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MASTER'S THESIS

The Biology of M&A

CEO Personality Psychology in Corporate Takeovers

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Abstract

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Purpose: The purpose of this paper is to investigate and explore how personality traits of CEO's affect the strategic decision of acquiring another company and whether the performance of the acquisition is affected by the examined traits.

Methodology: The study follows a quantitative approach with a hypothetical-deductive method. The data is primarily retrieved from transcribed earnings calls and a statistical regression analysis is used for the event study where stated hypotheses are tested.

Theoretical perspectives: The theoretical perspective is based on theory and previous research related to M&A value creation, traditional corporate finance as well as theories incorporating behavioral theory and theory from psychology.

Empirical foundation: The sample used in the study consists of 99 public acquisitions in the US market, announced between April 2010 and February 2020. Data is obtained from Zephyr, Yahoo Finance and Seeking Alpha.

Conclusions: The personality trait extraversion show a significant negative relationship on M&A-intensity while neuroticism show a significant positive relationship. The event study provided a significant result that the acquiring firm had a negative abnormal return of -1.2% on one month period and -2.0% on a two month period. As for the personality traits influence on performance no significant results were yielded, there was indications that neuroticism had a positive effect on performance, but as mentioned, not significant.

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List of Abbreviations

M&A	M ergers and A quisitions
FFM	F ive F actor M odel
OLCPT	O pen L anguage C hief executive P ersonality T ool
CAR	C ummulative A bnormal R eturn
BHAR	B uy and H old A bnormal R eturn
S&P 500	S tandard & P oor's 500
IPO	I nitial and P ublic and O ffering
PE	P ivate and E quity
VC	V enture and C apital

Chapter 1

Introduction

In the introduction, a brief background is provided concerning the topic of this study. The background culminates in a problem discussion, which leads to the overall purpose of the study, definitions that have been made and the target group for the study.

1.1 Background

Mergers and acquisitions (M&A) is an important corporate strategy for many corporations in order to drive growth. Whether the CEO recognize a great need to improve the company's earnings or if there is a desire to accelerate the company's growth, the idea of acquiring another company can be particularly attractive. The value of M&A transactions worldwide amounted to \$3.7 trillion in 2019, demonstrating the great interest that exists for market consolidation in an increasingly globalized world (Statista, 2020). Despite this great interest, there is strong evidence of how most of the completed mergers and acquisitions destroy shareholder value. Christensen, Alton, Rising, and Waldeck (2011) find that 70 to 90 percent of M&A transactions destroy value. In a similar fashion, Lewis and McKone (2016) provide evidence for how more than 60% of M&A destroy shareholder value. And yet, most CEOs of major corporations use M&A as part of their growth strategy.

M&A is a central part within the discipline of Corporate Finance (Berk and DeMarzo, 2017). Corporate finance is in turn the part of finance which concerns decisions regarding capital structure, sources of funding and investments in a setting where managers and investors interact with each other (Bolton and Scharfstein, 1998). "Traditional" corporate finance makes broad assumptions about completely rational attitudes and preferences in decision making for both managers and investors (Baker and Wurgler, 2013). Psychologists have for a long time criticized economists for the fact that individuals not always make their decisions based on rational assumptions when there is uncertainty involved in the decision making (Katona, 1951; Siegel and Goldstein, 1959; Tversky, 1969; Tversky and Kahneman, 1981; Amos and Daniel, 1986). Economists have traditionally disregarded this type of arguing and have instead countered with arguments relating to how individual irrationalities provide limited predictable information when considering market behavior (Friedman, 1962; Herbert A., 1986).

Just a few decades back, some researchers in the field of corporate finance have accepted the criticism and realized that in order to provide a more comprehensive explanation of "corporate finance"-related decision making, greater consideration needs to be taken to irrational behavior by individuals in certain situations (Roll, 1986; Rabin and Thaler, 2001). This in turn has resulted in the branch of corporate finance that has come to be called behavioral corporate finance. Research in behavioral corporate finance replaces traditional rationality assumptions with behavior-based empirical evidence from research in mainly psychology and sociology (Shefrin, 2007).

Behavioral corporate finance can, in turn, be divided into two additional branches. The first addresses the issue of investors acting less than completely rationally and examines the consequences this may have (Baker and Wurgler, 2013). The second branch (which is the focus of this paper) deals with less than fully rational behavior of managers and how this affects their decision making (Baker and Wurgler, 2013). It examines the consequences of non-rational preferences and judgmental biases on managerial decision making (Eckbo et al., 2008). One area that has been particularly exposed to scrutiny within the second branch of behavioral corporate finance managers role in corporate acquisitions. According to Roll (1986), takeovers reflect individual decision making, mainly by CEOs. Roll has also played an important role in the area of behavioral corporate finance and has, among other things, proposed the "Hubris Hypothesis", which has had a major impact in the field (Roll, 1986). The hubris hypothesis addresses how hubris (or overconfidence) among CEOs may explain the observed destruction of share value for acquirers and why CEOs engage in acquisitions that they rationally should not consider.

In parallel to the emergence of behavioral corporate finance, personality traits have been receiving close review in recent decades in the field of psychology (Robins, Fraley, and Krueger, 2007). Where, among other things, the Five-Factor Model (FFM) is often used to assess individuals personality traits, using the personality dimensions of "Extraversion", "Neuroticism", "Agreeableness", "Openness to Experience" and "Conscientiousness" (McCrae and John, 1992). Many studies support the model's reliability and validity when assessing personality. Sir Francis Galton, known for his groundbreaking research of human intelligence, was the one who developed the lexical method that would form the basis of parts of modern personality research (Galton, 1884). Galton examined the words used to describe a specific type of character, this approach has later been developed into a hypothesis, called "the lexical hypothesis", which is well known in psychology. Based on the lexical hypothesis it is possible to assess an individuals language use in order to examine the most significant dimensions of personality. Goldberg (1993) used the lexical hypothesis in conjunction with the Five-Factor Model to identify personality traits in people, based on the assumption that the personality traits with most relevance to people eventually become a part of

their language.

By moving the point of focus closer to today, we can observe how human irrational behavior have received even more attention in economic studies in the last decade. A demonstration of this is the award of "The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel" to Richard Thaler, "for his contributions to behavioural economics", which is something that to some extent has helped with legitimizing this topic even more (Nobelprize, 2017). The research on behavioral economics combines the traditional economic theories with a human perspective incorporating psychological and social theories (Zeiler and Teitelbaum, 2018). This legitimization of behavior-based research in economics as well as the growing interest for personality traits in psychology has spilled over into behavioral corporate finance. Thanks to the development of technology as well as better access to data major advances have been made in the area of assessing of personality by using quantitative methods in the last decade. This, in turn, has contributed to an increasing amount on quantitative studies based on machine learning algorithms being used for personality assessment through analysis of executives linguistic attributes.

Recent studies have tried to identify personality traits among executives by analyzing the linguistic behavior of them (Gow et al., 2016; Wang and Chen, 2019; Kasula and Vijayalata, 2016; Harrison et al., 2019). A personality trait among executives that have been studied frequently is the trait of *narcissism*. A considerable amount of real life examples in which CEO's show narcissistic behavior have been demonstrated, see for example Larry Ellison (former CEO of Oracle) and Pehr G. Gyllenhammar (former CEO of Volvo) (Maccoby, 2004). Narcissistic individuals are characterized by great confidence and an exaggerated positive self-judgment, they have an intense need for power and usually strive for positions high up in hierarchy (Campbell, Goodie, and Foster, 2004).

The trait of narcissism has been identified using different methods such as studying the use of first person pronouns in conference calls (linguistic analysis), the signature in annual reports or self portrayal in social media (Chatterjee and Hambrick, 2007; Aktas et al., 2010; Ferris, Jayaraman, and Sabherwal, 2011; Capalbo et al., 2017). The study by Aktas et al. (2010) found a positive relationship between the personality trait of narcissism of the acquiring CEO and the likelihood of engaging in corporate takeovers as well as a shorter negotiation processes. Another example of how personality affect decisions is the study by Bajo, Jankensgård, and Marinelli (2019) which show how narcissistic CEOs use selective hedging more extensively as it provides the manager with a continuous supply of attention.

The personality traits of Machiavellianism, narcissism and psychopathy are often referred to as the "dark triad of personality". Another empirically supported model

that addresses more "positive" general personality traits is the above mentioned Five-Factor Model. FFM has been used to study the personality traits impact in various settings, ranging from education and job satisfaction to finance and management (O'Connor and Paunonen, 2007; Judge et al., 2002; Mayfield, Perdue, and Wooten, 2008; Dalton and Wilson, 2000). Therefore, this comprehensive model of personality may also be useful in assessing the relationship between personality and corporate acquisitions. So far, however, the FFM has been less extensively used in the area of corporate finance compared to the traits included in the Dark Triad where Narcissism has been the personality trait attracting the greatest amount of interest.

A study performed by Gow, Kaplan, Larcker, and Zakolyukina (2016) on CEO personalities and firm policies used linguistic features to classify CEOs according to FFM and found that the entailed personalities are good at predicting behavior of how companies make decisions relating to financing, investments and operating performance. Their conclusions contributed to the authors of this study to consider using FFM to analyze the personality traits among CEOs and relating it to the performance of M&A-activity.

1.2 Problem Statement

Kaplan, Klebanov, and Sorensen (2012) find that CEO's general ability and implementation skills influence firms subsequent performance. Another study conducted by Grinstein and Hribar (2004) find that CEO's with more power also tend to engage in larger deals relative to the size of their own firms, and the market responds more negatively to their acquisition announcements. Many company CEOs also see M&A as an important factor for company growth (Malmendier and Tate, 2008). This combined with the fact that M&A is an area where the CEOs have a great influence in decision-making makes it particularly interesting to examine the underlying factors which causes CEOs to engage in potentially value destroying M&A-activities.

According to Heckman, Duckworth, Kautz, and Almlund (2011) the personality traits of an individual have major impact on the individual's decision making. However, there is a very limited amount of research dealing with how personality traits of corporate executives affect their decision making in terms of corporate acquisitions. This gap in literature is something that has puzzled many researchers, including Gow et al. (2016). Given the extensive literature available in personality psychology and the fact that personality has proven to be a useful predictor for the outcome in various settings it is clear that there is a gap which needs to be filled.

Given that there is a relatively limited amount of research dealing with personalities of CEO's, there is an even more limited amount of research dealing with the personality traits of the FFM in corporate decision making. Herrmann and Nadkarni

(2014) used the Five-Factor Model to study the personality traits of CEO's engaging in tasks related to managing strategic change. They find how Extraversion and Openness only influenced the initiation of strategic change programs. In addition, they find how neuroticism and agreeableness influenced both initiation as well as performance effects of implementation of strategic change. Conscientiousness was found to have opposing effects on initiation and effective implementation. Harrison, Thurgood, Boivie and Pfarrer (2019) developed and validated a tool to measure the big five personality traits among CEO's. In a similar way to Herrmann and Nadkarni (2014), they find that the five personality traits affect strategic change. Their findings provide evidence for how CEO personality traits have a significant impact on strategic change, but the nature of this impact varies based on the company's recent performance.

Gow, Kaplan, Larcker, and Zakolyukina (2016) categorized CEOs using linguistic features extracted from conferences calls with regard to the personality traits included in the Five-Factor Model. Based on this categorization, they examine how these traits affect corporate policies and influence the company's performance. They provide evidence for how CEO'S personality traits are related to their firms' decisions in terms of decisions related to strategy, investments and also overall firm performance. Results from their working paper suggest that firms with introverted CEOs perform better, and disagreeable and neurotic CEOs tend to have lower levels of net leverage. According to the same study, openness seems to be positively related to R&D intensity and negatively with net leverage. Conscientiousness is negatively associated with growth (Gow, Kaplan, 2016). They also find a robust negative relationship between extraversion and return on assets. They also state that more research is needed in this area in order to understand the relationship between the personalities of CEO's and provide better explanations for their implications in organizational settings.

As previously mentioned, a very limited amount of research is available which considers the character traits included in the Five-Factor Model in connection with M&A. There is also a misrepresentation of the examined personality traits included in FFM, where the available research mainly deals with extraversion. Malhotra, Reus, Zhu, and Roelofsen (2018) examines extraversion among CEO's by applying a linguistic model to unscripted texts from 2,381 CEOs. Their results show how CEO extraversion influence firms decisions related to M&A and find that extraverted CEOs are more likely to initiate acquisitions and typically conduct larger acquisitions compared to introverted CEO's. Gay, Ke, Qiu, and Qu (2019) examines all five personality traits included in FFM for CEO's in both US and Chinese companies and find that openness to experience is positively associated with the likelihood of engaging in M&A and the effect of openness to experience is stronger for diversifying M&A than for non-diversifying M&As.

Given that CEO's has great influence when it comes to acquisition-related issues

in companies and the personality traits of an individual have major impact in their own decision making, it is considered to be of interest to investigate how personality traits of CEO's impact both decisions as well as results in connection to corporate acquisitions. It is also considered to be of interest to investigate the extent to which personality traits can explain the irrational aspects for why CEO's engages in acquisitions.

1.3 Purpose

The purpose of this thesis is to analyze and explore how personal traits among CEO's affect the strategic decision to acquire another company and if the performance of M&A activity is affected by the personality traits of the CEO of the acquiring company.

