.17E-14	1.48E-13	0.617993	0.5401
β_8	-2.53E-12	5.89E-12	-0.429657	0.6698

R-squared	0.256069	Mean dependent var	0.311898
Adjusted R-squared	0.125881	S.D. dependent var	0.186843
S.E. of regression	0.174688	Akaike info criterion	-0.500621
Sum squared resid	1.220633	Schwarz criterion	-0.188754
Log likelihood	20.01490	Hannan-Quinn criter.	-0.382766
F-statistic	1.966920	Durbin-Watson stat	2.015330
Prob(F-statistic)	0.084126		

When inspecting Table 4.4, an F-Statistic probability of 0.084 indicates that there could be statistical significance to the regression variables. However, the probability of the null hypothesis being true is too high to say this with confidence. Furthermore, base overconfidence, which is denoted as β_1 in the regression table, is significant to the 0.26% level. This variable corresponds to the CEO base overconfidence measured through the media. The mean for observed overconfidence, as shown in table 4.2, is 0.71, indicating that external factors have lowered the observed overconfidence. This would indicate, as opposed to our results in OC1, that H2 and H3 carry a greater compared weight as compared to H1. The next variable, *CEOBoard* has statistical significance for the null hypothesis. This force us to discard H1, meaning there is no impact on observed overconfidence whether the CEO sits on the board of directors or not.

One coefficient worth noting is β_3, and corresponds to *Outs*. The value of this coefficient is -0.510792, which would indicate that changing a board of directors to exclusively insiders to exclusively outsiders (which would change the value of *Outs* from 0 to 1) would lower CEO overconfidence by 61%. This means that *Outs* has a very strong impact on overconfidence, and would make adding outsiders to the board of directors an effective method of lowering observed overconfidence. Furthermore, the probability of the null hypothesis being discarded for this variable is 93,55%, meaning there is a strong indication, while not a statistical significance, that this hypothesis is true. With an increased sample it is possible that the results would improve to become statistically significant.

Workrep, the final variable for this study's hypotheses, also has a negative coefficient, which is in line with the hypothesis. However, in the case of this variable there is no statistical significance, with a probability of discarding the null hypothesis of 35.7%. Similarly, M2B showed a negligible impact on observed overconfidence through a coefficient of 0.0030.

The only statistically significant variable was CEO Compensation, with a probability of rejecting the null hypothesis of 98.06%. The coefficient for this variable is 1.07×10^{-8}, which means that for every MSEK of annual CEO compensation, overconfidence decrease with 0.0107. In our data sample CEO compensation ranged from 0 SEK to

27.584 MSEK, which would result in CEO compensation impact to be as high as 0.2951. Finally, the two last controlling variables, *Size* and *CF,* showed little economic impact, with coefficient as low as 9.17×10^{-14}.

4.3 Explanatory Properties of Regression models

A test performed to ascertain the validity of the explanatory properties in the regression was a Variance Inflation Factors test, which test the regression for multicollinearity. The results of the tests are presented in table 4.5 and 4.6.

TABLE 4.5 – VARIANCE INFLATION FACTORS TEST, OC1

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
β_1	19.68140	52.96231	NA
β_2	2.420177	3.588606	1.611211
β_3	23.85944	47.25633	1.407547
β_4	2.421315	1.542452	1.223636
β_5	0.259803	2.784842	1.588745
β_6	4.07E-14	6.545872	3.045714
β_7	1.06E-36	1.274738	1.248723
β_8	4.05E-20	3.449499	2.915423

TABLE 4.6 –VARIANCE INFLATION FACTORS TEST, OC2

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
β_1	0.058243	91.11846	NA
β_2	0.004115	4.694567	1.271445
β_3	0.065871	76.75350	1.267394
β_4	0.004596	1.343834	1.112358
β_5	7.69E-05	2.749888	1.642195
β_6	1.97E-17	3.241586	1.408647
β_7	2.23E-26	3.218042	3.066118
β_8	3.34E-23	3.002133	2.458211

The generally accepted critical value of the VIF is 10. As can be observed in table 4.5, and 4.6, this value is exceeded in two cases, β_1, and β_3 in both regressions, which corresponds to the variables *base overconfidence,* and *outs.* This would indicate there is

a multicollinearity issue with these two variables. This conclusion, however, does not fit with the regression models used, as the intercept, β_1, is constant, whereas all other variables are not. Therefore in theory there can be no multicollinearity between the intercept and the independent variables. A solution to this is to instead use the centered VIF, which removes the issue. Centered VIF removes the intercept from the multicollinearity test, which results in only the independent variables being tested. Using the centered VIF is acceptable in cases where the intercept, in this paper *base overconfidence*, is constant, while the other x_n factors are variables[84].

From the two subsamples we also performed two Jarque-Bera tests to test whether the sample data was normally distributed. Tables 4.7 and 4.8 present the results.

TABLE 4.7 – JARQUE-BERA TEST, OC1

OC1	CEOBOARD	OUTS	WORKREP	SIZE	M2B	CF	CEOCOMP
Skewness	-0.205152	-1.113590	4.603537	6.783866	1.772781	4.753592	1.669721
Kurtosis	1.042088	4.332915	28.04257	47.02083	5.060448	28.21571	5.124589
Jarque-Bera	8.170283	13.75470	1453.464	4332.247	34.33360	1482.697	31.98424
Probability	0.016821	0.001031	0.000000	0.000000	0.000000	0.000000	0.000000

TABLE 4.8 – JARQUE-BERA TEST, OC2

OC2	CEOBOARD	OUTS	WORKREP	SIZE	M2B	CF	CEOCOMP
Skewness	-1.031376	-0.648578	5.261694	6.466880	2.109529	3.303349	1.335015
Kurtosis	2.063736	3.138955	33.37091	43.80772	7.124686	13.74128	4.079465
Jarque-Bera	10.26307	3.403841	2066.268	3665.104	69.62698	318.0470	16.58860
Probability	0.005907	0.182333	0.000000	0.000000	0.000000	0.000000	0.000250

The null hypothesis in the Jarque-Bera test is that the residuals are normally distributed. Therefore, when the probabilities are low, as is the case in all, the probability of the data being normally distributed is low. The highest value, 0.182333, belongs to *outs* in the second proxy, OC2. This value however has only an 18% probability of being normally distributed. As normal distribution is a prerequisite for OLS, this data value lowers the reliability of the results. As the samples are 49 and 48 observations respectively, the results can likely be attributed to sample size.

[84]Gross, J., *Linear Regression*, Springer-Verlag, Berlin, 2003, p. 304.

Finally, robustness tests were performed on the two regressions. The first test was performed on OC1, where CEO remuneration was removed from the formula. The motivation for this was that we saw individual CEO wealth created outliers on the sample, which skewed the sample.

TABLE 4.9 – ROBUSTNESS TEST ON OC1

Included observations: 49

$OC1 = \beta_1 + \beta_2 * CEOBOARD + \beta_3 * OUTS + \beta_4 * WORKREP + \beta_5 * M2B + \beta_6 * CEOCOMP + \beta_7 * SIZE + \beta_8 * CF$

	Coefficient	Std. Error	t-Statistic	Prob.
β_1	-11205916	12479018	-0.897981	0.3744
β_2	7038671.	4429803.	1.588935	0.1198
β_3	16773672	13706782	1.223750	0.2280
β_4	7702.832	4168866.	0.001848	0.9985
β_5	-949601.1	1390322.	-0.683008	0.4984
β_6	-0.120699	0.155017	-0.778617	0.4407
β_7	-9.09E-13	2.66E-12	-0.342106	0.7340
β_8	-7.54E-05	0.000388	-0.194433	0.8468
R-squared	0.069333			
F-statistic	0.436348			
Prob(F-statistic)	0.873542			

Removing the annual CEO compensation as a factor for overconfidence did improve the probabilities for base overconfidence, CEOBoard and Outs noticeably. However, the coefficient on base overconfidence is negative in this test, which is not in line with this study's interpretation of the intercept. As base overconfidence is the inherent overconfidence in the CEO, it should be positive.

The second robustness test was constructed by modifying the media coverage proxy formula as described in section 3.3. The results of the modified regression is presented in table

TABLE 4.10 – ROBUSTNESS TEST ON OC2

Included observations: 38

$OC2 = \beta_1 + \beta_2 * CEOBOARD + \beta_3 * OUTS + \beta_4 * WORKREP + \beta_5 * M2B + \beta_6 * CEOCOMP + \beta_7 * SIZE + \beta_8 * CF$

	Coefficient	Std. Error	t-Statistic	Prob.
β_1	1.059622	1.051134	1.008074	0.3215
β_2	0.058238	0.248405	0.234449	0.8162
β_3	-0.366539	1.074860	-0.341011	0.7355
β_4	-0.023945	0.811546	-0.029505	0.9767
β_5	0.009354	0.033174	0.281954	0.7799
β_6	-3.33E-08	1.86E-08	-1.785603	0.0843
β_7	2.07E-13	5.54E-13	0.373144	0.7117
β_8	-8.13E-12	2.18E-11	-0.372591	0.7121
R-squared	0.130966			
F-statistic	0.645869			
Prob(F-statistic)	0.714700			

As can be noted the included observations decreased from 48 in the original regression to 38 on the robustness test. This decrease is attributed to the CEOs who has equal number of or higher number of mentions of keywords in column C compared to column A and B. With the modified OC2 formula this results in the value of observed overconfidence becoming 0 or negative, which per definition is not being overconfident. Noticeably is also the probabilities which has overall deteriorated, signifying low robusticity in the proxy formulation.