1.4 Research questions

- **RQ1a:** Does the personality traits of CEOs affect the size of M&A-activity (M&A-intensity)?
- **RQ1b:** Which personality traits of CEOs has the most influence over the size of M&A-activity (M&A-intensity)?
- **RQ2a:** Does the personality traits of CEOs affect the M&A-performance?
- **RQ2b:** Which personality trait of CEOs has the most influence on the M&A-performance?

1.5 Contribution to research area

Apart from the study by Gay et al. (2019), there is, to the best of the authors' knowledge, currently no research in place where all personality traits included in the Five-Factor Model are taken into account for CEO's involved in corporate acquisitions at once.

In those cases where CEO's personality traits have been analyzed and related to the area of corporate acquisitions, most research has focused on traits that are not included in this model such as Narcissism. In the few cases where this model has been used, only a few selected personality traits included in this model has for the most part been used at once, with the main focus being on Extraversion, at present there is a very limited amount of research on the impact of the personality traits of Neuroticism, Openness to Experience, Agreeableness and Conscientiousness of CEOs involved in M&A.

Personality traits have been studied among leaders in other types of environments within corporate finance. In these studies, less complex methods have been used to determine the personality traits, for example by using surveys as well as various more subjective methods. Objective data analysis methods by using Machine Learning algorithms is something which has been applied to the area of Behavioral Corporate Finance not until very recently. However, there are those who have examined a few personality traits using linguistic data analysis tools within M&A, and those who have examined all five traits within other areas but none have done so for all five traits included in the Five-Factor Model in a M&A-setting.

To conclude our contributions, first the more comprehensive perspective on the personality traits of CEOs in connection with corporate takeovers, where we take into account all the personality traits in the FFM model. Second, we summarize and concentrate the current research on the area and establish a way of working. By displaying how one can use a machine-learning tool that is applied to transcribed texts from Q&A sessions which make it possible for other researchers to go into data collection quickly and not spend time looking for reliable ways to personality score CEOs.

1.6 Limitations and Scope

As with most studies one have to limit the scope of the study to have a viable way of conducting it. For this thesis the main limitations are related to the data selection for which only a specific industry and segment of companies in the US are included in the study. The data selection criteria are further explained in section 3. In this thesis the focus is acquisitions and the acquiring company, hence, no analysis is made for the target companies. Acquisition bids with payment methods other than cash or shares have been excluded. Delimitation has also been made with regard to the examined time horizon, with the announcement date during the period 2010–2020 and where the transaction was completed before February 2020. The main reason for the time period not being more extensive, is due to limited access to transcribed documents for previous years. Further, the study focus solely on the use of transcribed speeches by the CEOs which are analyzed and no psychometric analysis is used.

1.7 Target Group

The audience for this thesis is primarily academics with knowledge and interest for the intersect between corporate finance and behavioral economics. The thesis is also considered to be of relevance for practitioners and others who have an interest in finance and wish to learn more about the reasons for existence of certain market anomalies within corporate finance. It is also in the intention of the authors to let

this study inspire the reader to consider behavioral aspects in his or her personal investment decisions.

Chapter 2

Theoretical Framework and Empirical Evidence

This chapter starts by presenting the theoretical framework which forms the basis for the analysis of the previously stated problem. Thereafter, a brief summary of relevant previous research with regard to the FFM is presented and subsequently the hypotheses are stated.

The relationship between personalities of CEOs and corporate acquisitions takes its beginning in traditional economic theories within the area of Corporate Finance and is then later derived based on theories originating from the field of Behavioral Corporate Finance and Psychology. The traditional economic theories describes primarily the underlying causes of certain actions by managers and why certain types of economic conflicts occur. They are rooted in psychological reasons as to why individuals act in certain ways depending on the circumstances. In addition, theoretical knowledge is presented about motives for why CEOs participate in acquisitions and situations are described where conflicts arise between the management and the firms' shareholders.

Since the starting point in this thesis is how personality traits of CEO's impact acquisitions, a brief background of corporate acquisitions is here first presented. Since the problem of reconciling the company's management (more specifically the CEO) with the shareholders' interest (not least in a bidding setting) it is important to also consider motives for M&A in this area, theories such as Winner's curse and Agency theory are thereafter discussed with respect to corporate acquisitions. In connection with corporate acquisitions, an information asymmetry arises between the shareholders and management. This asymmetric relationship is then dealt with by presenting theories from research in Behavioral Corporate Finance.

2.1 Corporate mergers and acquisitions

2.1.1 What is M&A?

Corporate mergers and acquisitions are referred to as M&A (an abbreviation for Mergers and Acquisitions). Corporate acquisitions usually involves two parties, the acquiring company (acquirer) and the target company (target) which the acquirer wants to acquire (Gaughan, 2018). In order for the buyer to gain control of the target company, the acquirer must buy out the target company's shareholders. In order for the acquirer to gain control over the target, it needs to become a majority owner which is done when it possesses more than 50 percent of the voting power in the target company Palepu, Rubak, and Healy (1992).

In the case of corporate mergers, they can be regarded as a legal and economical combination of two or more independent companies (Gaughan, 2018). Mergers are usually carried out either between a takeover company and one or more transferring companies that defuncts (absorption) or by merging two or more companies to form a joint entity (combination) (Gaughan, 2018). The number of business acquisitions and mergers tends to increase throughout the economic cycle (Rousseau and Jovanovic, 2001).

2.1.2 The fundamentals

The most common payment methods in connection with M&A are payment with either cash, shares or a mix of the two (Gaughan, 2018). When shares are used as a payment method, the target company's shareholders receive a certain number of shares in the acquiring company for each share in the target company. The bid premium is the difference between the estimated market value of a company and the actual bid value (Berk and DeMarzo, 2017; Gaughan, 2018). The bid premium is usually positive as a higher price is usually required for the current shareholders of the target company to be willing to sell their shares.

In order for the offer to be accepted, it is required that the owner of the target company accepts and that other clauses of the bid are fulfilled (Gaughan, 2018). A common clause in the agreement is that the acquirer is allowed a certain proportion of shares in order for the offer to be accepted. If the agreement is fulfilled and both parties agree, then the authority responsible for fair competition must also approve the deal.

Some research shows that the acquiring company's announcement of the acquisition results in a decrease in the value of the acquirer, that is, its own shareholders react negatively to the announcement. Among other things, Masulis, Wang, and Xie (2007) shows a negative return for the acquirer following the announcement of the planned takeover. However, not all studies support this conclusion. Asquith, Bruner,

and Mullins Jr. (1983) were unable to find a consistent pattern of falling stock prices following the announcement of a takeover. However, there is more consensus in the research on the positive price effects of the acquisition announcement on the target company's share price, for example, Bradley, Desai, and Kim (1983) show that bidding advertising generally has a positive impact on the target company's share.

International growth through cross-border acquisitions is also an important aspect of M&A. Doukas and Travlos (1988) found that, unlike many domestic acquisitions, acquirers enjoyed positive (although not statistically significant) returns when they acquired targets in countries in which they did not previously have operations but negative (although not statistically significant) when the acquirer already had operations in the foreign country. Cakici, Hessel, and Tandom (1996) found no positive significant shareholder wealth effects in their control sample of 112 deals in which U.S. companies acquired non-U.S. firms from 1983-1992. However, they found positive significant bidder gains when foreign companies acquired U.S. companies. Moeller and Schlingemann (2005) found in their sample of 4 430 deals during 1985-1992 that U.S. bidders who participated in cross-border acquisitions experienced lower returns compared to when they pursued U.S. targets.

2.1.3 Main motives

Strategic motives

The underlying reason for corporate acquisitions is usually that the acquiring company wants to expand its business, either by growing larger in its current business area, by expanding either vertically or horizontally, or by expanding into a new market (Gaughan, 2018). This being said, corporate acquisitions can generally be divided into the three following categories: vertical, horizontal and conglomerate-related acquisitions. In the case of vertical acquisitions, the buyer acquires another company which is part of its supply chain, either upstream or downstream. Some of the reasons why companies choose to integrate vertically include strengthening their supply chain, reducing production costs due to economies of scale, avoiding suppliers with strong market power, or getting access to new distribution channels (Berk and DeMarzo, 2017).

For horizontal types of acquisitions, the acquirer is interested in acquiring a company within the same industry, either a direct competitor or a company producing some substitute product which satisfies a similar type of need. Some of the most common motives for horizontal acquisitions are increasing market presence, reducing competition in the marketplace, expanding product or service offerings, achieving economies of scale and gaining access to new customers in other (geographical) markets (Gaughan, 2018).

In a conglomerate acquisition, the acquirer's aim is to achieve a higher diversification in the company's portfolio of subsidiaries. This is done by acquiring a target company which is not in any way related to current operations (Porter, 1987). As a conglomerate, the company becomes less sensitive to both market downturns and market fluctuations.

Financial motives

Acquisition-driven growth can be particularly attractive to a listed company if the potential target company is undervalued compared to the acquirer. In such a case, the acquisition can be financed by shares in the acquirer, this will provide an immediate improvement in earnings per share for the acquirer (Gaughan, 2018).

Acquisitions of companies are also often motivated by the fact that the target company has unused accumulated tax credits or high balance liquidity (Auerbach and Reishus, 1987; Ogden, Jen, and O'Connor, 2003). A company with a history of good profits may want to acquire a target company which has built up losses over a period of time. When the acquisition is completed and the appropriate accounting conditions are met, the accumulated losses for the target can be cancelled out against the future profits of the acquirer, resulting in a reduced corporate tax liability (Faulkner, Teerikangas, and Joseph, 2012). In a similar way, a company with large amounts of cash or that is in a highly cash generating business without any good own investment opportunities of its own may want to purchase another company with more promising investment opportunities (Faulkner, Teerikangas, and Joseph, 2012). The acquirer can increase the rate of return on the target company's cash by investing it in its own business or extending its own borrowing capacity thanks to its enhanced cash flow.

Other financial motives for M&A transactions can for example be restructuring purposes, where the acquirer buys another company it considers undervalued and sell it at a later occasion, either as a whole or bit by bit (Gaughan, 2018).

Managerial motives

In addition to more pronounced reasons for company acquisitions, there is also research which indicates that acquisitions are made to benefit the company's managers rather than the shareholders. In these case, the motives can often be linked to psychological factors of the management. Levinson (1970) mentions two psychological motives for mergers and acquisitions, fear and obsolescence. Companies acquire other companies for fear of being taken over and demolished by another company. Obsolescence occurs as companies become more and more bureaucratic and slow-moving over time, leaving less room for individual initiatives and more spontaneous actions. Acquisitions can thus cause the company to stay more agile, which counteracts the effect of obsolescence. Obsolescence is also something which is addressed by Freek

and Harry (2001) as a possible reason for acquisitions. An acquisition-driven strategy can also result in the company becoming more dependent on the CEO's unique competence in connection with acquisitions, implying that the CEO can use acquisitions as a mean to further secure his position (Berkovitch and Narayanan, 1993).

Acquisitions that are primarily motivated by the managers of the acquiring company's self-interest will probably not be value-maximizing for the company's shareholders. This is because managers who are driven to make acquisitions for personal reasons may be less concerned about making a thorough financial analysis of whether the acquisition has the potential to create shareholder value. Second, they may be prepared to pay a higher price for the acquisition than would be justified for purely financial reasons.

Examples of two theories related to managerial motives that will be further accounted for later on are the *Hubris hypothesis of takeovers* and *Empire building theory*.

2.2 Corporate finance

2.2.1 Winner's curse in corporate acquisitions

Corporate takeovers can be viewed from an auction point of view where the bidding firms place bids (exceeding the market value of the target) hoping to gain control of the target firm. The bid dispute that arises in connection with acquisitions can be explained by the Winner's Curse hypothesis (Flanagan and O'Shaughnessy, 2003). The Winner's Curse assumes that the auctioned item has the same (unknown) value for all bidding firms (Varaiya, 1988). The hypothesis deals with whether the bidder who won the bidding contest also may have overestimated the actual value of the object, if this is the case the winner has become a victim of the "Winner's curse".

The phenomenon is not specific to acquisitions but is rather a natural result of every bidding competition (Bazerman and Samuelson, 1983). The phenomenon has appeared in widely different types of settings, initially found in the area of bidding for oil drilling rights (Capen, Clapp, and Campbell, 1971), stock market investments Miller (1977) and salaries among free agents in baseball Cassing and Douglas (1980), it has also been suggested in widespread economic markets (Akerlof, 1970).

The winner's curse occurs in settings when companies bid on an asset (for example, a target company) with a given value (although unknown) and each bidder has a unique estimate of the fair value of the asset (Flanagan and O'Shaughnessy, 2003). The company winning the bidding of a target company is of course the highest bidder, which also implies the highest estimate of the value of the target company. Due to the complexity of valuing the target company, the highest estimate among the bidders may well be an overestimate of the target company's value. An overestimate of the

target company implies that the acquiring company's estimated value and thus the winning bid is higher than what the target company is actually worth to the acquirer. In other words, the winner is "cursed" in that it paid too much for the target company. However, this is to some degree a simplification of reality as the target company may be more valuable to certain bidders.

Varaiya (1988) studied 800 acquisitions from 1974 to 1983 in order to examine the winner's curse in takeover contests. He measured the size of Winner's Curse as the difference between the winning bid prize and an estimate of the highest offered bid before the overall market would react negatively to the bid. He showed that there are two specific factors which affect the winner's curse positively in an auction setting: (1) the degree of uncertainty regarding the value of the item being auctioned and (2) the number of bidding companies being involved.

It is also important to understand that the decision-making individual can also make a subjective valuation of the object that he or she is bidding on (Bazerman and Samuelson, 1983). The individual can, for example, overbid and be aware of the overbid but still not experience any remorse. This may occur when winning has a certain psychological advantage in itself or when the object has some type of underlying value in itself (Bazerman and Samuelson, 1983).

2.2.2 Agency theory

Agency theory is used to explain the ubiquitous relationship and resolve the issues between the principal (shareholders) who delegates work to the agent (corporate management). Since the shareholders generally have passive ownership, they appoint a board of directors (with the best interest of the shareholders) which makes important decisions regarding the company's operational and financial activities. Agency theory tries to describe the relationship between the two parties by using the metaphor of a contract (Jensen and Meckling, 1976).

The most important task for the agents (company management) is to run the company so that it generates profits for its owners, this implies that the agent should act in favor of the principal (Ogden, Jen, and O'Connor, 2003). Unfortunately, human beings have a tendency to act based on their own interests, this also has a strong influence on people in leading positions in the corporate world (Ogden, Jen, and O'Connor, 2003). When the principals relinquish control, it can sometimes result in the agent prioritizing their own interests over those of the principals, which in turn causes a conflict because the owners want to prioritize their own interests over those of the agents (Jensen and Meckling, 1976; Fama and Jensen, 1983).

Agency theory focuses primarily on solving two problems that can arise in principal-agent relationships (Eisenhardt, 1989). The first problem arises when the principal

and agent's incentives conflict with each other and it is particularly demanding for the principal to ensure that the agent is actually behaving correctly. The second problem is the risk-sharing challenge that arises when the principal and the agent have different approaches to risk. The problem here is that the principal and the agent may prefer different measures because of different risk preferences. In more general terms, it can be said that the agency theory consists of a principal and an agent who is engaged in cooperative behavior, but has different goals and different attitudes to risk (Eisenhardt, 1989).

A well-credited study that related agency theory to corporate acquisitions was authored by Amihud and Lev (1981). In their study, they investigated why companies participate in conglomerate mergers. Generally speaking, conglomerate mergers are not in the interests of shareholders, as shareholders can usually diversify directly through their stock portfolio (Eisenhardt, 1989). However, mergers of conglomerates may be attractive to managers who have fewer opportunities to diversify their own risk. One motive for this could according to the authors be that the manager risks losing his job if the company is very exposed to an individual industry. Thus, conglomerate-related acquisitions are an area where the owner's and manager's interests are in conflict with each other. Amihud and Lev (1981) examined, among other things, the degree of diversification-related acquisitions for manager-controlled firms (i.e. companies without major shareholders) compared to owner-controlled firms. In accordance with agency theory arguments proposed by Jensen and Meckling (1976), manager-controlled firms participated significantly more in conglomerate-related acquisitions.

2.2.3 Asymmetric information

Information asymmetry arises in transaction settings when one party has access to more information compared to the other party. Relating to agency theory, information asymmetry occurs in the company setting when the company's management (agents) has more information about the company's future prospects, profits and risks compared to the shareholders (the principals) (Brealey, Myers, and Allen, 2011). The party with access to more information can easily create a favorable situation by using the information to their advantage.

Since the principals cannot always monitor the agents, there is a risk that they will deviate from their duties. They can only determine if the agents fully comply with the contracts if they have access to full information. By the principal himself observing the agent, complete information can be obtained but this is both time consuming as well as costly (Douma and Schreuder, 2013). Since managers are human beings they also have their own agendas to look after, this could imply seeking to maximizing their own gains while sacrificing the interests of shareholders (profits). Gaughan (2018) argues that managers may be aware that if they generate an acceptable return,

it will probably be difficult for shareholders to start a successful proxy fight to have them removed. Given that information about potential profitability is asymmetric and management is in a much better position to assess this than shareholders or even the board, managers may know that a less than maximum profit will be acceptable to the shareholders (since they are less aware of the maximum profits) and the managers can therefore act more in their own interests.

Two types of problems can arise in a principal-agent relationship due to information asymmetry; the first problem is called "moral hazard" and means that the agent puts his own interests before the interests of the principal (Ogden, Jen, and O'Connor, 2003). The second problem is called "adverse selection" and implies that an individual utilizes his or her information advantage at someone else's expense (Huemer, 1998). A classic example of adverse selection was provided by George A. Akerlof (1970) which dealt with the market for used cars. The car owners who are selling their cars are assumed to know about the quality of their cars, the interested buyers lack sufficient information to judge whether the cars are of good or bad quality. Buyers will be willing to pay a price somewhere between the price of a car of good quality and a car of bad quality. This results in the sellers of good cars not being able to get full price. This will result in less incentives for the sellers to sell their good quality cars which will result in the good quality cars being pulled away from the market. The asymmetric information can therefore lead to the market being dominated by bad cars, this is an example of adverse selection.

Barry and Brown (1985) provide empirical results stating that if the disclosures made by companies are imperfect, investors will bear risks in forecasting future payoff from their investments. They show that if companies do not provide investors with sufficient information, they will carry additional risks, if the risks are not diversifiable, investors will require a higher return to account for the information risk. Therefore, firms with high level of disclosure, hence low information risk, will sustain lower cost of capital than comparable firms with lower level of disclosure. According to Dionne, La Haye, and Bergères (2014) information asymmetry between participants is shown to influence the premium paid. Blockholders with access to more information pay an approximate of 70% lower conditional premiums compared to other buyers.

2.3 Behavioral corporate finance

Behavioral Economics is the combination of psychology and economics that explores the irrational behaviors of the agents who display human limitations and complications causing conflicts of interest, resulting in companies deviating from their main financial goal of maximizing the shareholder returns (Mullainathan and Thaler, 2000; Luo, 2012).

Behavioral Corporate Finance deals with how individuals act in less than fully efficient financial markets and relies on findings from both psychology and sociology (Shefrin, 2007). Theories from Behavioral Corporate Finance are suitable to use in areas where traditional economic theories have greater difficulties of predicting the actions observed in the marketplace (Malmendier, 2018). One such area is the influence of CEO's personality traits in corporate acquisitions, not least as this field involves variables linked to individual characteristics, usually overlooked by traditional economic theories.

2.3.1 Hubris hypothesis of takeovers

The hubris hypothesis in Corporate Finance literature was first proposed by Roll (1986) and can be seen as part of agency theory. According to Roll (1986), hubris or pride among decision makers in the acquiring company could be one of many reasons for why bids are made although it involves a bid of the target exceeding its current market value. According to the hubris hypothesis, hubris among managers who have influence over decisions related to acquisitions may cause the acquirer to pay too much for their targets. The hubris hypothesis implies that managers with influence over decisions related to acquisitions not only base their decisions with regard to the interests of the shareholders such as financial gains and estimated synergy effects, but rather (at least to some extent) according to their own personal motives. Despite Roll (1986) belief that hubris was at least as important a factor as many others used to motivate acquisitions, he did not provide any definition of how one should test it appropriately. American Psychology Association defines hubris as "arrogant pride or presumption" and is thus something that, in conjunction with corporate acquisitions, is evident among executives who overestimate their own abilities to create benefits and therefore pay significant premiums (*American Psychological Association - Hubris*; Roll, 1986).

In the large amount of research that have studied the hubris hypothesis for over 30 years, many have provided results indicating good reasons to believe that hubris plays an important role in certain company decisions, such as acquisitions. These studies agree that pride among the managers makes them believe they are better at valuing the target company in comparison to the market. Hayward and Hambrick (1997) studied a sample of 106 large acquisitions and found, among other things, four different indicators of CEO hubris to have strong positive impact on the size of the acquisition premium (the acquiring company's recent performance, the importance of the CEO's, recent media praise for the CEO self-importance, and a composite factor of all three variables). They also found in their study how a greater amount of either CEO hubris and acquisitions premium, the greater the shareholder losses (for the acquiring company). Figure 2.1 summarizes their examined variables and their assumed

impact on acquisition premiums and the share performance of the acquirer (hubris appearing in a dashed box due to not being directly observed).

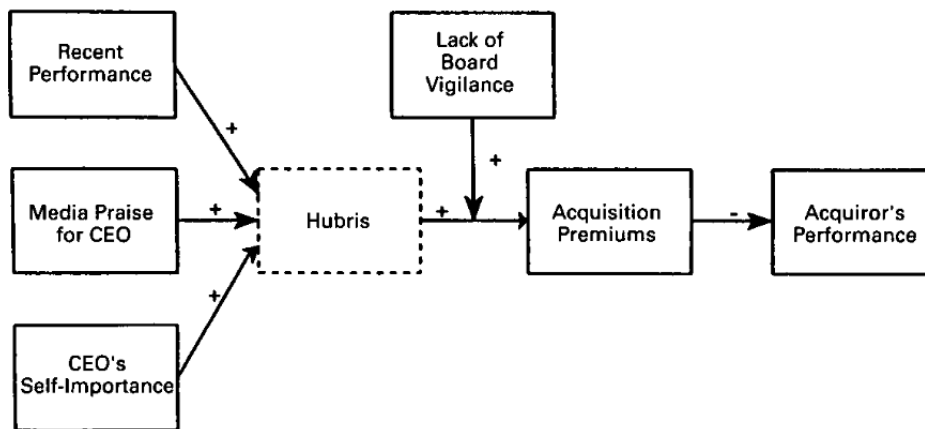


Figure 2.1: Model of the role of CEO Hubris in large acquisitions. Source: Hayward and Hambrick (1997)

Malmendier and Tate (2008) examine CEO overconfidence in deals done by 394 large companies and find that overconfident CEOs tend to overestimate their own skill of creating value through acquisitions and therefore also overpay for the target company, thus resulting in value destroying mergers. The same authors show how acquisitions made by CEOs with hubris are more value destroying compared to those acquisitions made by CEOs without hubris, by looking at the share price reaction in connection to the announcement. The authors measured the confidence among CEOs with the help of two different variables: the CEO's proneness to over-invest in the own company's stock as well as statements in media by the CEO. Their results have been confirmed by Doukas and Petmezas (2007) among others who demonstrated that the CEO hubris is related to worse share performance both in connection with the announcement but also in the longer term. Malmendier and Tate (2008) also found that the probability of making acquisitions was 65% higher among CEOs with hubris compared to CEOs without hubris. According to the authors, this is because CEOs with hubris consider more potential acquisitions as profitable compared to CEOs without hubris. According to Varaiya (1988) the hubris hypothesis may be considered a special case of the winner's curse hypothesis, something which Thaler (1988) also agrees with.

2.3.2 Empire building theory

Malmendier and Tate (2008) mention in their study that it is often pointed out in the literature on acquisitions that *empire building* is a possible source of unprofitable acquisitions. Empire building theory concerns the matter where a manager of a company with fragmented ownership tries to maximize power and influence by expanding the company through acquisitions, even if it happens at the expense of the shareholders. By increasing the size of the company, the CEO usually also receive higher compensation and benefits and also acknowledgement leading to additional incentives

(John M and David S, 1999). Additional possible explanations for why the executive may act in this way are provided by Jensen and Meckling (1976). The authors reasoning in their study is based on acquisitions increasing the company's dependence on the current management and executive prestige often being tied to company size. Unlike the hubris hypothesis, empire building theory differs in that the CEO does not necessarily believe the acquisition will maximize the value for the shareholders, and is thus fully aware of the possible detrimental consequences of his actions (Trautwein, 1990).

Khorana and Zenner (1998) analyzed the role of executive compensation in takeover decisions by examining the outcome of 51 companies responsible for 84 acquisitions between 1982 and 1986. Among those who participated in corporate takeovers, they found a positive relation between the size of the company and the salary of the executive, but could not find the same relation among those who did not participate in acquisitions. Hope and Thomas (2008) report how non-disclosing companies experience serious problems related to empire building. According to the authors, the governance-related problems result in, among other things, a lower firm value, which also speaks to the empire building theory. In the study conducted by Grinstein and Hribar (2004) where 327 large transactions between 1993 and 1999 were included, it was found how 39% of the surveyed compensation committees referred to acquisitions as an important reason for why the compensation was at the level it was.

2.3.3 Narcissism

Narcissism is a personality trait or disorder manifesting itself in the fact that a person's self-image is characterized by a very high degree of grandiosity as well as a perception of one being superior to the rest (Campbell, Rudich, and Sedikides, 2002). The term "narcissism" stems from the Greek mythological figure Narcissus, who according to the myth fell hopelessly in love with his own image and pined away for his own reflection. The lesson being that excessive self-love is self-destructive. Narcissism is a common occurrence in the business environment (Bajo, Jankensgård, and Marinelli, 2019).

Chatterjee and Hambrick (2007) argue that narcissistic corporate executives favour strategies which involves high amounts of risks, such as corporate acquisitions. Huang (2007) find a significant positive correlation between the number of narcissistic CEOs and the number of acquisitions in the U.S. throughout the period 1993-2004. Chatterjee and Hambrick (2007) also show how narcissism among CEOs involve a higher risk of value-destroying acquisitions. Something which also characterizes narcissists is their impulsivity, this has been shown to influence their decisions in situations entailing a great amount of uncertainty (Campbell, Goodie, and Foster, 2004).