5. Analysis

In this section we present an analysis of the empirical data presented in section four. The analyses performed are derived from the theoretical framework of published overconfidence articles as well as our own working hypotheses.

5.1 Analysis of Results

As we observed that there is a negative correlation between our two proxies of overconfidence. We have no method of, with accuracy, discerning which of the two is the most apt to measure overconfidence with. When initially looking at the tests performed on the two regressions to discern the explanatory power of the regressions, we see little difference between the two. On the Jarque-Bera tests it was evident that neither of the samples were normally distributed, and on the multicollinearity test we could observe no multicollinearity when using the centered VIF method.

Another method we used was measuring market reaction. Malmendier & Tate found that acquisitions stemming from overconfidence were met with a more negative reaction from the market, measured in share price in the days following the acquisition[85]. We measured these reactions in the samples by measuring the decrease or increase in share price between the day before the announcement of the acquisition, and three days post-acquisition. This data show that the market reaction to acquisitions with overconfidence present is -0.23% in OC1 and in OC2 the market reaction is +0.92%. These numbers were calculated by calculated the share price change between 1 day before announcement, and 3 days post completion of the acquisition for every observation. From this the average change were calculated separately for the two proxies. In both cases there has been a weak reaction to both proxies. However, while OC1 is negatively, OC2 has had a positive reaction. This would indicate that OC1 is better suited for using as a proxy for overconfidence, as Malmendier & Tate found that the market reacted negatively to overconfidence-driven acquisition with an average share price decline of -0.9%[86]. However, there are some reservations to this hypothesis. The first reservation is the fact that there are a number of time gaps in the observations

[85]Malmendier, U & Tate, G., 2007, p. 34.
[86]*Ibid*, p. 34.

between announcement and completion dates, which would enable a share price drift between the two share price observations which can be attributed to other factors apart from the acquisition. The second is that Malmendier & Tate and this study use samples from different countries and stock exchanges, and we have no evidence that the investors would react identically between the two. The final reservations is the difference in time spans of the two samples, where this study's sample ranges from 2000-2007, whereas the sample used by Malmendier & Tate ranges from 1980-1994. This makes time a possible explanation to the different results, as investor behavior, optimism and information asymmetry (which could worsen or dampen market reactions), could differ between the two time frames.

Another method to discern which proxy most accurately captures overconfidence is to compare the usage of the two in the academic community. Here we found that the media coverage proxy has a much wider usage as compared to the insider trading proxy. Media coverage as a proxy to measure overconfidence is used in both Brown & Sarma and Malmendier & Tate as fundamental components of the papers. It is further used in Hayward & Hambrick, and the proxy itself is based on the widely accepted Five Factor Model, which gives it high credibility. Meanwhile, the insider trading proxy has exclusively been used in Doukas & Petmezas. Furthermore, in Doukas & Petmezas' paper the insider trading proxy was not the major method of measuring overconfidence. Rather, this paper used acquisition frequency as a proxy, and later tested the hypothesis of insider trading on their results[87]. While they found the results to be correlated with statistical significance, this is the only occurrence of this proxy, giving it less weight.

Finally, we performed ocular inspections of the results of the two regressions, to find which of the two proxies showed results most in line with our hypotheses. This study's results clearly indicate that the media proxy is a far more accurate measurement for overconfidence. The results in the regression of OC1 showed little to no cohesion or systematic correlation between dependent variable and explanatory variables, and R^2 and Prob(F) also indicated this. This leads us to the conclusion that other motivators, such as signaling and board pressure, are far more important factors to insider trading

[87]Doukas, J. & Petmezas, D., 2007, p. 569-570.

activities. This compared to rational investment behavior which has a valuation bias based on overconfidence, which is the theory that is the basis for the construction of this proxy.

5.1.1 Analysis of OC1

As mentioned earlier, the results in the first regression strongly indicated that OC1 is an inappropriate proxy for measuring overconfidence, at the least in its current form. R^2 was 0.057, indicating low explanatory power. The null hypotheses had a probability between 27 and 97.5% of being true, giving little credibility to the coefficient results. Furthermore, when performing a Jarque-Bera test on the results, we saw that the data was not normally distributed as the probability of the Jarque-Bera null hypothesis being true was 0.017 at the highest. This indicates that the data might not be normally distributed. However, considering that the size of the sample is 49, it is not outside of the conceivable that the data will normalize given a substantially larger sample. In section 5.2.1 we have further outlined the weaknesses of OC1 which explains why net acquisition might be unfit for use as an overconfidence proxy. The regression in the robustness test gave mixed results. While most of the probabilities to reject the null hypothesis improved, coefficient values deteriorated, with for example negative base overconfidence, and O*uts* coefficient being positive. We can therefore draw no conclusions as to the robusticity of the proxy.

An analysis of our findings would be inappropriate, as the low sample size, non-standardized data and low cohesion of results makes it impossible to find whether the non-results are due to the null hypothesis being true, or due to the low sample size giving inconclusive results. It would however be beneficial to research why our overconfidence proxy is unreliable while similar proxies for overconfidence, such as Malmendier & Tate's stock option proxy, are not. We have therefore analyzed the correlation of Malmendier & Tate's study with other research and theories such as monitoring and corporate governance, in order to ascertain the suitability of CEO personal investment patterns as a proxy for overconfidence.

Malmendier & Tate tested the correlation between longholders, the equivalent proxy to our proxy net acquisition, and different variables in their paper in 2007[88].

TABLE 5.1- VARIABLE CORRELATION IN MALMENDIER & TATE STUDY

	Longholder Correlations
Overconfident CEO/longholder	1.00
Size	-0.09
Cash flow	0.10
Net acq/Vested options	0.19
Efficient board	0.04
President & board member	-0.02

Malmendier & Tate found a negative correlation between size and overconfidence. The cash flow variable is positively correlated with overconfidence in Malmendier & Tate's sample.

The efficient board variable shows results of some interest. Malmendier & Tate's findings are inconsistent with monitoring theory, and also inconsistent with our findings in our regression of OC2. A board with a higher degree of outsiders would increase monitoring, which in turn would reduce observed overconfidence. This cannot be observed in Malmendier & Tate's study, indicating that the results may not be as appropriate in measuring overconfidence as previously stated.

Both indicate that there is no correlation between the CEO acting as chairman, or even being present on the board of directors, and overconfidence.

When inspecting the results of longholder correlation to CEO president and chairman multiple titles, there is an observed negative correlation with statistical significance. However, when looking at President & Board Member dual position in Malmendier & Tate's descriptive statistics the results are comparable to other research, including our own. Malmendier & Tate's finds no difference between the overconfidence sample and the full sample in the percentage the CEO is on the board of directors, alternative the percentage the CEO is president. Finally, when comparing to our second proxy, we find

[88]Descriptions for each variable can be found on page 29 in Malmendier, U & Tate, G., 2007.

a coefficient of -0.001, and a probability of 0.984, which strongly indicate that there is no correlation between CEO on the board of directors and overconfidence.

This means that there likely is no correlation between this variable and overconfidence. However, when using the longholder proxy a correlation can be found. Further, this correlation shows a negative relationship, when it ought to be positive. This all indicates a problem in the proxy, and that it might incorrectly describe overconfidence.

The net acquisition/vested options variable is positive and in line with both this study's and Malmendier & Tate's hypotheses. However, at the same time the majority of the variables are either contradicting other hypotheses, or are statistically insignificant, leading us to the conclusion that proxies constructed on the basis of acquisition patterns are inappropriate for observing overconfidence when used on their own.

5.1.3 Analysis of OC2

While the regression results for the media proxy sample were markedly better compared to OC1, the tests performed on the regression put some doubt on the results. The Jaruqe-Bera test indicated that the sample was not normally distributed. However, as noted with OC1, we are of the opinion that the main contributing factor to this is the small sample size. Furthermore, the probabilities in the test were slightly better compared to OC1, with a highest probability of being normally distributed of 18.2%, compared to OC1 1.7%. The robustness tests however showed a low robusticity in the proxy. When modifying the formula to instead have column C as a numerator, the results deteriorated to the point that all our hypotheses would have to be discarded. We can however see that this might be due to putting an unduly large shock on the proxy, as previous research all has used column C as a denominator.

The two variables which proved most statistically significant were *Outs* and *CEOcomp*. In line with our hypothesis, outsiders had a negative impact on overconfidence. Less expected is the fact that the correlation between CEO compensation and overconfidence was found to be negative as well. We explain this with the CEO compensation increasing; a higher percentage of his wealth becomes tied to his employment, which would decrease his wealth diversification. As his risk exposure towards his employment increase, (s)he will strive to take measures to minimize this exposure. One measure would be to make less inherently risky investments, such as acquisitions. This results in

a lowered *exercised* overconfidence. Therefore an increased remuneration effectively acts as a monitoring device for overconfidence. While a high compensation might instill confidence in the CEO, (s)he will also be more careful to keep this salary.

Neither *CEOBoard* nor *Workrep* showed any statistically measureable impact on overconfidence. In fact, our research resulted in statistical significance for the null hypothesis for *CEOBoard*, indicating that the CEO having a director's seat has no effect on overconfidence levels. This is in line with Malmendier & Tate's findings, where they observed no difference in overconfidence levels regardless of whether the CEO was both CEO and chairman of the board[89]. While this does not invalidate the research of Fama & Jensen, it would indicate that separating decision making and monitoring might have other impacts, such as directing company strategy and direction, and curtailing directly fraudulent behavior stemming from moral hazard, rather than affecting CEO overconfidence.

The hypothesis for *Workrep* was that employee representatives would act as an internal monitoring device in addition to the external monitoring from outsider directors. However, could not be proven as no statistical significance could be discerned. This could be explained in a few ways. The first is the possibility that while actively monitoring, the employee representatives does not have the authority or managerial power to influence the CEO. The CEO might not feel that his career can be affected by union displeasure with him, and considers union actions such as striking a very low possibility, and therefore does not modify his behavior for them. Another possibility is that while being union representatives, they still feel pressure from the CEO, and are afraid that raising concerns or objectives might negatively affect their career, and therefore cannot effectively monitor the CEO. In a company where union presence is weak the representative might only be present on the board to follow regulation, and is not expected to provide input to the board of director's work. The final possibility is the fact that the employee representative might simply not have the competence to spot overconfident behavior. An example is not being able to discern whether the CEO pays

[89]Malmendier, U & Tate, G., 2007, p. 27.

a too high premium in an acquisition, or not being able to gauge whether cash flow projections or future synergy benefits are being too optimistic or not.

The study's results give a strong indication that the most effective method of curtailing overconfidence in a CEO is monitoring through outsider directors. However, seeing as Swedish boards of directors are already largely compromised of outsiders, with a mean percentage of outside directors of 85%, increasing outsiders on the board does not seem an available solution to CEO overconfidence to most companies.

5.1.4 Geographical Differences

From our data we have found that 86 out of the 375 observed mergers have had overconfident CEOs. However, if we are to find the approximate percentage of overconfident CEOs in Sweden based on our findings, we have to remove the sample data from OC1 as it is unreliable as well as count each CEO only once. This leaves us with 48 observed overconfident CEOs out of 248, which shows that about 19.4% of all CEOs in Sweden are overconfident. Comparing our results with Malmendier & Tate's research on longholders in the U.S.A. where they found that 188 out of 896 CEOs were longholders, resulting in an overconfidence level of 21%. In their publication with a British sample, Doukas & Petmezas' research on multiple acquisitions found that 27.9% of all acquisitions consisted of multiple acquisitions. Therefore, we can posit that the overall level of overconfidence is lower in Sweden[90, 91]. We believe factor which has had the highest impact on these results are the high level of outsiders on the board of directors in Sweden.

As explained in section 2.4.4, earlier studies have shown that the number of outsiders on the board is higher in Europe and lower in the U.S.A. We theorized in hypothesis 2 that a larger percentage of outsiders on the board would decrease observed overconfidence. As we have found indications of this in our regression, we can assume that the difference between the percentage of overconfident CEOs in Sweden and the U.K. is partly due to the lower percentage of outsiders in England's boards. Although the U.K.

[90]Malmendier, U & Tate, G., 2007, p. 32.
[91]Doukas, J. & Petmezas, D., 2007, p. 540.

is a European country, it still has a widely held share ownership which is consistent with few outsiders on the board[92].

One factor that ought to be mentioned is the difference in time-frame between the studies. Our study looked at acquisitions in the time period of 2000-2007, whereas Malmendier & Tate used data from the period 1980-2004. As the oldest of the datapoints are more than 30 years old, the results may not be representative to the current situation in USA. One example of this is the changing trends in the board composition in the U.S. There is a clear trend of American boards moving towards the European model. This is evident in the 2012 Board Index report by Spencer Stuart. According to the report, the percentage of outsiders has increased, and the CEO/Chairman dual position is being less common, rather being replaced with independent chairmen[93]. This would indicate that monitoring and board vigilance is taking a more prominent role among the board's tasks, which would indicate that overconfidence is on a declining trend in USA.

The percentage of overconfident CEOs in the U.S. sample is very close to the percentage in our sample. While this is counterintuitive to our hypotheses and results, which indicate that there ought to be a larger gap between the two samples, it can be explained by other factors which weren't included in the study. Examples of this are company culture, regulation and other forms of corporate governance, and leader characteristics. That this scenario is likely is evidenced by the R^2 being 25.2%, meaning that a large majority of the external factors having an impact on observed overconfidence are still missing. Furthermore, all three studies use different methods for measurements overconfidence which makes our comparison between geographical overconfidence levels less reliable.

5.2 Weaknesses of the Study

One evident weakness of the regression, which is also mirrored in the results, is the low number of data-points. As our regression used overconfidence as a dependent variable, our sample could only consist of acquisitions where overconfidence was observed. This

[92] Enriques L. & Volpin P., 2007, p. 118.
[93] SpencerStuart, 2012, p. 10.

was only the case in 86 out of 375 mergers and acquisitions, 22.9% out of the full sample, and the process of measuring the proxies was a time-consuming and manual, limiting the sample size. Efforts to counteract this was adding two rounds of additional data, first acquisitions in 2006, and later in 2007, in order to acquire more observations. Unfortunately, the sample still was markedly smaller than was optimal, but time constraints made further gathering impossible. There also was the issue of the financial crisis in 2008-2009 to take into the consideration. The large macro economical shocks during this period would distort the results and it would be unclear whether acquisitions or insider trading would be the result of overconfidence or from the extraordinary market conditions during this period. Conversely, increasing the sample two years previous to our study would prove impractical as well. This is due to Retriever, the main database utilized for annual statements, did not provide statements or statistics previous to the year 2000.

5.2.1 Weaknesses of OC1

The first weakness of overconfidence measured through insider trading is the discrepancy between theory and the real world. This proxy hinges on the fact that the CEO's investment behavior is solely the product of rationality. It disregards many real life factors that could influence how the CEO buys or sells stocks in this company. The first of these is pressure from the board of directors and shareholders to purchase, or at least not sell, stocks in the company, due to the signaling effect. This might also be done to better align the interest of the CEO with the company's welfare as the performance of the company now directly affects the CEOs welfare, much like stock option bonuses. A CEO purchasing stock would send a signal of belief in the company and a rising share price, and the CEO might be instructed to send this signal, perhaps even being funded to do so. Conversely, selling stock as the CEO might send a very negative signal, and the CEO may therefore be under instruction to keep shares even if (s)he personally would be inclined to sell. Another motivation for selling shares might simply be that the CEO needs liquid cash for a purchase, and much of his wealth was locked into shares through option remuneration programs. We believe that these factors are the main reasons for the low probabilities and correlation in the regression using this proxy, as we have no method to discern which transactions were due to overconfidence and which were due to other motivations, such as those mentioned above or others.

Another weakness of this proxy is the assumption that most of the CEO's wealth is largely based on the remuneration from their CEO position. The independent variable is therefore based on the relationship between remuneration and investment behavior, in order to remove impact of CEO salary. However, this makes the variable susceptible from noise from independently wealthy CEO's. An example would be a CEO who also is the founder and majority shareholder, whose wealth far surpasses that of his salary. The trading patterns of such individuals could surpass annual salary by 10 or even 100 times, whereas most CEO's insider trading is just a percentage of their salary. This creates extreme outlier values which likely skews the regression line.

5.2.2 Weaknesses of OC2

One weakness we found in the proxy using media coverage was the bias towards large companies. On average our keywords indicating overconfidence had 2.08 hits per data-point. Meanwhile, the average number of articles per data-point was 91.58 articles. This would mean that on average there was one mention of overconfidence every 44th article. When testing the correlation between number of articles and size of the companies, we found that there was a positive correlation of 0.08 between company market value and amount of articles covering the CEO. As the hits per article are very low, this would mean that smaller companies' CEO would be less likely to be described as confident or optimistic simply due to the number of articles covering him. Another possible bias in article coverage is the fact that popular companies, or companies that are of public interest gets a higher number of articles.

Another weakness with the very low number of average hits is the reliability in the results. The average hits of keywords indicating overconfidence was as mentioned 2.08, and they could only take on integers. This resulted in very low precision in the results, as just one additional mention of optimism or confidence when the current count was 1 would essentially double the overconfidence value of the CEO.

Furthermore, the fact that the proxy is based on certain keywords lowered the flexibility, and possibly the accuracy, of the proxy. There were cases where articles showed indications that the CEO might be overconfident, an example being him portraying his company in a better financial situation than observers or the market thought realistic, or the CEO having more positive or high projections of future earnings

compared to the market. However, in cases where these articles did not mention the keywords, they were not added to the proxy results. These results were intentionally left out in order to not bias results between companies where we read full articles and companies where we solely read the articles with the keywords in them. The only method to add these articles to the proxy would be to manually read the full sample of 4,396 articles to find indications of overconfidence. This was not done for two reasons, with the first being that there simply was not sufficient time or resources to perform this. The second would be the issue of bias in interpretation of the article. Basing the results on what is perceived as overconfidence would bias the results with the Author's own opinions of the CEO's or companies.

6. Conclusion

In this final section we summarize our conclusions drawn from the study. We also present suggestions for further research that we believe would be beneficial to the field of overconfidence.