2.3.4 Five-Factor model

In organizational psychology, the Five-Factor Model (FFM), also known as "the Big Five personality traits" and the "OCEAN-model", is one of the most prominent models for determining personality traits (Chiaburu et al., 2011). Although there are many different definitions and views on what the concept of personality actually is, many researchers believe FFM to capture a significant part of the concept (EYSENCK, 1992; Costa and McCrea, 1992; Smith, 2015). The Five-Factor Model includes five different types of personality dimensions, these are as follows: *Extraversion*, *Neuroticism*, *Openness to experience*, *Agreeableness* and *Conscientiousness* (Costa and McCrea, 1992). Each of the five dimensions consist of six facets (another name for more specific components of the personality traits).

FFM is the result of several decades of research within personality psychology and although many researchers do not fully agree on the names of a few of the dimensions, there is a significant consensus on what the dimensions needs to entail. The five dimensions are regarded as elementary and stable dimensions of human personality being recognized across cultures and over time (Kahlke and Schmidt, 2002; Carlo et al., 2014). Personality psychologists largely agree that the five dimensions are necessary and sufficient to describe fundamental dimensions of normal personality (Witt et al., 2002a). This is also one of the key reasons to why the why the framework is the foundation for most of the personality tests that exist today. The prevailing acceptance of the model for determining normal personality traits has enabled research in many different areas to investigate the effects of different personality traits. The practical convenience of the framework has been demonstrated in many different types of environments, such as in both organizational and educational environments (DeYoung et al., 2010; Allen and Deyoung, 2016).

In 1970's Costa and McCrae introduced their NEO system closely resembling three of the factors included in the FFM, although Agreeableness and Conscientiousness were not included (Costa and McCrae, 1976). They later extended their model with preliminary scales measuring Agreeableness and Conscientiousness (McCrae and Costa, 1985).

The five personality traits included in this model are below presented and further accounted for. A summary table by Soto and John (2017) is presented in Appendix A.1, providing a more concise representation of how different researchers describe the included traits.

Extraversion

Sigmund Freud is a well known Austrian neurologists who is most famous for being the father of psychoanalysis, a type of intensive therapy form that digs deep into people's

lives to understand and treat psychological disorders (Freud, 1952). Freud also had an interest in personality psychology, and some of his theories in the field are familiar to many people. Despite his interest and reputation for personality psychology, it was his disciple, the Swiss psychiatrist Carl Jung (1923), who was first with the theory that individuals could be divided into one of the following two main categories:

- *Introverts*, which includes those who receive energy from the "inner world" or from solitude with the self;
- *Extroverts*, which gain energy from the "outside world" or from interactions with others.

This idea has been well proven and is today widely accepted and used in psychology. An extensive amount of research has shown that it is a useful distinguishing factor between two relatively different groups of people. Today, the differentiation between introversion and extraversion is however perceived as a broad spectrum rather than binary (which was part of Jung's idea).

What characterizes *extraversion* is the tendency to focus on the world outside the self. Extroverted people are energized by social gatherings and are usually enthusiastic, assertive and outgoing with a verbal and an expressive communication style (Almlund et al., 2011). The opposite of extraversion is introversion. Compared to extraversion, introversion is instead characterized by a lesser need for stimulation from the outside world. Introverts usually perceive social gatherings as something demanding and instead find their energy in activities carried out in solitude, often of a creative nature. Based on the interpretation presented by Parker (1986), this dimension can be further divided into two underlying traits: Ambition and Sociability. This interpretation will here however not be used to any greater extent and is presented for the reader's further reference.

Neuroticism

In 1950, the German-born psychologist Hans Eysenck published the book "Dimensions of personality" which was an extension of Jung's proposed personality concept of extraversion (Eysenck, 1950). In addition to extraversion, Eysenck assumed that there was a second personality type called *neuroticism*. According to Eysenck, individuals could be either high or low on each of these two traits, suggesting there to be four dominant types of personalities.

Neuroticism is usually described in terms of anxiety, vulnerability, tension, distress and low self-confidence. Thus, people with a high degree of neuroticism are likely to be anxious, nervous and self-conscious (Barrick, Mount, and Judge, 2001). They are more sensitive to psychological stress and manage stress worse than others.

People with low levels of neuroticism tend to be more relaxed and calm (Costa and McCrea, 1992; Nevid, 2011). According to the American Psychological Association (APA), neuroticism is characterized by a chronically high level of emotional instability and an increased propensity for psychological distress (*American Psychological Association - Neuroticism*). People with a high degree of neuroticism can be described as emotionally labile, anxious, nervous, unstable, impulsive and hypochondriac, while those with a low degree can best be characterized as calm, relaxed, confident and happy with themselves (Lahey, 2009; Almlund et al., 2011; Jeronimus, 2015).

What often coincides with this destructive personality type is an assurance of one's own inability to handle challenging events. This assurance, in practice, mean an increased focus on criticism and a perception of lack of control over significant events (Eysenck, 1950; Goldberg, 1993; Hofmann, 2007; Almlund et al., 2011; Barlow, 2004).

Openness to experience

Although researchers have generally agreed on the two previously mentioned and the two remaining traits included in the Five-Factor Model, they have found it more difficult to agree on the trait of *openness to experience* (Openness). Fiske (1949) named it "Inquiring Intellect", Norman (1963) named it "Culturedness". Goldberg (1993) and Wiggins (1996) preferred "Openness to experience", this was also the term adopted by McCrae and Costa (1985).

As far as openness is concerned, it was initially Coan (1974) who identified the factor after extending the analysis of Cattell's 16 personality factors (Cattell, 1943). Coan (1974) identified a cluster of personality traits which he decided to name "openness to experience". Costa and McCrae (1976) further developed on Coan's work with their research. In addition to the two already thoroughly investigated factors - Extraversion and Neuroticism - they also discovered a third factor consisting of a heterogeneous group of functions related to aspects such as imagination and liberal thinking. McCrae and Costa combined the identified functions into the proposed dimension of "Openness to experience". These three initial factors (Extraversion, Neuroticism and Openness) formed the basis for the NEO Personality Inventory (NEO-PI), which would later form the basis of the Five-Factor Model (McCrae and Costa, 1985).

The American Psychology Association defines the trait of *openness* as "The tendency to be open to new aesthetic, cultural, or intellectual experiences" (*American Psychological Association - Openness to Experience*). Openness explains the degree of curiosity and openness of the individual. A high degree of openness usually implies that the individual is happy to absorb new intellectually challenging ideas and rarely avoids new experiences. These individuals are often innovative, imaginative, curious, open to change and have many interests (McCrae and Costa, 1987). If the individual

instead has a low degree of openness, they tend to experience difficulties in adapting to changing environments and usually prefer a large number of routines in their everyday lives. (McCrae and Costa Jr, 2008).

Agreeableness

After having introduced their instrument containing words characterizing the three personality traits of Neuroticism-Extraversion-Openness Inventory (NEO-I) in the 1970's, Costa and McCrae further developed their instrument in 1985 to include Agreeableness and Conscientiousness and thereby renamed it NEO Personality Inventory (NEO PI) (McCrae and Costa, 1985). The instrument has since been further developed into several more updated versions. The instrument has since been further developed into several updated versions, which often form the basis for the tools used in text analysis.

American Psychology Association defines agreeableness as “the tendency to act in a cooperative, unselfish manner, construed as one end of a dimension of individual differences (agreeableness vs. disagreeableness) in the Five-Factor Model.” (*American Psychological Association - Agreeableness*). A high degree of agreeableness is an indication that the person can be characterized as friendly and warm-hearted (Costa Jr and McCrae, 2008). People who rank high on this scale often collaborate well with others. A high degree of agreeableness is also a good indicator of individuals who are perceived by others as friendly and generous. A high degree of agreeableness has also been shown to make it easier to establish trust and easier to form positive, and more favorable working relationships. (Barrick, Stewart, and Piotrowski, 2002; Costa and McCrae, 2013). However, research has also shown that people with a high degree of agreeableness have a harder time looking after their own interests and are also less willing to influence and manipulate others for their own advantage (Almlund et al., 2011).

Looking at the other part of the spectrum, a low degree of agreeableness usually implies a high degree of disagreeableness. Characteristic of people with a low degree of agreeableness is that they tend to be perceived by others as reserved and obstinate (Almlund et al., 2011). Unlike those with a higher degree of agreeableness, this trait is common among those who put themselves ahead of others and are often not so interested in helping out (Costa and McCrae, 2013; Kahlke and Schmidt, 2002). Individuals with a low degree of agreeableness have been described by some researchers as manipulative, self-centered and ruthless (Costa and McCrae, 1992; Cicchetti and Cohen, 2006).

Conscientiousness

American Psychology Association defines conscientiousness as “the tendency to be organized, responsible, and hardworking, construed as one end of a dimension of individual differences (conscientiousness vs. lack of direction) in the Five-Factor Model.” (*American Psychological Association - Conscientiousness*).

Conscientiousness is the fifth and final personality trait being described by the Five-Factor Model. This personality trait reflects an individual’s self-control and understanding. A high degree of conscientiousness is usually a good indicator of the individual behaving responsibly, being efficient, reliable, organized, rational and achievement-oriented (Costa Jr, McCrae, and Dye, 1991; Costa and McCrae, 1992; Roberts et al., 2005; Eisenberg et al., 2014). Individuals with a high degree of conscientiousness are also dependable, caring and persistent (Almlund et al., 2011; Shealy, 2014). Conscientious people are often more planning- and detail-oriented than others. They appreciate measuring their results against clearly stated goals and also appreciate order and clarity (Almlund et al., 2011). They are performance oriented, dedicated and effective (Witt et al., 2002b). A low score on the other hand usually implies acting on impulses and the individual to have less self-control (McCrae and Costa, 1987; Eisenberg et al., 2014). Conscientiousness is also associated with having a good social ability and being perceived as genuine by others (Christiansen and Tett, 2013; Day, 2014). Conscientiousness has been shown to be negatively correlated with perceived stress and fear (Penley and Tomaka, 2002).

2.3.5 FFM in previous research and summary of hypotheses

In the previous subsection, the Five Factor Model and the characterization of the included personality traits were presented in broad terms. It was made evident how there is an extensive amount of research on what characterizes the different personality traits, particularly in psychology. There is however also a lot of research involving the Five-Factor Model and the impact of personality traits in other areas, ranging from education to management (O’Connor and Paunonen, 2007; Lim and Ployhart, 2004). However, there is a limited amount of research involving the Five-Factor Model in the area of Corporate Finance and thus even less which relates to M&A. In this subsection the traits being entailed by the Five-Factor Model will be discussed more in-depth and the authors aim to shed light on proven relationships between the personality traits and aspects considered particularly relevant when relating CEOs to corporate acquisitions. After accounting for the traits in previous research, hypotheses will be formulated for each trait with regard to the anticipated relationship between how the traits of CEO’s affect aspects related to M&A.

Extraversion

Extraversion among CEOs is according to some research positively correlated to the company's performance. Extroverts are energetic and powerful when communicating their ideas (Judge et al., 2002). They have greater flexibility and may therefore be more likely to initiate a strategic change that is aided by their ability to create employee positivity and enthusiasm (Nadkarni and Herrman, 2010; Judge et al., 2002; Bono and Judge, 2004). In addition, extraversion involves ambition and progress and predicts both leadership and effectiveness (Barrick, Stewart, and Piotrowski, 2002; Judge et al., 2002; Oh and Berry, 2009). Herrmann and Nadkarni (2014) find that extraversion promoted the initiation of strategic change which could be interpreted as not being afraid to make decisions which have major impact on the company's organization, something which can be compared to engaging in corporate acquisitions where change of strategy is often a key element.

However, there are other studies showing extraversion to have a negative impact on company performance, mostly due to internal resistance among subordinates (Floyd and Wooldridge, 1997; Wooldridge, Schmid, and Floyd, 2008). Similar to the trait of narcissism, extroverted CEOs have a greater tendency to overestimate their own ability, which is why they also tend to listen less to those around them. This, in combination with a short-lived enthusiasm and more volatile behavior among some extroverts, makes these types of CEOs often engage in more bold strategies while also executing more radical changes based on premature conclusions (Judge, Piccolo, and Kosalka, 2009). It has also been shown that extroverted CEOs are more likely to engage in acquisitions, they tend to carry out more acquisitions as well as larger ones and also more related acquisitions (Malhotra et al., 2018). It has also been shown that M&A intensity is higher in countries where people tend to be more extroverted (Chan and Cheung, 2016).

With this in mind, the first hypothesis is stated as follows:

Hypothesis 2.1. *There is a positive relationship between extraversion and M&A intensity, but the relationship is the opposite when considering the stock market's reaction.*

Neuroticism

In view of the research that exists on neuroticism among leaders in the corporate world, most research indicates that neuroticism has a negative impact on leadership among managers. Bass and Stogdill (1990) suggest that most successful leaders have a low degree of neuroticism. The same authors also argue that emotional stability is associated with self-confidence, self-assurance, determination and success (Bass and Stogdill, 1990; Boudreau, Boswell, and Judge, 2001; Judge et al., 2002). Those who are more emotionally stable are often more balanced in stressful situations and are

not as afraid of challenging the status quo and taking risks (McCrae and Costa, 1997; Judge and Bono, 2000; Nadkarni and Herrman, 2010; Josef et al., 2016; Meier, 2019).