6.1 Conclusion & Summary

The current study examines CEO overconfidence surrounding mergers and acquisitions in Sweden. The purpose of the study was twofold; to ascertain if overconfidence was a prevalent issue in Sweden, which would suggest geographic location is not a factor in overconfidence, and to ascertain if differences in board composition would affect observed overconfidence.

Three independent variables were chosen, CEO presence on board of directors, outsiders on the board of directors, and employee representatives on the board of directors. Controlling variables such as size and CEO compensation were also added to the regressions. Theory suggested that CEO presence would increase overconfidence, whereas outsiders and employee representatives would act as monitoring tools, and lower the observed overconfidence. The measure for overconfidence was constructed using two proxies, based on two different sets of data; one was based on media coverage, and the other insider trading with stocks.

Our regression showed less unequivocal results as compared to previous research. The results for insider trading showed little to no coherent structure, and did not allow for a further analysis. It was hypothesized that other factors played a larger role in trading behavior rather than overconfidence. Meanwhile, media proxy indicated that, as hypothesized, outsider directors were a very effective means of curtailing overconfidence. The CEO presence on board of directors, and employee representatives' variables did however not give any conclusive evidence of affecting overconfidence. One unanticipated result was the negative correlation between CEO compensation and observed overconfidence, calling for further research in the subject.

By comparing the percentage of overconfident CEO's present in our sample with similar studies, we have found a geographical difference in the level of overconfidence. This difference can be explained by the percentage of outsiders on the board as Swedish

companies have more outsiders on their boards compared to U.S. or U.K. boards. The difference in the level of overconfidence is largest between Sweden and the U.K., while there is little difference between American and Swedish overconfidence levels. However, it is unlikely these differences are due only to differences in outsiders, as there is both uncertainty in our regression results, and the explaining power of our chosen variables can only account for 25.2% of the changes in observed overconfidence.

6.2 Further Research

One of the more interesting findings of this study is the negative correlation between CEO salary and CEO overconfidence. We found with statistical significance that an increase in CEO salary results in a decrease in observed overconfidence. This signifies that there is a connection between overconfidence and compensation. This study used a simple measure of remuneration, in form of total compensation excluding pension costs. However, we did not take into account different types of compensation plans, such as option bonus schemes compared to simple performance bonus. As the connection is now established between the two factors, we believe an interesting field of further study would be to compare the effects of different types of compensation, in order to study if certain types of compensation plans more effectively curtail overconfidence compared to others.

Further study and research in a net acquisition proxy is also of interest. Previous studies on overconfidence support proxies based on the CEOs personal investment behavior in the company. Although Malmendier & Tate's option proxy is widely accepted, we still see correlations that are incompatible with other research and empirical findings, such as monitoring. The same is true for our net acquisition proxy which proved to be insufficient in explaining overconfidence, which suggests that there are variables that are not being taken into consideration, or that the proxy itself is not properly constructed. We suggest that further studies are made on personal conditions for the CEO, such as the CEOs personal wealth, current financial situation or pressure from the board, which would make it possible to discern if the CEO is acquiring company shares due to overconfidence or for other reasons.

Furthermore, we still believe that there are various factors missing in explaining the difference between base overconfidence and observed overconfidence. This study focused mainly on board composition and active monitoring, but we believe that there are more factors affecting overconfidence. One potential example of such a factor is company culture, as there is a possibility that certain company cultures, perhaps cultures showing individualistic tendencies, might foster overconfidence while others dampen it. Another factor is company industry, as the overconfident manager might be more attracted to certain types of ventures.

Interesting insights in CEO overconfidence might be found as well by performing more in depth study of a CEO showing clear signs of overconfidence. A personal thorough interview and analysis would provide the research field with a new data source, as all current research, including this study, has been striving to describe and measure personal traits with data, effectively studying from a distance. Data and insights from the primary source, the individual being studied himself, would likely provide new and interesting insights to how overconfident managers think, rationalize their actions and act.

Finally, as explained there is a need for continuous study in the subject. There are trend changes in corporate governance systems and management styles, such as the American model putting bigger impact on corporate governance. This likely has been even more important in the wake of the global financial crisis of 2008. It would be of interest to perform a follow-up study to previously researched companies, in order to ascertain in what percentage of companies steps have been taken to moderate overconfidence, and which methods has proven most effective.

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8. Appendix

8.1 Exhibit 1 - OC1 Subsample

Ann. D.	Compl. D.	Target	Acquirer	Acquiring CEO	CEO Board	CF (MSEK)	CEO Comp. (MSEK)	OC1	Size (MSEK)	Workrep	Outs	M2B
2-1-2000	4-14-2000	Fastighets AB Balder	Fabege AB	Erik Paulsson	1	648,00	2,73	26,3545	3183,61	0,0000	0,8750	1,6167
12-10-2001	1-25-2002	AU-System Aktiebolag AB	Teleca AB	Nick Stammers	0	270,63	1,35	8,8502	1673,82	0,5000	0,6667	0,5199
10-22-2007	12-11-2007	Academedia AB	Bure Equity AB	Mikael Nachemson	0	1146,30	4,70	5,1917	2660,14	0,0000	1,0000	1,0324
6-15-2001	9-5-2001	Halsokostcentralen AB (HKC)	Wilh Sonesson AB	Greg Dingizian	1	,04	,55	5,0737	99,61	0,0000	0,8889	4,4356
11-8-2005	12-1-2005	Fastighets AB Centralposthuset	Peab AB	Mats Paulsson	1	1192,00	5,45	4,3704	2768,47	0,5000	0,9091	1,2093
8-26-2005	8-26-2005	Building rights on Ulriksdalsfalt together with part of property Jarva 4:11	Peab AB	Mats Paulsson	1	1192,00	5,45	3,9798	2528,68	0,5000	0,9091	1,3240
10-31-2007	10-31-2007	property Apotekarn 22	Fabege AB	Christian Hermelin	1	1818,00	2,16	3,9284	13286,00	0,0000	0,5000	0,8592
11-9-2005	11-24-2005	CAD-Quality i Sverige AB	Addnode AB	Bo strandberg	0	68,45	,71	3,1128	386,50	0,0000	1,0000	1,0288
3-12-2007	3-12-2007	IVM Automotive Holding GmbH & Co, KG	Semcon AB	Henrik Sund	0	314,80	1,10	2,5114	982,49	0,4286	0,7000	0,4104
3-17-2004	5-21-2004	Parere AB	WM-Data Nordic AB	Crister stjernfelt	0	462,60	3,46	1,9038	7690,31	0,5714	1,0000	0,3271
11-9-2006	11-9-2006	Plus4You	Proffice AB	Lars Wahlström	0	70,00	3,45	1,1870	1406,81	0,2857	1,0000	0,2303
9-13-2000	11-1-2000	Arete Ab	Turnit Ab	Peter Enström	1	139,67	3,49	0,7081	3044,24	0,0000	0,8333	0,4328
3-29-2007	4-2-2007	Vitalas International AB	Midelfart Sonesson AB (Midsona)	Lennart Nylander	0	-287,00	1,06	0,6234	3607,14	0,0000	0,8333	0,1383
12-19-2005	12-19-2005	3 properties in Norrahammar and Granna	Kungsleden AB	Jens Engwall	1	3657,59	5,19	0,5717	1223,59	0,0000	0,8333	5,4340
12-5-2007	12-5-2007	Lost Boys NV	LBI International AB	Luke taylor	0	162,00	5,31	0,5045	2158,20	0,0000	1,0000	0,9355
1-9-2007	1-9-2007	Nordic Modular Holding AB	Kungsleden AB	Thomas Erseus	1	2406,30	7,49	0,3909	9991,95	0,0000	0,8750	0,9047

6-1-2007	6-1-2007	E,ON Bredband Sverige AB	Tele2 AB	Lars-Johan Jarnheimer	0	2491,00	14,70	0,3797	51380,33	0,0000	1,0000	0,5226
7-7-2006	7-7-2006	Business Assets	Sandvik AB	Lars Pettersson	1	10883,00	12,05	0,3711	96102,16	0,2222	0,9000	0,2830
1-23-2007	1-23-2007	Leta AB	Eniro AB publ	Tomas Franzén	1	2043,00	7,43	0,3193	284414,40	0,5000	0,6000	0,0143
2-20-2001	2-20-2001	Frontec Research & Technology AB	Sigma AB	Sune Nilsson	1	-,21	1,59	0,2706	2039,74	0,3333	0,6667	0,0997
11-19-2004	2-15-2005	Ainax AB	Scania AB	Leif Östling	1	7992,00	15,33	0,2321	12320,00	0,2857	0,9333	1,7086
4-23-2001	4-23-2001	Datorex Nova AB	Sigma AB	Sune Nilsson	1	-,21	1,59	0,2003	1510,26	0,3333	0,6667	0,1347
10-25-2005	11-7-2005	Technology Nexus AB's business in Borlange	Know IT	Anders Nilsson	0	37,21	2,31	0,1999	530,08	0,0000	0,8333	0,3914
9-7-2005	9-7-2005	Akelius Fastigheter's three properties in Gavle, plus one property in Vasteras	Fast Partner	Sven-Olof Johansson	0	323,00	,96	0,1712	1471,69	0,0000	1,0000	0,8014
2-1-2000	2-1-2000	Hotellus International Ab	Pandox AB	Anders Nissen	0	229,56	1,97	0,1498	1655,85	0,0000	1,0000	1,0112
1-14-2002	1-14-2002	Frantextil AB	New Wave Group AB	Torsten Jansson	1	36,85	3,48	0,1434	275,14	0,0000	0,7500	1,8581
9-25-2006	4-2-2007	Komatsu Zenoah's outdoor power products operation	Husqvarna AB	Bengt Andersson	1	2740,00	9,62	0,1249	20111,85	0,2000	0,9091	0,3674
9-26-2007	9-27-2007	Objectnet AS	Know IT AB	Anders Nilsson	0	82,07	3,83	0,1108	753,99	0,0000	0,8333	0,4419
10-25-2005	1-24-2006	Marconi's telecommunications equipment and international services businesses	Telefon AB LM Ericsson (ericsson)	Carl-Henrik Svanberg	1	33680,00	24,04	0,1056	20724,71	0,1667	0,9231	5,8334
2-5-2007	5-31-2007	Dynapac AB	Atlas Copco AB	Gunnar Brock	1	9269,00	18,04	0,0926	111506,47	0,6667	0,3333	0,1313
5-15-2007	5-15-2007	Commercial property	Castellum AB	Håkan Hellström	0	2006,00	3,50	0,0568	16564,00	0,0000	1,0000	0,6764
4-29-2002	7-1-2002	Besam AB	Assa Abloy AB	Carl-Henric Svanberg	1	1058,50	15,60	0,0513	46837,50	0,6667	0,6667	0,0289
5-15-2002	5-15-2002	Slatta Damm AB	Drott AB	Mats Mared	1	1155,00	3,06	0,0384	1797,18	0,0000	0,7500	3,4398
12-18-2007	12-23-2007	Plenware Group Oy	Cybercom Group Europe AB	Patrik Boman	0	67,03	1,75	0,0349	235,34	0,3333	0,7500	3,0103
2-19-2001	5-3-2001	Atle Ab	Woodrose Invest AB (ratos ab)	Arne Karlsson (Ratos)	1	2589,00	4,58	0,0304	1469,41	0,0000	0,8889	5,4539
3-21-2007	6-8-2007	Spits ASA	A-Com AB	Fredrik Sandelin	0	6451,00	3,73	0,0254	168,31	0,0000	1,0000	1,4318
1-19-2006	1-25-2006	Ingemansson	Angpanneforenin	Jonas	0	165,85	3,97	0,0209	899,36	0,2857	0,7778	1,2137

		Technology AB	gen AB (AF)	Wiström								
9-10-2007	9-10-2007	BBM-Verktyg AB	Investment AB Latour	Jan Svensson	1	1030,00	3,99	0,0208	10873,00	0,0000	0,8750	0,9326
10-29-2007	11-15-2007	TotalTelefoni Svenska Invest AB	Mobyson AB	Bent Brugård	0	-52,76	5,38	0,0197	192,20	0,0000	1,0000	1,1681
9-6-2007	10-19-2007	Seguridad Cono Sur SA	Securitas AB	Alf Göransson	1	1974,00	10,40	0,1400	26579,94	0,1000	0,9091	0,3316
8-29-2005	8-29-2005	Kanoten 7	Klovern AB	Gustav Hermelin	1	380,48	2,24	0,0131	2840,60	0,0000	0,6250	0,7971
6-21-2006	6-21-2006	Combra AB	Angpanneforenin gen AB	Jonas Wiström	0	165,85	3,97	0,0120	1041,79	0,2857	0,7778	1,0477
2-26-2007	4-11-2007	ABBA Linear Tech Co Ltd	SKF AB	Tom Johnstone	1	6543,00	11,61	0,0118	57060,04	0,4000	0,7143	0,3217
2-8-2006	7-31-2006	Trio AB	Teligent AB (SWE)	Tomas Duffy	0	-92,00	2,30	0,0096	477,21	0,0000	1,0000	0,7345
7-4-2007	7-4-2007	Medifact AS	Proffice Care AB	Lars Wahlström	0	106,00	2,97	0,0094	1499,90	0,1667	1,0000	0,3047
10-17-2001	10-17-2001	commercial property in Vasteras and Malmo	Castellum	Lars-Erik Jansson	1	534,00	3,25	0,0081	1128,79	0,0000	0,8333	3,4045
3-27-2003	5-14-2003	Respons AB	Eniro AB	Lars guldstrand	0	648,00	17,96	0,0072	10043,85	0,2500	1,0000	0,2836
5-9-2006	9-6-2006	JC AB	rnb Retail and Brands AB	Mikael Solberg	1	337,91	2,07	0,0030	346,58	0,0000	0,8889	4,5161
5-8-2000	9-30-2000	Folkebolagen Ab	Lindab AB	Carl-Gustaf Sondén	1	373,00	4,24	0,0014	2232,00	0,2857	0,7778	0,5856

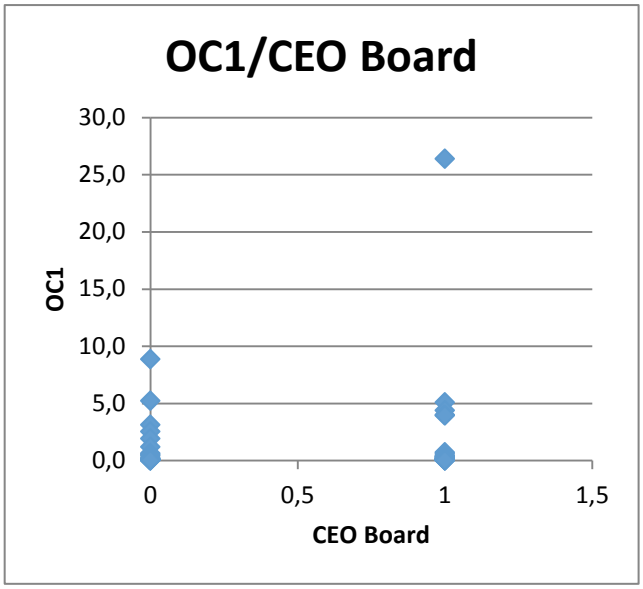
8.2 Exhibit 2 – OC2 Subsample

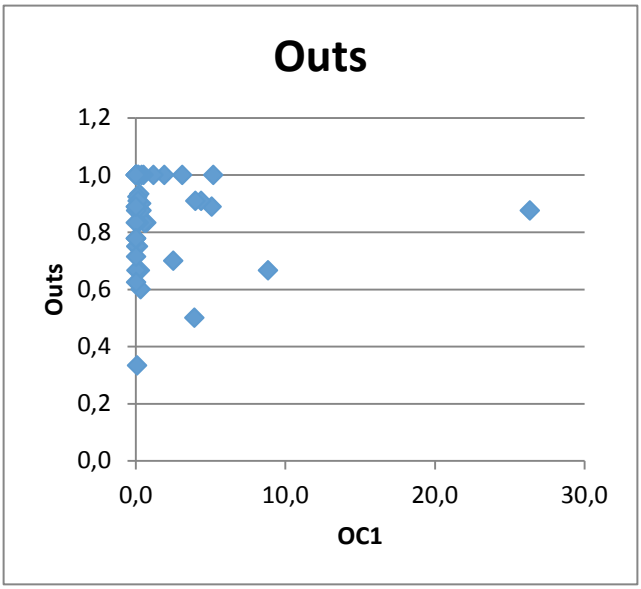
Ann. D.	Comp. D.	Target	Acquirer	Acq. CEO	CEO-Board	CF (MSEK)	CEOComp (MSEK)	OC2	Size	Work-rep	Outs	M2B
8-20-2007	9-1-2007	Bysted A/S	Intellecta AB	Richard Ohlson	1	49,90	1,79	0,3333	251,23	0,0000	0,8571	1,6344
5-16-2006	5-16-2006	NextGenTel Holding ASA	TeliaSonera AB	Anders Igel	0	30486,00	9,59	0,0877	200094,77	0,3000	1,0000	1,5667
6-14-2006	6-14-2006	Hemtex's 24 franchised shops	Hemtex AB	Anders Jansson	0	151,11	2,68	0,1754	1902,38	0,0000	1,0000	4,7796
6-14-2006	6-14-2006	Jotul AS	Ratos AB	Arne Karlsson	1	3328,00	18,30	0,1807	8231,79	0,0000	0,8750	0,6968
5-29-2006	8-1-2006	Valkyries Petroleum Corp	Lundin Petroleum Ab	Ashley Heppenstall	1	1571,17	5,32	0,5797	22293,56	0,0000	0,8571	2,1096
5-7-2001	5-7-2001	Ericsson Saab Avionics AB	Saab AB	Bengt Halse	1	2307,00	7,67	0,2151	9261,99	0,1667	0,8333	1,3867
1-26-2007	3-30-2007	Moelnlycke Health Care AB	Investor AB	Börje Ekholm	1	-367,00	16,18	0,1067	130036,17	0,0000	0,7000	0,8378
4-29-2002	7-1-2002	Besam AB	Assa Abloy AB	Carl-Henric Svanberg	1	1058,50	15,60	0,4301	47479,68	0,4444	0,6667	3,8348
10-25-2005	1-24-2006	Marconi's telecommunications equipment and international services businesses	Telefon AB LM Ericsson (ericsson)	Carl-Henrik Svanberg	1	33680,00	24,04	0,2913	2072470,50	0,1538	0,9231	17,1427
3-17-2004	5-21-2004	Parere AB	WM-Data Nordic AB	Crister stjernfelt	0	462,60	3,46	0,1124	7690,31	0,5714	1,0000	3,0574
6-26-2006	8-25-2006	Beacon Holdings Corp	Atlas Copco North America Inc	Gunnar Brock	1	17010,00	13,80	0,0820	45380,97	0,2000	0,9000	1,3875
12-21-2001	12-21-2001	Real estate property in Gothenburg	Wallenstam AB	Hans Wallenstam	1	96,90	2,68	0,3571	85,75	0,0000	0,7143	0,1365
1-9-2007	1-9-2007	Playahead AB	Modern Times Group MTG AB	Hans-Holger Albrecht	0	1354,00	27,58	0,1449	27389,66	0,0000	0,8750	4,6621
5-15-2007	5-15-2007	Commercial property	Castellum AB	Håkan Hellström	0	1487,52	3,50	0,4762	17372,68	0,0000	1,0000	11,6790
8-14-2003	10-9-2003	Siemens LSS (Life Support Systems)	Getinge Industrier AB (getinge ab)	Johan Malmquist	1	1400,50	7,61	0,6897	11052,01	0,3636	0,5455	3,1305
8-11-2006	8-31-2006	Property in Kungsangen	JM AB	Johan Skoglund	1	1587,00	5,29	0,3448	9877,55	0,2222	0,8889	2,7514