Neuroticism is also negatively related to beliefs about the importance of working hard (Holland et al., 1993), which is plausibly undesirable in a CEO. Furthermore, Nettle (2006) suggests that high neuroticism can serve as a motivator to achievement in competitive environments where a combination of other factors such as intelligence and conscientiousness allows for success, while low neuroticism may be related to a lack of striving. Herrmann and Nadkarni (2014) find that CEO neuroticism hindered both initiation and performance effects of implementation strategic change in small and medium sized enterprises.

Hence, the second hypothesis is stated as follows:

Hypothesis 2.2. *CEO neuroticism is negatively related to M&A intensity as well as share performance.*

Openness to experience

In the business environment, Barrick and Mount (1991) found a positive relationship between openness and the leadership ability among managers. In line with this, Judge et al. (2002) found openness to be a good indicator of the probability of individuals to become leaders and also for the effectiveness of their leadership. Nadkarni and Herrman (2010) also found a positive relationship between the degree of openness among CEO's and strategic flexibility, this in turn positively impacting the company's results. In another study they found that openness to experience promoted the initiation of strategic change Herrmann and Nadkarni (2014). According to Judge et al. (2002), leaders with a high degree of openness seek both excitement and risks, thus indicating that they would be particularly interested in corporate acquisitions. Similarly, O'Reilly et al. (2014) find that openness among CEOs promotes a corporate culture where behavior related to risk-taking, experimentation, innovation and speed is encouraged. Gow, Kaplan, Larcker, and Zakolyukina (2016) find a positive relationship between openness and R&D intensity but a negative relationship between openness and net leverage. Gay et al. (2019) find openness to experience to be positively related to the probability of engaging in acquisitions and CEOs with a high degree of openness to experience tend to participate more in diversifying M&As compared to non-diversifying M&As.

Taking previous research and theory about conglomerate diversification into account, the third hypothesis is stated as follows:

Hypothesis 2.3. *Openness to experience is positively related to M&A intensity but negatively related to share price development.*

Agreeableness

McClelland and Boyatzis (1982) showed in their study how managers with a higher degree of agreeableness often perform worse than those with managers who have less need to agree with others. According to the same authors this is partly due to the fact that these managers have a harder time making tough decisions affecting subordinates and colleagues negatively. According to Seibert and Kraimer (2001), agreeableness is negatively related to salary levels and career satisfaction, presumably due to them tending to avoid confrontation.

Judge et al. (2002) concluded that agreeable individuals are less likely to become leaders because of their passive and compliant nature. Herrmann and Nadkarni (2014) found that agreeableness hindered both initiation and the outcome effects of strategic change. On the contrary, other researchers have found agreeableness to be an important trait of CEOs.

The negative effects of Agreeableness appear to play an important role among managers, which is why we expect a negative effect of a high degree of agreeableness among CEOs in acquiring companies, largely due to poor negotiating ability. However, one thing that contradicts this is that CEOs with a high degree of agreeableness are presumed to be favored by shareholders, this could possibly also influence the market reaction in connection with the announcement of the acquisition.

Hence, the relationship between agreeableness and its impact on M&A is considered somewhat uncertain, why the following hypothesis is put forward:

Hypothesis 2.4. *The relationship between agreeableness and M&A is ambiguous in terms of M&A intensity but a positive relationship is expected for the share value.*

Conscientiousness

Judge and Long (2012) find that highly conscientious individuals tend to be cautious and analytical and are therefore often less willing to innovate and take risks. This causes the leaders with a high degree of conscientiousness to avoid innovation, resist change and delay critical decision-making processes, mostly due to their their need to gather compelling information to support their preferences Judge, Piccolo, and Kosalka (2009). On a similar note, Le Pine, Colquitt, and Erez (2000) show how conscientious individuals tend to be less adaptable to change. Judge, Piccolo, and Kosalka (2009) argue for how being less adaptable to change may also have a negative impact on organizational integration, this possibly resulting in deliberately avoiding favorable investment opportunities. The authors believe that a large part of this behavior is due to the fact that conscientious individuals tend to be too attentive to details and are therefore more willing to stick to the procedures and policies already in place.

Herrmann and Nadkarni (2014) find that conscientiousness among CEOs is negatively associated with the initiation of strategic change. On the other hand, they find that conscientiousness improved the performance effects when highly conscientious CEOs actually implemented strategic change (Herrman & Nadkarni, 2014).

John, Srivastava, et al. (1999) show how conscientious individuals are also characterized by having a large amount of self-control, meaning a greater ability to withstand impulses and rather think through their decisions. For this reason, very conscientious CEOs should also have an improved ability to maintain self-control in M&A processes and remain goal-oriented, which should mean that they can make as rational decisions as possible and should therefore be less likely to make unfavorable decisions (Barrick and Mount, 1991; Bono and Judge, 2004).

On a more negative note, Salgado (2002) provide evidence that conscientiousness has a negative relationship to both turnover and willingness to take difficult decisions. Gow, Kaplan, Larcker, and Zakolyukina (2016) found in their working paper suggestive results of conscientiousness being negatively associated with growth.

We therefor expect that conscientious CEOs are less interested in making large acquisitions but at the same time those acquisitions that are carried out may entail a positive abnormal return.

With this in mind, the final hypothesis is stated as follows:

Hypothesis 2.5. *There is a negative relationship between CEO conscientiousness and M&A intensity but positive for the stock market reaction.*

Chapter 3

Method

In the following section, the methodology used to obtain the study's results will be presented and accounted for. First, however, the design and methodology of the survey method will be elaborated upon. Thereafter, the study's approach to data collection, development of regression model and the selected variables will be further accounted for and finally a brief discussion will be provided, critically examining the study's validity and reliability.

3.1 Research design

The research design should help explain how the researched is to be performed and according to Yin (2014) it should at least consider the following four aspects:

1. What questions are to be answered? (What are the research questions?)
2. What data is relevant or needed to answer these questions?
3. How will this data be collected?
4. How will the data (and results) be analyzed?

This chapter aim to answer these questions and enable the reader to understand how the study have been conducted.

3.2 Research methodology and approach

Research methodology is usually divided into four different types (Höst, Regnell, and Runeson, 2006):

- Descriptive - with the aim to portray a phenomena.
- Exploratory - aim to portray and explore a phenomena.
- Explanatory - aim to find a relation between different variables and the phenomena.
- Problem solving - aim to find the solution to an identified problem.

The general research methodology for this thesis will be of descriptive and explanatory nature where the objective is to find and portray the phenomena of M&A performance and personality traits and to find a relation between these variables (personality traits)

to explain the phenomena (M&A performance). According to Saunders, Lewis, and Thornhill (2009) explanatory research is commonly used together with quantitative data collection and so is also the case in this thesis. The quantitative data is used in the event-study performed, which is described in more detail later in this chapter.

The research approach in this study will be of somewhat abductive reasoning as the authors explore the personality traits of executives in relation to M&A activity. The different reasoning approaches can be seen in Figure 3.1. The deductive approach start with a clear hypothesis derived from theory and try to reach a logical conclusion based on empirical findings, while the inductive approach is sort of the opposite, starting with empirical findings to try and build a theory (Check and Schutt, 2011). The inductive approach is commonly used when there are no, or limited, previous research on the topic to build a hypothesis from (Check and Schutt, 2011). The abductive approach is a combination of the two mentioned approaches which is more continuous and iterative (Van Maanen, Sørensen, and Mitchell, 2007). The abductive approach is hence the best way to describe the approach adopted in this study, although one could argue the thesis is more of a deductive nature than inductive as hypothesis deducted from previous literature and used in the analysis. On the other hand, there are limited previous research examining the specific research questions of this thesis which make us label it as abductive.

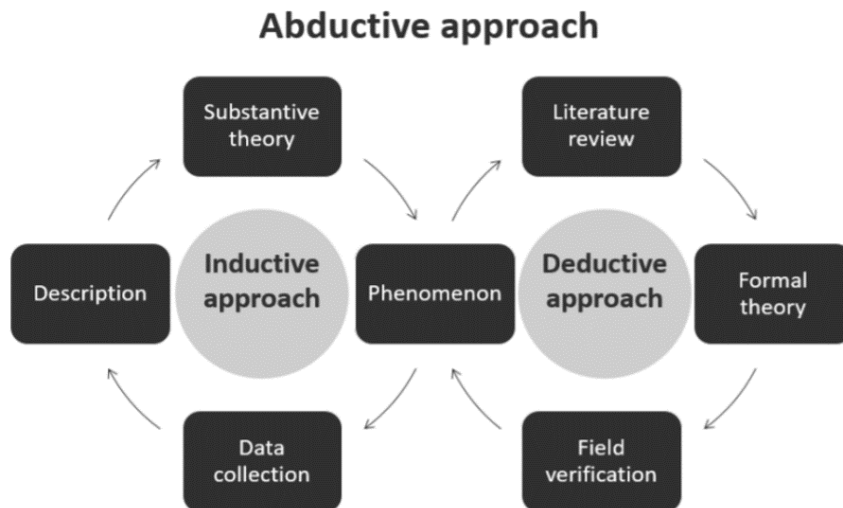


Figure 3.1: Abductive research approach, by Woodruff, 2003

3.3 Literature study

The research process started with collecting material from various sources such as articles and books to build a theoretical base to base and develop the study on. Scientific articles and books were used from various subjects covering everything from finance and economics to psychology and linguistic analysis. The material was found using

keywords such as personality traits, Five-Factor Model, mergers and acquisitions, executive personalities etc. in search databases such as LUB-search and Google Scholar. When choosing relevant material it is important to consider where the article is published as the quality of publishers varies by a lot. There is a limited amount of books covering the topic of executive personality in relation to M&A, why scientific articles are used more extensively. The literature review was used to get an understanding of whether or not there was a viable method to answer the suggested research questions and to get a theoretical framework to analyze the results.

3.4 Event study

Event study methodology has been around for quite some time, commonly used to evaluate and test the reaction of different events such as announcements of both dividends and acquisitions (Binder, 1998). It was introduced by Fama et al. (1969) in the academic profession and has since been used extensively when researchers want to measure security price reactions in connection with a particular event. The event study methodology is continuously updated and improved but the basis remains the same and the idea is to compute a normal return for the stock and then compare this expected normal return to the actual return during an event window (Campbell, Lo, and MacKinlay, 1997). In this section the main assumptions and basis for the event study methodology will be outlined as described by MacKinlay (1997) as it is considered one of the most common approaches to event studies. The event study for this thesis has been carried out by using the tool developed by Schimmer, Levchenko, and Müller (2014), normally the authors prefer to use STATA for event studies but due to issues with access to the STATA software the tool by Schimmer, Levchenko, and Müller (2014) was used instead. The event study is conducted with a focus on the acquiring company, and no further study is made concerning the target companies, apart from the deal-size being the numerator in M&A-intensity.

3.4.1 Event and estimation window

One fundamental aspect of event studies is to define the actual event date, commonly one set the announcement date of the event as the event date. In this study the announcement (press-release) of an acquisition will be used as day zero, or event day. This is the common approach to define event date for M&A transactions as the day of the announcement is related the most significant market reaction (Aktas et al., 2016). Next the event window is to be specified, meaning the time interval during which the abnormal returns are measured. By using different event windows one can take into account if the market is reacting before the announcement due to information leakage, or if it takes some time for the market participants to act on the new information (the announcement). Figure 3.2 display the different windows used in an event study. As previously stated, the event window is the time period during which the abnormal return is measured, the estimation window corresponds to the time before the event

used to compute the normal return of the security which is then compared to the return during the event window, yielding the abnormal return measure. The post event window is sometimes included in the estimation window data to normal returns model, but this is not the case for this thesis.

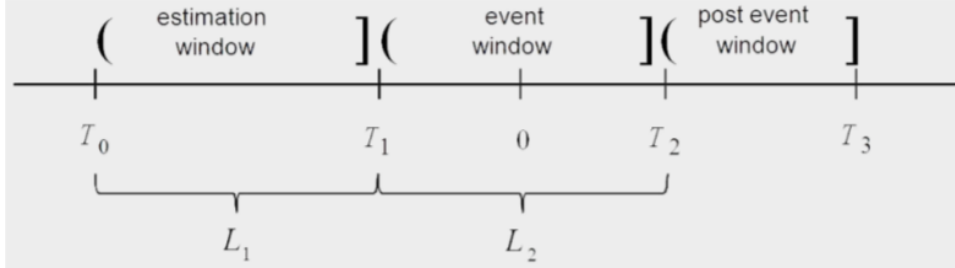


Figure 3.2: Event study timeline

The length of both the event and the estimation window varies widely between studies (Aktas et al., 2010; Aktas et al., 2016; Binder, 1998; MacKinlay, 1997). For short-term value effects the event windows of this thesis will be a symmetric window with $[-1,1]$, $[-2,2]$ and $[-5,5]$ in order to capture different dimensions of information leakage or delay in reaction, as explained above. For the long-term value estimation the event window start at -5 days to capture potential information leakage and end either one and two months after the event. As suggested by MacKinlay (1997) the estimation window will be 120 days (four months), starting 150 days before the event date and ending 30 days prior to the event in order to avoid overlap with the event window.