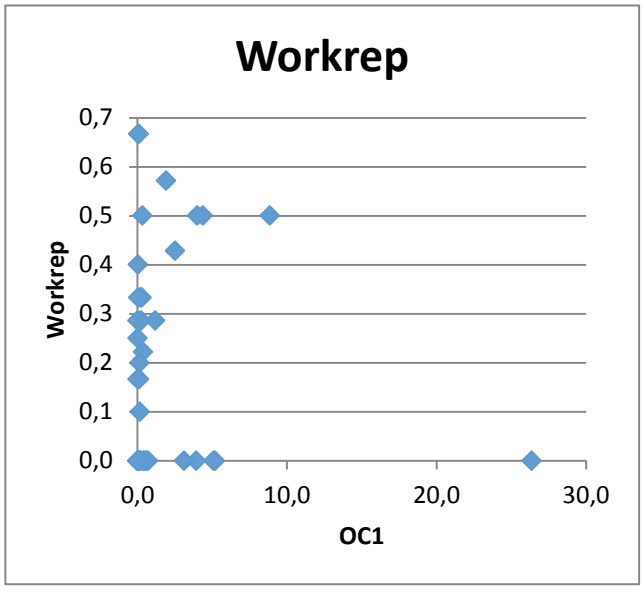
6-9-2006	6-9-2006	Tribotec AB	Indutrade AB	Johnny Alvarsson	1	378,00	4,48	0,2273	3640,00	0,0000	0,8750	4,0807
1-19-2006	1-25-2006	Ingemansson Technology AB	Angpanneforeningen AB (AF)	Jonas Wiström	0	165,85	3,97	0,3774	899,36	0,2222	0,7778	0,8239
8-27-2007	8-27-2007	Guardian Armored Security Inc	Loomis AB	Lars Blecko	1	-862,30	12,38	0,1754	N/A	0,0000	1,0000	N/A
11-20-2001	12-17-2001	Scandinavia Online AB	Eniro AB	Lars Guldstrand	1	538,00	4,90	0,4762	13565,93	0,0000	0,8750	2,7257
7-7-2006	7-7-2006	Business Assets	Sandvik AB	Lars Pettersson	1	10883,00	12,05	0,0685	96102,16	0,2000	0,9000	3,5334
9-23-2005	3-6-2006	Tranter PHE Inc	Alfa Laval AB	Lars renström	1	2326,40	6,67	0,2222	3840,25	0,3333	0,5833	0,5622
6-15-2007	6-15-2007	MobilEyes AB	HiQ International AB	Lars Stugemo	1	139,40	6,50	0,1923	1633,86	0,1250	0,7500	3,7869
11-9-2006	11-9-2006	Plus4You	Proffice AB	Lars Wahlström	0	70,00	3,45	0,2703	1406,81	0,2857	1,0000	4,3420
3-20-2000	6-14-2000	Diligentia Ab	Skandia Liv AB (scandia,se)	Lars-Eric Petersson	1	3283,00	6,00	0,0746	219038,10	0,0000	0,9000	10,5566
6-30-2006	8-1-2006	E,ON Bredband Sverige AB	Tele2 AB	Lars-Johan Jarnheimer	1	67,00	14,40	0,1504	32003,25	0,0000	0,8889	1,0989
3-17-2003	8-12-2003	Kommersiella Fordon AB (KFAB)	Volvo AB	Leif Johansson	1	8702,00	26,55	0,0569	11567,85	0,3333	0,9333	0,1358
11-19-2004	2-15-2005	Ainax AB	Scania AB	Leif Östling	1	7992,00	15,33	0,1897	12320,00	2,6667	0,9333	0,5853
8-26-2005	8-26-2005	Building rights on Ulriksdalsfalt together with part of property Jarva 4:11	Peab AB	Mats Paulsson	1	1192,00	5,45	0,2857	2528,68	0,4545	0,9091	0,7553
4-26-2004	8-27-2004	Custos AB	Investment AB Oresund	Mats Qviberg	1	636,67	1,59	0,1775	2007,04	0,0000	0,8000	0,5168
2-8-2006	2-8-2006	TH Kristiansen AS	PartnerTech AB	Mikael Jonsson	1	174,15	6,26	0,7692	1437,48	0,1250	0,8750	2,4006
10-21-2005	11-17-2005	Skandinaviskt Herrmode AB	rnb Retail and Brands AB	Mikael solberg	1	59,54	1,46	0,1389	207,05	0,1250	0,8750	0,8150
10-8-2007	11-28-2007	NovAtel Inc	Hexagon AB	Ola Rollén	1	2614,00	13,11	0,0833	28418,98	0,0000	0,8000	2,8289
1-31-2007	1-31-2007	Sommer Corporate Media GmbH & Co, KG	Elanders Kommunikation AB	Patrick Holm	1	267,27	4,10	0,4762	1293,05	0,1000	0,8000	1,4956
6-20-2005	10-25-2005	HQ Fonder AB	Hagstromer & Qviberg	Patrik Enblad	1	103,00	1,35	0,5882	92,93	0,0000	0,8750	0,1062

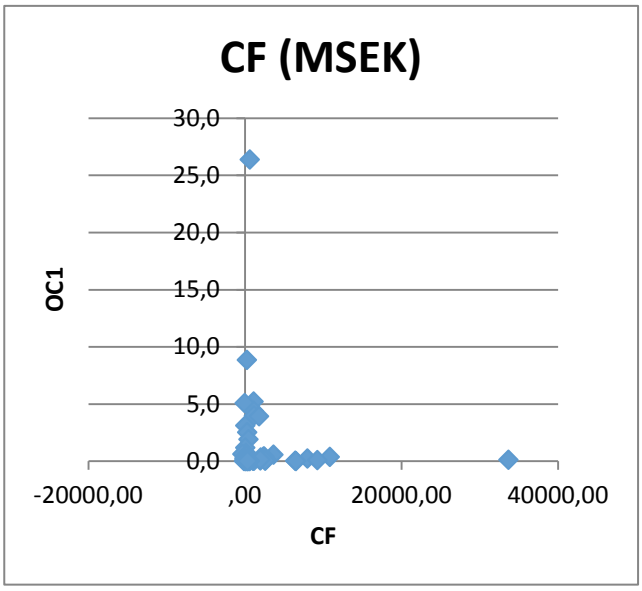
9-7-2007	10-10-2007	Marianne Morris AS	Wedins Skor & Accessoarer AB	Per thelin	0	5,00	3,65	0,2439	N/A	0,2857	0,7143	N/A
2-24-2006	2-24-2006	Norrportens real estate portfolio	Vasakronan AB	Per-Håkan Westin	0	3834,00	1,17	0,6250	N/A	0,2857	0,7143	N/A
11-22-2005	11-22-2005	The Sandbacken property	Ap Fastigheter	Per-Håkan Westin	1	3118,00	2,90	0,5882	N/A	0,0000	0,8571	N/A
2-17-2006	2-27-2006	Combursa	Cardo AB	Peter aru	1	621,00	4,98	0,3226	6870,00	0,2727	0,9091	2,3007
11-2-2006	11-1-2006	Reflex Software Ltd	Protect Data AB	Peter Larsson	1	114,04	1,25	0,4348	3788,95	0,0000	0,8000	12,8257
12-6-2001	12-6-2001	11 Airport Related Properties	NORDISK RENTING	Reinhold Geijer	0	511,42	4,67	0,2128	N/A	0,0000	1,0000	N/A
4-12-2000	6-15-2000	Provobis Hotel & Restauranger Ab	Scandic Hotels AB	Roland Nilsson	1	854,50	3,90	0,3571	6207,25	0,1250	0,7500	3,2855
12-22-2004	4-1-2005	Turnit Ab	Nocom AB	Stefan Skarin	1	30,29	1,19	0,4348	712,69	0,0000	0,8000	11,5032
5-17-2006	5-17-2006	Kemira's paint factory in Stockholm	Skanska AB	Stuart Graham	1	4802,00	16,62	0,3571	50554,84	0,2500	0,7500	2,6144
12-7-2001	12-7-2001	NetAssist International AB	Dimension AB (proact IT)	Sven Uthorn	0	-7,59	1,77	0,4167	693,70	0,0000	1,0000	5,9201
9-7-2005	9-7-2005	Akelius Fastigheter's three properties in Gavle, plus one property in Vasteras	Fast Partner	Sven-Olof Johansson	0	323,00	,96	0,2041	1471,69	0,0000	1,0000	1,2478
4-6-2006	4-6-2006	Macrotech Polyseal Inc	SKF AB (skf inc)	Tom Johnstone	1	6266,00	9,66	0,6667	52369,93	0,0000	0,8000	2,6710
2-8-2006	7-31-2006	Trio AB	Teligent AB (SWE)	Tomas Duffy	0	-92,00	2,30	0,5000	477,21	0,0000	1,0000	1,3615

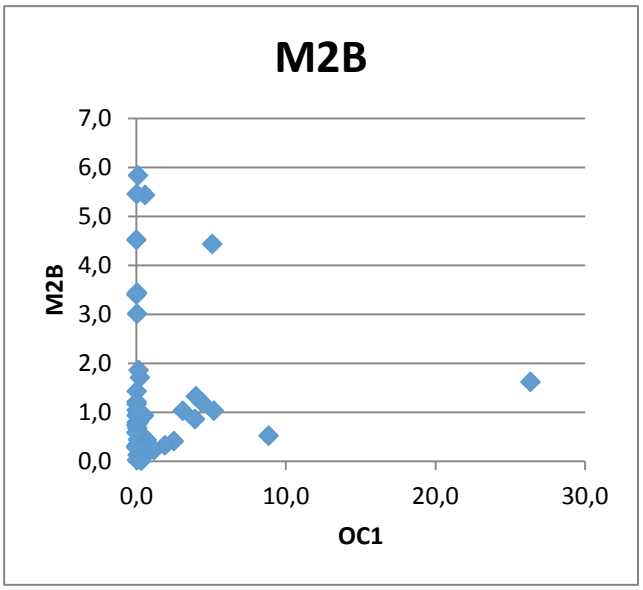
8.3 Exhibit 3 – Graphs OC1







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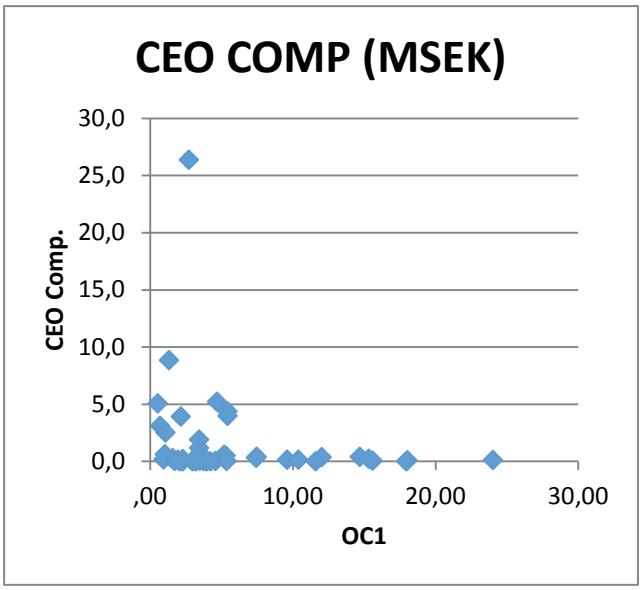
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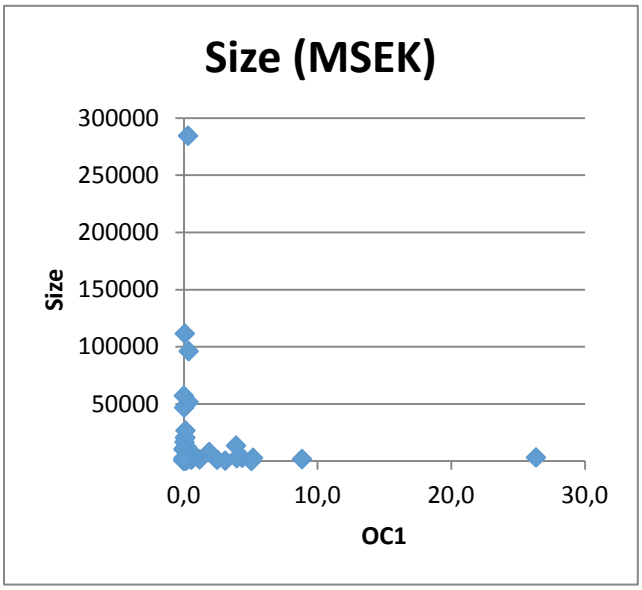
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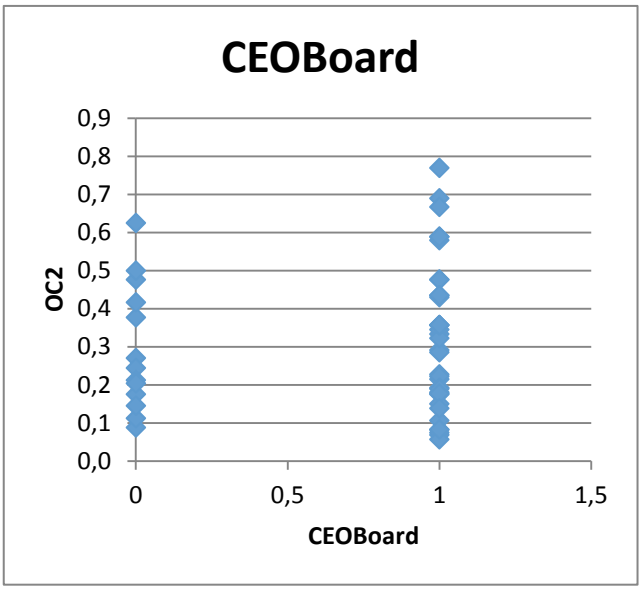
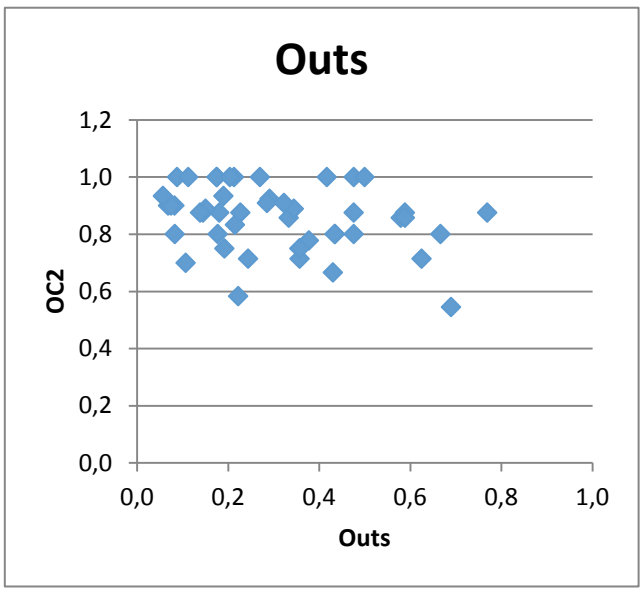
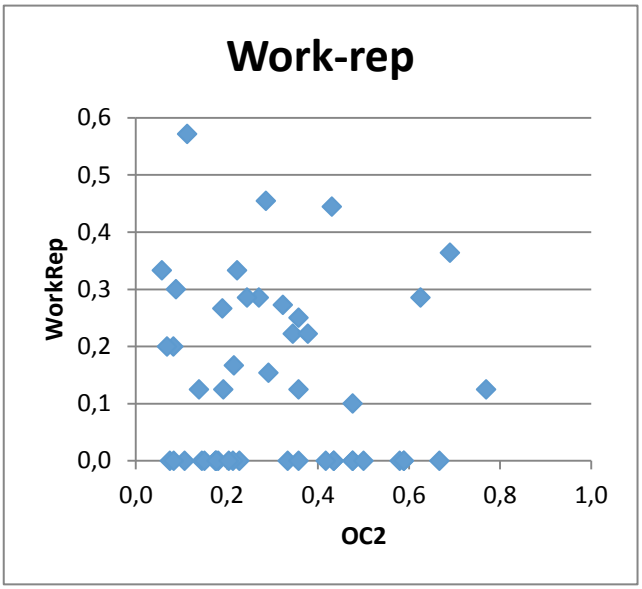
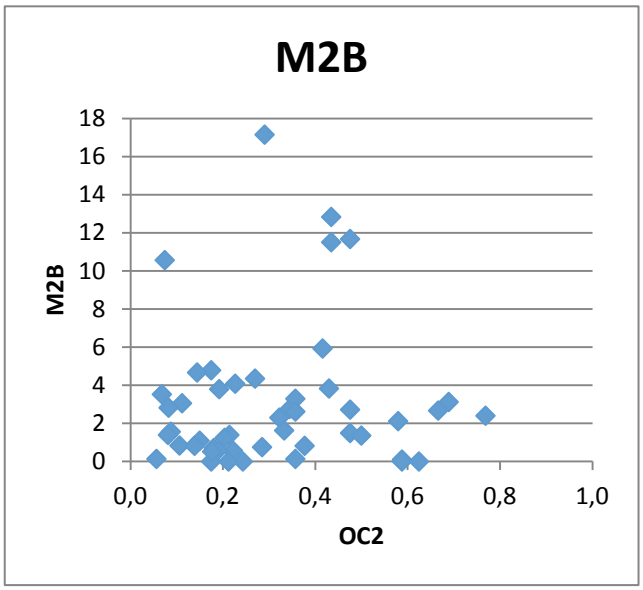
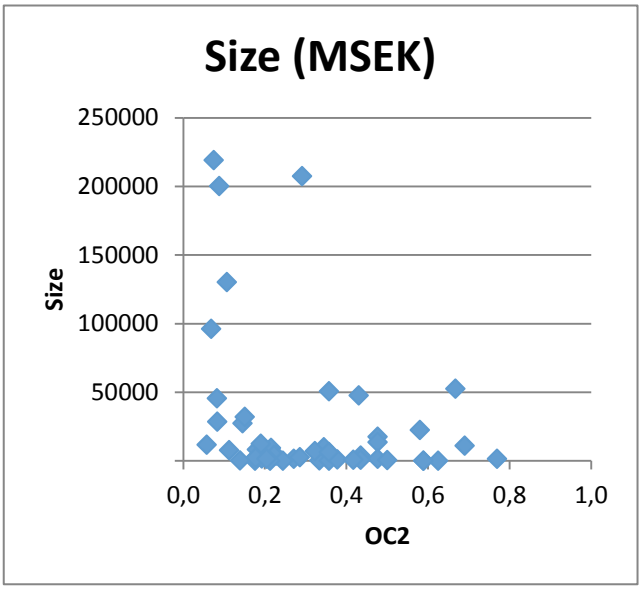
8.4 Exhibit 4 – Graphs OC2