3.4.2 Normal return model and the market model

The basis of event studies is to compute an abnormal return for the companies included in the study and in order to do so one have to have a model to compute the normal returns (MacKinlay, 1997). There are different models used to compute normal returns, these can normally be divided into two categories, statistical and economic approaches. The statistical approach consider only the behavior of the asset returns and have strong assumptions on the returns being normally and independently distributed. Whilst the economic approach also incorporate economic assumptions which in general offer more precise measures of the normal return. However, as acknowledged by MacKinlay (1997) the Market model is one of the most common methods used to measure share price performance in event study as it require less extensive data availability as compared to the Capital Asset Pricing Model (CAPM). Where the latter offer very marginal benefits in terms of precision according to MacKinlay (1997). As only the market model is employed in this thesis for computing normal returns no other models will be specified.

The Market model formula is based on the study of MacKinlay (1997) and follow equation 3.1 below.

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \epsilon_{i,t} \quad (3.1)$$

with

$$E(\epsilon_{i,t}) = 0 \text{ and } var(\epsilon_{i,t}) = \sigma_\epsilon^2 \quad (3.2)$$

Where $R_{i,t}$ represent the actual return of company i on the day t and $R_{m,t}$ represents the return of the market (market index) on day t . The $\epsilon_{i,t}$ term is the zero mean disturbance term, α_i , β_i and σ^2 are the included parameters of the market model. The parameters are calculated for each stock in the estimation window to compute the normal return for each stock and day which is then compared to the returns during the event window. In this thesis the Standard and Poor 500 index (S&P 500) will be used as a proxy for the market portfolio, this is a common approach when studying the US market (MacKinlay, 1997). As stated in the section on data collection later below, all companies included in the used sample are included in the S&P 500 Index.

3.4.3 Abnormal return measures

Once the normal return has been computed, the abnormal return is calculated using the following equation 3.3. The abnormal return measures how the return for each company included in the study vary compared to the expected return as computed by the market model for that period.

$$AR_{i,t} = R_{i,t} - \alpha_i - \beta_i R_{m,t} \quad (3.3)$$

Average abnormal return - AAR

When studying an event MacKinlay (1997) suggest that one should use average abnormal returns rather than each individual abnormal return in order to capture the general reaction to the studied event. The average abnormal return is computed as the sum of the individual abnormal returns ($AR_{i,t}$) divided by the number of events, (N), as described in equation 3.4:

$$AAR = \overline{AR}_t = \frac{1}{N} \sum_{i=1}^N AR_{i,t} \quad (3.4)$$

The AAR-measure is used to examine the distribution of abnormal returns, that is how the market reacts to the event each individual day both prior to the event as well as after the event.

Cumulative abnormal return - CAR

Cumulative abnormal return (CAR) is one of two frequently used measures for event studies, the second one is buy and hold abnormal return (BHAR) (Fama, 1998). It has been suggested that CAR is superior for short-term assessment from a statistical perspective as compared to BHAR, whilst the latter is preferred when assessing long-term impacts (Fama, 1998; Mitchell and Stafford, 2000; Kothari and Warner, 1997;

Barber and Lyon, 1997). Hence for this study the CAR measure will be used to assess the short-term (less than a week) value effects of M&A announcements, while BHAR is used to assess the long-term (one and two months) value effect.

The CAR is computed by accumulating the abnormal returns over the specific event window as described in equation 3.5.

$$CAR_i = \sum_{t=T_1}^{T_2} AR_{i,t} \quad (3.5)$$

In this thesis we use the cumulative average abnormal return (CAAR) as it provides a measure for the entire sample rather than the individual company as described by MacKinlay (1997) and is obtained by using equation 3.6.

$$CAAR = \overline{CAR}_i = \sum_{t=T_1}^{T_2} \overline{AR}_t = \sum_{t=T_1}^{T_2} AAR_t = \quad (3.6)$$

Buy and hold abnormal return - BHAR

The BHAR model is used to study the long-term effects by calculating the return one would have attained if one purchased the stock in the beginning of the event window, sold it in the end of the event window and then subtracted the normal return computed from the market model. The computation of BHAR is described in equation 3.7 (Barber and Lyon, 1997).

$$BHAR_{i,t} = \prod_{t=T_1}^{T_2} (1 + R_{i,t}) - \prod_{t=T_1}^{T_2} (1 + E(R_{i,t})) \quad (3.7)$$

Where $BHAR_{i,t}$ is the "buy and hold abnormal return" for company i over time t , $R_{i,t}$ Where $E(R_{i,t})$ is the expected return (normal return) over period t for company i . As with CAR the BHAR measurement is used for each individual company (or observation) and in order to obtain a measurement analyzing the reaction of the entire sample the average BHAR (ABHAR) is computed as described in equation 3.8 (Barber and Lyon, 1997).

$$ABHAR_t = \overline{BHAR}_t = \frac{1}{N} \sum_{i=1}^N BHAR_{i,t} \quad (3.8)$$

Both of the abnormal return measurements CAR and BHAR can be tested for significance against a null hypothesis as described by (Barber and Lyon, 1997). The null hypothesis is that CAR or BHAR is equal to zero during the event window, and hence a significant t-test suggest that there is a significant value effect of the studied event. The t-test is computed as described in equation 3.9 and 3.10.

$$t_{CAR} = \frac{CAAR_t}{\left(\frac{\sigma_{CAR_t}}{\sqrt{N}}\right)} \quad (3.9)$$

$$t_{BHAR} = \frac{ABHAR_t}{\frac{\sigma_{ABHAR_t}}{\sqrt{N}}} \quad (3.10)$$

Where σ_{CAAR_t} and σ_{ABHAR_t} is the cross-sectional standard deviation (Barber and Lyon, 1997).

3.5 Personality scoring

Background on personality traits and the theoretical aspect of it is presented earlier in section 2.3.5. Hence this section is meant to address the topic of how personality scoring can be conducted and mainly how it has been computed in this particular study. Traditionally personality measures are derived from psychometric tests of the individual in question (Rothmann and Coetzer, 2003). However, another common approach is to use content analysis instead as it does not necessarily require the subject to free up time to conduct in a specific test, rather the information needed for the content analysis is retrieved from secondary sources. Especially when studying executives of large companies the content analysis offer a less intrusive way of collecting personality measures (Hambrick, 2007). Content analysis is a research tool used to determine the occurrence of certain words, themes or concepts within certain given qualitative data (i.e. text). Starting from the Lexical hypothesis, researchers can quantify and analyze the presence, meanings and relationships of such words, themes or concepts by means of content analysis (; Galton, 1884). Researchers have for example used content analysis to identify and measure the degree of narcissism by counting words and isolating keywords in texts that is attributed to executives (Chatterjee and Hambrick, 2007; Bajo, Jankensgård, and Marinelli, 2019). Developing on this idea of discrete attributes researchers have tried to extend this content analysis employing broader trait frameworks such as the FFM (Zajenkowski and Szymaniak, 2019; Rothmann and Coetzer, 2003). Further, developments in AI and computer power have enabled researchers to further extend the idea of content analysis and build automatic tools for personality traits through analysis of text (Harrison et al., 2019; Mairesse et al., 2007; Argamon et al., 2005; Oberlander and Nowson, 2006).

For this thesis the aim was to find an appropriate tool to make efficient and reliable scoring of CEOs personality traits based on their linguistic behavior. The first tool considered was the *Personality Recognizer* by Mairesse et al. (2007) which was a tool that analyzed a text sample and returned a personality score from one to seven for each of the five factors (*openness, neuroticism, extraversion, conscientiousness* and *agreeableness*) in FFM as shown in Figure 3.3.

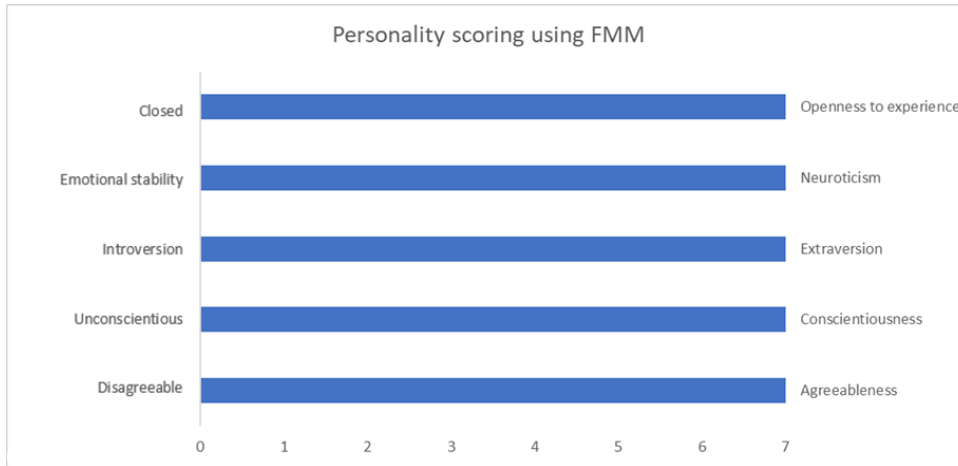


Figure 3.3: Personality scoring scale 1-7

The tool by Mairesse et al. (2007) have been used in previous studies of executives to extract personality traits from text analysis (Gow et al., 2016; Adebambo et al., 2019; Wang and Chen, 2019). However the *Personality recognizer* is not built and tested for CEOs or executives, rather it is more general and trained, developed and tested on psychology students. Although the tool by Mairesse et al. (2007) was not developed for CEO personality scoring it was considered a viable option for the study of this thesis. Luckily we found a tool that was developed for analyzing transcribed texts from CEOs and similar to Mairesse et al. (2007) was developed using machine learning. The tool used for personality scoring in this thesis is the result of work by Harrison et al. (2019) who have developed a linguistic tool for personality scoring based on the FFM. The tool is referred to by the owners as "Open Language Chief Executive Personality Tool" (OLCPT). They developed their tool by letting machine learning algorithms estimate the five traits of the FFM (similar to Mairesse et al. (2007)) based on a selection of transcribed speeches from CEOs of firms included in S&P 1500. The models were trained and tested against the work by Hill et al. (2019) who did extensive psychometric scoring by employing a video-metric approach (by studying videos of executives to score them according to FFM). When doing so, the tool by Harrison et al. (2019) can be expected to have a more reliable performance in estimating the personality scores of executives as compared to (Mairesse et al., 2007). In their paper Harrison et al. (2019) also does a benchmark against the *Personality recognizer* by Mairesse et al. (2007) and it showed that the OLCPT was superior in terms of validity for the CEO sample, using the videometric scoring as reference (Hill et al., 2019). To put it simply, in this thesis we will rely on the work of Harrison et al. (2019) and their development of the OLCPT, for the personality scoring conducted in our study. The authors of this thesis do not have any further knowledge regarding the tool and have not made any contributions or modifications to it.

3.5.1 Extracting personality traits using OLCPT

In order to extract the personality scoring from the OLCPT by Harrison et al. (2019) it is necessary to prepare texts containing transcribed speeches by the managers one wishes to retrieve a personality score for. In this thesis a personality score is computed for each event implying that the same CEO may have multiple personality scores, one unique for each event. The reasoning behind this was that computing a unique personality trait related to each deal is more in line with the research questions of this thesis, that is to see how personality scores affect M&A activity and performance. As the data is available to extract transcribed speeches isolated to each event (M&A) it is possible to capture the estimated personality of the CEO for that specific event. Further, once testing the OLCPT it was evident that the scoring for the same CEO did not change so much if the events were relatively close in time. The authors thought this suggested that the tool is accurate enough to capture minor changes in CEO personality over longer timer periods, and hence a unique score per event was used. An interesting example (not scientifically tested but rather telling) of the accuracy of OLCPT is that there was only one out of the 95 personality scores achieving the maximum of seven on the extraversion scale and it was Steve Ballmer, former CEO of Microsoft, please refer to the here cited video for some telling evidence of his extraverted personality at (Youtube, 2011).

As for the output of the tool it scores the personality of each transcribed text on a seven grade scale from one to seven. One indicating the minimum score and seven the maximum score for the specific trait, similar to Mairesse et al. (2007) and as displayed in Figure 3.3. The output variables are named according to the traits they reflect:

- AGREE - Agreeableness
- CONSC - Conscientiousness
- EXTRA - Extraversion
- NEURO - Neuroticism
- OPENN - Openness to experience

Once the scoring have been made using the tool the output variables are examined in scatter plots to check for any strange or skewed look as displayed in appendix A.

3.6 Data collection

The data collection sources for this study have varied from literature (books, articles, web-sites etc.), databases (Zephyr, Yahoo and Seeking Alpha), press releases and annual reports. Due to the ongoing COVID-19 pandemic at the time of this thesis, limited access to some of the data sources normally accessible through the university was unavailable for the authors, which to some extent is reflected in the volume of

data in this thesis. The following section will further explain how data collection was managed and what considerations have been made.

3.6.1 Data selection criteria

The list of events to be included in the study was extracted from the database Zephyr, which is a comprehensive database keeping records of M&A, IPO, PE and VC deals around the world. To obtain a data-set that was of feasible size, containing relevant events, a set of criterion had to be set. These criterion were set in an interactive process starting with determining the time period to be examined and selecting an appropriate geographical market. Subsequently, the search criteria would be further narrowed down, in a way that was suitable for the scope of this thesis.

An initial decision was made to consider the last ten years of acquisition deals to more or less take an entire economic cycle into account. It was then decided to examine the US market as it generally offers proper access to relevant data. The decision to consider companies that are covered in S&P500 is due to the use of S&P500 as a proxy for the market-portfolio (discussed earlier in this chapter), furthermore, the choice to analyze the selected industries was partly due to limit the amount of data but also to have a homogeneous selection of companies for the analysis. The minimal stake criterion is applied in order to only consider majority stakes, and lastly the minimum deal value is to remove deals that have very little financial impact for the acquirer and hence the CEO is less likely to be extensively involved in those deals.

The criteria selection used in Zephyr is summarized in the list below:

- Acquirer is listed and is part of the S&P500 Index.
- The primary industry code for the acquirer: computer programming services (7371) or Prepackaged software (7372).
- Time-span: 2010-04-16 → 2020-02-16, completed confirmed.
- Deal type: Merger och Acquisitions.
- Minimal 50% final stake.
- Minimum 5 mEUR deal value.

This resulted in 99 events to study however, some events were excluded due to outliers, which is discussed later in this chapter, so the final data-set amounted to 95 events for the regression study.

After having selected the events to be studied, the stock price data for all companies were retrieved from Yahoo Finance. The collected stock price data and index price data have been adjusted according too CRSP standards, which adjust for splits

and dividends (Yahoo, 2020). Next the CEO at the time of the announcement for the M&A-transaction was retrieved manually from company websites and Google. For the collection of data to be used in the personality scoring transcribed Q&As in connection to earnings calls were collected. These transcribed earnings calls were obtained from Seeking Alpha, using its "Earnings Call Transcripts"-module (SeekingAlpha, 2020). To the extent possible the earnings calls in close connection prior to the announcement of acquisition were used. The parts of the transcripts where the CEO spoke were filtered out using the program Notepad++, these filtered texts were then saved as separate documents.

3.7 Regression analysis

A common way to analyze the relationship between the variables of an event study is by cross sectional regression analysis (Binder, 1998). It enables one to study how different variables affect the abnormal returns computed in the event study. The basis for a regression analysis is to have a dependent variable, which in our study is the abnormal return measures and the M&A-intensity, as well as independent variables which in our study are the personality traits in the FFM. Regression analysis can be computed in many different ways, one of the most common methods is the ordinary least square (OLS) method, which is used to find linear relationships between parameters. As our study have multiple variables a multiple regression will be computed using the software used SPSS, a statistical computer software from IBM.

3.7.1 Dependent variables

The dependent variables are sometimes also referred to as the outcome variables or predicted variables, they are simply the variables to be predicted by the independent variables. In this study the dependent variables are used to answer the research questions in chapter 1. Hence, the dependent variables will in the regression analysis be constituted of the M&A-intensity and the average abnormal returns. For each dependent variable three different models are computed where the first include the personality trait variables, the second include the control variables and the third and final model include both personality trait variables and control variables.

The M&A-intensity is computed according to equation 3.11 below. It aims to portray the relative size of the deal which is referred to as intensity as it to some degree reflect how "big of a deal" it is for the acquiring company.

$$M\&A\ Intensity = \frac{Log(Deal\ value)}{Log(Market\ capitalization\ acquirer)} \quad (3.11)$$

As for the abnormal return variables, only two measures showed significant results in the event study and was selected as dependent variables in the regression analysis. These were the average buy-and-hold abnormal returns (ABHAR) for one and two

months event windows. The computation of these variables are described in section 3.4.

3.7.2 Independent variables and control variables

The independent variables are as mentioned the variables used to predict the dependent variables. In this study the independent variables are the personality traits of the CEOs and the control variables for each deal. The personality trait variables are explained in section 3.5 regarding personality scoring. The control variables are used to have a more reliable regression by testing if other variables than those of interest (personality scores) have an impact on the outcome variable. The term "correlation is not causation" is often used to highlight that correlation does not necessarily imply that the independent variables cause the outcome of the dependent. The control variables used in this study was:

- **CROSSBORDER** - a variable used to check if the target company was located in the same country as the acquirer. Set to 1 if the target is from outside US, 0 if it was not from US. The geographical relatedness have been shown to have an impact on CAR and is included as a dummy variable to consider this (Faccio, McConnell, and Stolin, 2006; Markides and Ittner, 1994).
- **SAMEINDUSTRY** - if the target has a SIC code in the 737x category. 1 if same industry 0 if not. Similar to Krishnaswami and Subramaniam (1999) the SIC code is used to check industry relatedness, as it has been found in studies that it has an impact on value effects.
- **DEALVALUE** - the logarithmic value of the deal (acquisition) in thousand Euros. Both absolute value before and after the logarithmic transformation is presented, but solely log-value is used for the regression. Deal-size or deal value is part of the A-intensity variable but is used as a control variable in the value effect regression as it is a common control variable when conducting event studies (Aktas et al., 2016; Faccio, McConnell, and Stolin, 2006).
- **ACQSIZE** - logarithm of the pre-sales of acquirer in thousand Euros. Both absolute value before transformation through logarithm is presented, but only log-value used in regression. Large acquirers is associated with lower CARs while smaller acquirer are related to higher CAR which is why acquirer size is used as a control variable (Moeller, Schlingemann, and Stulz, 2004; Schwert, 2000).

The control variables are summarized in Table 3.1.

Table 3.1: Summary of control-variables

This table present a summary of the control variables used in the regression models.

Variable	Definition
CROSSBORDER	= Dummy variable taking the value 1 if target is from the US and 0 otherwise
SAMEINDUSTRY	= Dummy variable taking the value 1 if target is in the same industry as acquirer and 0 otherwise
EURO_DEALVALUE	= Deal value in thousand Euros
LN_DEALVALUE	= Natural logarithm of EURO_DEALVALUE
ACQSIZE	= Acquirer size defined as last years annual sales in thousand Euros
LN_ACQSIZE	= Natural logarithm of ACQSIZE

More control variables could have been used but partly due to difficulties in accessing certain databases, these variables were considered to be the most important. Another variable the authors intended to include was the premium paid by the acquirer in each acquisition as it could have been related to theory concerning for example managerial hubris. However, this data was available for less than ten percent of the deals and the variable was therefor excluded.

The final regression model being applied for each of the dependent variables, M&A-intensity and ABHAR, is displayed in equation 3.12

$$\begin{aligned}
 DV_i = \alpha + \beta_1 AGREE + \beta_2 CONSC + \beta_3 EXTRA + \beta_4 NEURO + \beta_5 OPENN + \\
 \beta_6 CROSSBORDER + \beta_7 SAMEINDUSTRY + \beta_8 LNDEALVALUE + \\
 \beta_8 LNACQSIZE + \mu
 \end{aligned}
 \tag{3.12}$$

where α = intercept (constant)

DV_i = Dependent variable i (either M&A-intensity or ABHAR)

β_i = coefficient for independent variable i

μ = error term (residual)

3.7.3 Descriptive statistics and treatment of outliers

In the following tables 3.2 and 3.3 the sample data is displayed. Note that only the logarithmic values of *dealvalue*, *acquirer size* and *M&A-intensity* is used in the regression analysis, but to enable the reader an understanding of the underlying data the absolute values are also displayed in the tables. The logarithmic values are used to transform the data to get normalized data, as displayed in the histograms in Appendix A. The reasoning behind transforming data to obtain a normalized data-set is a common approach in statistics, and the logarithmic transformation is also frequently when the variable only can assume positive values, which is also the case here (Bartlett and Kendall, 1946).

Table 3.2: Descriptive statistics of sample including outliers

This table summarize the statistics variables used in the study before the removal of outliers. *AGREE*, *CONSC*, *EXTRA*, *NEURO*, *OPENN* are the obtained personality scores for each trait in the Five-Factor Model on a scale from 1-7 where seven indicates a high recognition of the specific trait. *CAR1*, *CAR2*, *CAR5*, *BHAR_20* and *BHAR_40* are the abnormal return measures computed in the event study. *MA_INTENSITY* display the relative size of the deal for the acquirer as computed in equation 3.11, and the *LN_MA_INTENSITY* is the M&A-intensity computed by the logarithmic values of deal value and market cap. As for the control variables they are defined and presented in Table 3.1

	Descriptive Statistics				
	N	Minimum	Maximum	Mean	Std. Deviation
AGREE	99	2,390	6,083	4,22932	0,806864
CONSC	99	3,508	5,932	5,10141	0,512465
EXTRA	99	2,946	7,000	4,86336	0,828555
NEURO	99	1,376	4,484	3,18871	0,632845
OPENN	99	3,709	6,458	4,77189	0,573031
CAR1	99	-0,0816	0,1347	-0,001610	0,0328879
CAR2	99	-0,1027	0,1897	-0,001119	0,0397749
CAR5	99	-0,1018	0,1992	0,001259	0,0455695
BHAR5_20	99	-0,1992	0,1859	-0,012430	0,0669470
BHAR5_40	99	-0,2682	0,2051	-0,019949	0,0840505
CROSSBORDER	99	0	1	0,29	0,457
SAMEINDUSTRY	99	0	1	0,83	0,379
EURO_DEALVALUE	99	4433	23309609	1090572,58	3162073,207
LN_DEALVALUE	99	8,40	16,96	12,4495	1,62499
MA_INTENSITY	99	0,000068	0,732536	0,04240689	0,100113887
LN_MA_INTENSITY	99	0,5164	0,9818	0,733275	0,0959190
ACQSIZE	99	404067	111462895	19661513,29	29045244,472
LN_ACQSIZE	99	12,91	18,53	15,6373	1,55114
Valid N (listwise)	99				

Adjusting for outliers in M&A-intensity and deal-value by removing extremes as seen in Figure 3.4 the final data-set was 95 events. As one outlier in deal-value was the same as one of the outliers for M&A-intensity the total number of outliers amounted to four. In this study the outliers were identified visually and the authors did not use any more advanced tests. Visual identification of outliers is a rather primitive method but this also makes it quite easy to apply, which is why this method is also widely used. (Achttert et al., 2010).

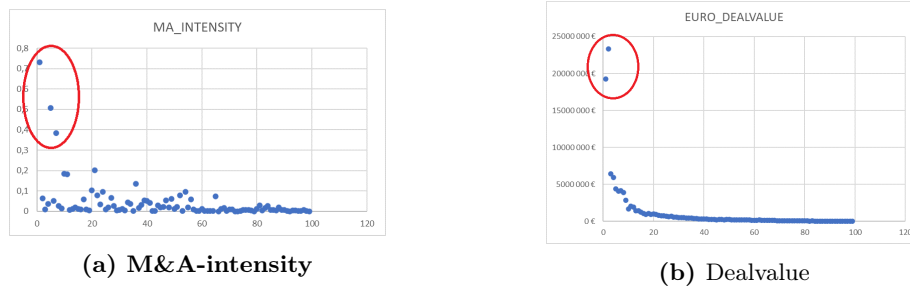


Figure 3.4: Outliers removed

Table 3.3: Descriptive statistics sample excluding outliers

This table summarize the statistics variables used in the study after the removal of outliers. *AGREE*, *CONSC*, *EXTRA*, *NEURO*, *OPENN* is the personality scoring of each trait in the Five-Factor Model on a scale from 1-7 where seven indicate high recognition of that trait. *CAR1*, *CAR2*, *CAR5*, *BHAR_20* and *BHAR_40* is the abnormal return measures computed in the event study. *MA_INTENSITY* display the relative size of the deal for the acquirer as computed in equation 3.11, and the *LN_MA_INTENSITY* M&A-intensity computed by the logarithmic values of deal value and market cap. As for the control variables they are defined and presented in Table 3.1

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
AGREE	95	2,474	6,083	4,26228	0,778246
CONSC	95	3,508	5,932	5,10987	0,517172
EXTRA	95	2,946	7,000	4,85400	0,829028
NEURO	95	1,376	4,484	3,19188	0,644613
OPENN	95	3,709	6,458	4,77869	0,575483
CAR1	95	-0,0816	0,1029	-0,003941	0,0283990
CAR2	95	-0,1027	0,0940	-0,004712	0,0319544
CAR5	95	-0,1018	0,0988	-0,003018	0,0378068
BHAR5_20	95	-0,1992	0,1544	-0,016492	0,0638944
BHAR5_40	95	-0,2682	0,2051	-0,024602	0,0814892
CROSSBORDER	95	0	1	0,31	0,463
SAMEINDUSTRY	95	0	1	0,84	0,367
EURO_DEALVALUE	95	4433	6427501	598216,25	1093063,550
LN_DEALVALUE	95	8,40	15,68	12,2971	1,46443
MA_INTENSITY	95	0,000068	0,201692	0,02644731	0,039831826
LN_MA_INTENSITY	95	0,5164	0,8956	0,724786	0,0877465
ACQSIZE	95	404067	111462895	19470642,03	28750649,415
LN_ACQSIZE	95	12,91	18,53	15,6241	1,55800
Valid N (listwise)	95				

The events removed as outliers are displayed in Table 3.4. No other outliers were removed, scatterplots for all variables are displayed in appendix A.