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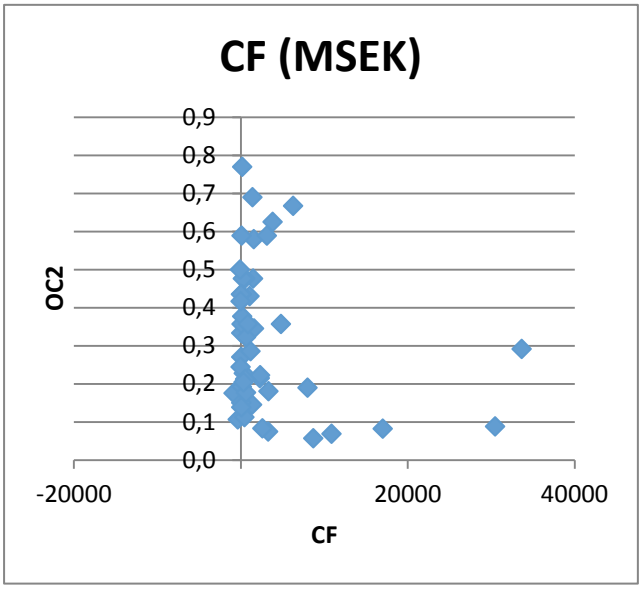
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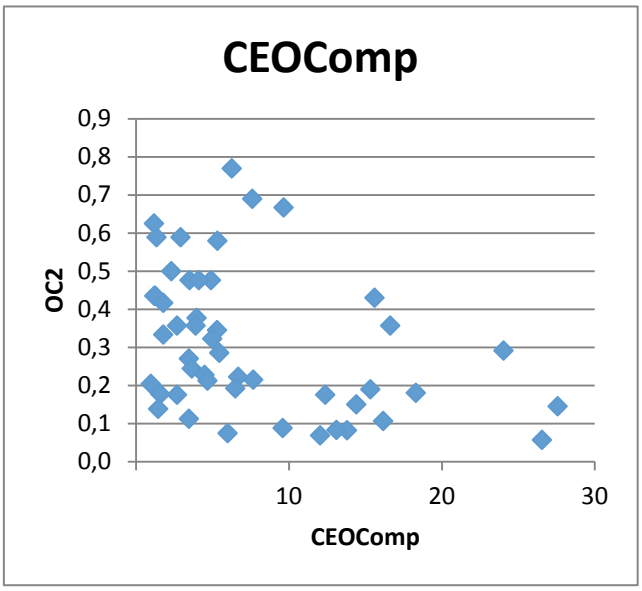
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Var femte VD låter sig styras av hybris.

Bilden av den Svenska riskaverse VD:n till trots har VD-hybris påvisats som en faktor i en femtedel av svenska företagsförvärv 2000-2007. Och en av de effektivaste metoderna att kontrolera chefens övermod – ge honom högre lön.

Mellan åren 1980 och 2001 förstördes cirka 226 miljarder USD i aktieägarvärde genom företagsuppköp och mergers – bara i USA. Detta till trots är uppköp en vanligt förekommande strategi där företagsledare söker en snabbare tillväxt eller värdeskapande genom synergier. En förklaring till detta fenomen är hybris. Studier har visat att hybris hos VD:n är en bakomliggande faktor i upp till 30 % av företagsförvärv. Hybris tar form genom att VD:n tror på en så kallad ”bättre-än-medel-effekt”, där han har en överdriven tilltro till sin egen förmåga att skapa värde, öka kassaflöden och skapa synergier. Han ser därigenom fler uppköpsmöjligheter, och är beredd att betala högre premier på aktiepris. Marknaden i sin tur delar inte nödvändigtvis VD:ns avkastningsförväntningar, och en bevisat negativ aktiepriseffekt har blivit påvisad när uppköpet drivs av hybris. Malmendier & Tate visade i en artikel från 2007 att marknadens negativa reaktion är dubbelt så hög i den här typen av uppköp.

Då hybris är ett påvisat fenomen som kan ha starkt negativa effekter för ett företag, blir det av vikt att kontrollera och minska den. I vår studie har vi undersökt VD-hybris i 375 Svenska företagsförvärv. Vi hade två syften med detta; det första var att undersöka dess förekomst bland Svenska verkställande direktörer. Detta då tidigare studier främst undersökt direktörer i USA och England, och möjligheten finns att hybris är en effekt av specifikt geografiska faktorer. Det andra syftet var att kontrollera vilka externa faktorer som kunde påverka VD:ns övermod. Målet var att hitta metoder för ett företag att kontrollera direktörers hybris, och säkerställa att hans handlingar är i företagets och dess intressenters intresse.

Vi valde att främst fokusera på styrelsesammansättning. VD:n svarar till styrelsen, och det är de som har i uppdrag att övervaka och kontrollera hans agerande och investeringar. Vi hade därför anledning att tro att styrelsens sammansättning är ett viktigt instrument att kontrollera hybris. Vi valde att fokusera på tre faktorer i styrelsen. (1) Huruvida VD:n även sitter i styrelsen. (2) Andelen styrelsemedlemmar som kan klassificeras som outsiders. Med outsiders menar vi styrelsemedlemmar som ej är anställda på företaget i fråga, utan har en oberoendeställning. (3) Andelen fackmedlemmar eller arbetstagarrepresentanter på styrelsen.

Hybris uppmättes genom hur VD:n avbildas i tidsskrifter genom egna uttalanden eller journalisternas åsikt, och en förekomst av hybris kunde uppvisas i 19.4% av undersökta verkställande direktörer. I den efterföljande analysen kunde ett starkt negativt samband mellan hybris och outsiders påvisas. Det innebär att ju högre andel outsiders på styrelsen desto lägre övermod hos VD:n, och det förklaras med att outsiders har andra incitament än en insider, och värdesätter sitt anseende, medan en insider kan känna sig pressad att vara VD:n till lags. Däremot kunde inga effekter påvisas av VD:ns närvaro på styrelsen, och även fackmedlemsnärvaro visade sig vara ett ineffektivt medel att motverka hybris.

Även ett antal ytterligare variablers effekt på hybris testades, och ett överraskande resultat var att det finns ett starkt samband mellan hybris och VD:ns ersättning. Ett negativt samband. Analysen visade att ju högre ersättning en VD har, desto mindre hybris kunde påvisas. Vi förklarar detta med att när VD:ns ersättning ökar, blir hans förmögenhet mindre diversifierad –

hans beroendeställning till företaget ökar. På grund av detta blir han mer försiktig i sina bedömningar, till exempel i potentiella synergier och risker.

Den Amerikanska VD:n är stereotypiskt ansedd självsäker och riskhungrig – och mycket riktigt är VD-hybris vanligare förekommande i USA. Men det är Britterna som har visat sig vara de mest självsäkra, med en uppmätt hybris i 29.7% av företagsförvärv. De låga siffrorna i Sverige kan förklaras med att Sverige har en av världens högsta andelar outsiders på styrelsen – vi uppmätte ett genomsnitt på 84% outsiders. Trots att det är den effektivaste metoden att motverka hybris, blir det dock problematiskt att öka andelen outsiders på den svenska styrelsen då den redan är hög. Därmed kan en löneökning vid tillfällen när chefen ter sig för självsäker vara den optimala lösningen.