Table 3.4: Removed events from sample identified as outliers

Eventid	Acquiror name	Target name	Announced date	Deal-value th EUR	M&A-intensity
1	FISERV INC.	FIRST DATA CORPORATION	16-01-2019	19 269 797	0,7325
2	MICROSOFT CORPORATION	LINKEDIN CORPORATION	13-06-2016	26 200 000	0,0623
5	ACTIVISION BLIZZARD INC.	AMBER HOLDING SUBSIDIARY COMPANY	25-07-2013	5 830 000	0,5059
7	SYMANTEC CORPORATION	BLUE COAT SYSTEMS INC.	12-06-2016	4 650 000	0,3849

Comparing our descriptive data sample with other comparable studies the mean of each personality trait included in this study vary more than in the study by Gillmert and Persson (2019) who obtained mean values for all personality traits in the range of 3.0 to 4.0. An explanation to this could be their larger and different dataset as well as their more comprehensive study, but also their use of the personality recognizer developed by Mairesse, Walker, Mehl, and Moore (2007) instead of the CEO-specific tool developed by Harrison, Thurgood, Boivie, and Pfarrer (2019) being used in this study. Comparing our personality scores to Harrison et al. (2019) study, we find our means to be more in line with their obtained mean values, although we have larger variance, which is to be expected due the more limited data set used in this study. Further, comparing the other variables, the control variables display similar values as previous studies by Gillmert and Persson (2019), Into and Treyer (2015), Dresen and Sprenger (2019), and Ham, Seybert, and Wang (2018), the differences from our sample are related to the selection of unit for each measure as well as the geographic region being studied. Lastly, by comparing our abnormal return measures as well as M&A-intensity measure there are large deviations in comparison with other studies. However, as these are related to the outcome of our study they are further discussed in the result section, presented further below.

3.7.4 Assumptions

The following section aim to address questions regarding the assumptions related to regression analysis and how these have been checked in this thesis.

According to Osborne and Waters (2002) there are four main assumptions one should consider and test for when using multiple regression. These four are assumptions are *normality*, *linearity*, *reliability of measurement* and *homoscedasticity*.

Starting with the assumption of normality, it refers to the assumption that regression variables should be normally distributed. This can be checked using visual inspection of data plots, P-P plots and different tests (Osborne and Waters, 2002). One way to achieve normality is to transform the variables, for example taking the natural logarithm, which is a method employed in this thesis. In our study we make use of histogram plots with normality curves for the input variables, and in the regression we test the result using P-P plots to check the normality assumption. These graphs or plots can be found in appendix A.

Next, the assumption of linearity assume that there should be a linear relationship between the independent and the dependent variables, which in other words mean that the population can be described using equation 3.13:

$$y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \dots\beta_nx_n + u \quad (3.13)$$

Where $\beta_0, \beta_1, \dots, \beta_n$ are the unknown parameters or coefficients and u is the random error (Wooldridge, 2013). This assumption can be checked using residual plots in order to plot standardized residuals and standardized predicted values, which is also the method being employed in this thesis (Osborne and Waters, 2002). An example of how to check linearity using residual plot is displayed in Figure 3.5 where one want a rectangular shape of the plots.

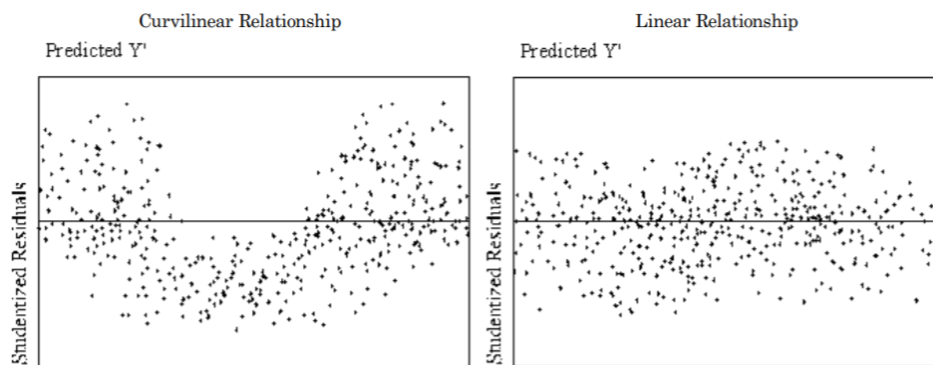


Figure 3.5: Example of linearity in residual plot (Osborne and Waters, 2002).

Next is the assumption of reliability, which refer to how well one has correct data. this is discussed later in this chapter in section 3.8. But in short the main concern of data reliability in our study is the personality scoring. No correction other than removal of outliers is done.

Lastly, the assumption presented by Osborne and Waters (2002) is homoscedasticity which refer to the notion that variance of errors should be the same for all levels of independent variables. This assumption can be checked using residual plots (as with linearity) of standardized residuals (the errors) and the regression standardized predicted value, an example is displayed in Figure 3.6 (Osborne and Waters, 2002).

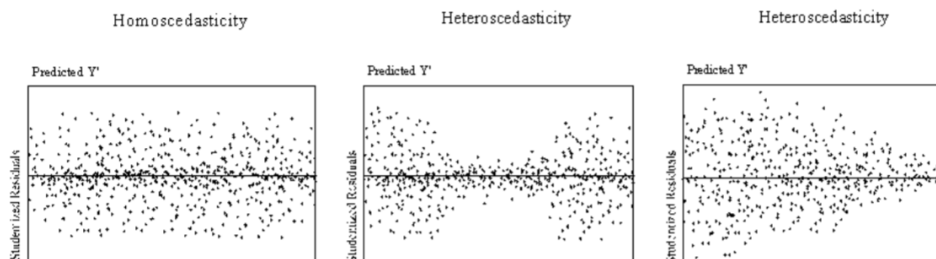


Figure 3.6: Example of homoscedasticity in residual plot (Osborne and Waters, 2002).

Additional checks of statistical assumptions are made with the built in output variables of the regression tool in SPSS. For example the Variance Inflation Factor (VIF) which help test for multicollarity, that is to see if the independent variables are strongly inter-correlated, a common limit is five which is also being employed in this study (Sundell, 2010).

3.8 Validity and Reliability

3.8.1 Validity

According to Bryman (2011), validity is defined how well the thing meant to be measured corresponds to the thing that actually gets measured. Or in other words put by Heale and Twycross (2015), are you measuring data that will help answer your questions. Looking at our research questions one could argue that we do measure the right thing in order to answer them as we establish a clear set of deals to be included in the study and then use transcribed speeches from CEOs to conduct the linguistic analysis. One choice that can be questioned is the use of M&A-intensity rather than M&A frequency which might be more interesting study. Also we make rather tight selections for the data in terms of country, index and industry which could be viewed to limit the validity.

3.8.2 Reliability

Reliability refers to the question weather or not the data is correct or if it is measured in a trustful way (Heale and Twycross, 2015). Another way to view reliability is the possibilities for other students or researchers to redo the study (Bryman, 2011, p. 49). The authors have tried their best to describe every step of the study to make it as easy as possible to replicate the study or to redo it using another dataset. The data have been collected from well known sources and using established benchmarks such as the S&P500 as proxy for the market.

Chapter 4

Result and Analysis

In this chapter the results of the conducted event study will be presented as well as the computed regression models used to observe if personality traits have an impact on M&A activity and performance for the acquirer in the deal. Further, the result will be analyzed in relation to the previously presented theoretical framework and empirical evidence.

4.1 Value effects of acquisitions

The event study was, as earlier mentioned, conducted using an event study tool by Schimmer, Levchenko, and Müller (2014) which suggest the use of the standard residual test or Patell z-test over the cross sectional t-test as it limits the impact of companies with very high standard deviations in their returns. Hence, when applicable the Patell z-value is used as significant test.

4.1.1 Average abnormal return

To get an overall understanding of how the market reacts to the announcement of an acquisition the average abnormal return for the sample is computed for five days prior to and five days after the event.

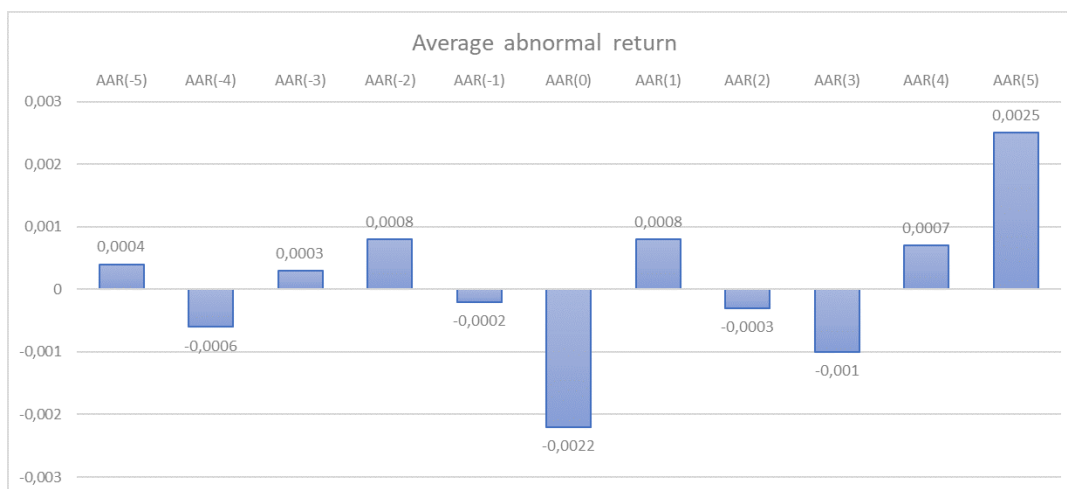


Figure 4.1: Average Abnormal Return for the sample

Table 4.1: Average Abnormal Return

This table display the result from the event study in terms of AAR and day the day prior to or after the announcement, where day zero represent the day of the announcement (event day). Further, the t-value and Patell z-value are statistical test values which are translated to statistical significance p-values.

Day	AAR	t-value	p-value t-test	Patell z-value	p-value z-test
-5	0,0004	0,3841	0,7017	0,6590	0,2549
-4	-0,0006	-0,5560	0,5795	-0,4182	0,3379
-3	0,0003	0,2577	0,7972	0,0585	0,4767
-2	0,0008	0,7489	0,4557	0,4396	0,3301
-1	-0,0002	-0,1303	0,8966	0,0602	0,4760
0	-0,0022**	-1,6628	0,0995	-1,9589	0,0251
1	0,0008	0,3211	0,7488	-0,0954	0,4620
2	-0,0003	-0,2285	0,8197	-0,4272	0,3346
3	-0,0010	-0,9267	0,3564	-0,2721	0,3928
4	0,0007	0,7009	0,4850	0,4151	0,3390
5	0,0025**	1,5979	0,1133	1,9805	0,0238

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ (Patell z-value)

As seen in Figure 4.1 and table 4.1 the greatest AAR is present at the day of the event (negative effect) and five days after the event. These days are also the only two that show significant impact on the abnormal return for the sample used in this study. The result differs from other studies supporting the theory that acquisitions are related to positive short term value effects, for example the study by Dresen and Sprenger (2019) displayed a positive AAR at the day of the announcement, although not with the same significance. The differences can be many as there are several factors affecting the distribution of the AAR. Some differences of our study and the study of Dresen and Sprenger (2019) is the difference of industry and country as well as the the ratio of listed or unlisted targets included in the sample. These factors have been proven to display different abnormal returns (Faccio, McConnell, and Stolin, 2006; Masulis, Wang, and Xie, 2007; Uysal, Kedia, and Panchapagesan, 2008). For example Faccio, McConnell, and Stolin (2006) showed that acquirers of listed targets displayed an insignificant negative AAR of -0.38%, and acquirers of unlisted targets displayed a significant positive AAR of 1.48%. As most studies does only display the CAR it is hard to make any deeper comparisons or analysis of this result.

4.1.2 Cumulative average abnormal return

The AAR indicated that there was a negative value effect associated with the announcement of an acquisition for the acquirer. However, as mentioned in the method section earlier, the more common measure for short term value effects is the CAR measure. The result of the event study is presented in Table 4.2.

Table 4.2: CAAR results of event study

In which the *CAAR1* represent an event window of $[-1,1]$, *CAAR2* $[-2,2]$ and *CAAR5* $[-5,5]$ and so on. The *t-value CAAR* and *Patell Z-value* display the statistical test significance.

	CAAR1	CAAR2	CAAR5	CAAR20	CAAR40
Observations	99	99	99	99	99
pos:neg CAR	45:54	48:51	44:55	43:56	44:55
CAAR Value	-0,002	-0,001	0,001	-0,012**	-0,017**
t-value CAAR	-0,487	-0,280	0,275	-1,769	-2,091
Patell Z-value	-1,151	-0,886	0,133	-2,007	-2,411

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ (Patell z-value)

From Table 4.2 it seems to be a very small negative short term value effect as both CAAR1 and CAAR2 are showing negative values, however as they are insignificant at all levels one can not draw any conclusions or remarks from these results. This result is similar to results from previous studies on acquisitions displaying an insignificant result for the short term value effects associated with CAR (Capron and Pistre, 2002; Faccio, McConnell, and Stolin, 2006; Uysal, Kedia, and Panchapagesan, 2008). As an example the study by Capron and Pistre (2002) displayed an insignificant negative CAR $[-20,1]$ of -0.34% for acquirers while the study by Masulis, Wang, and Xie (2007) displayed a significant positive abnormal return of 0.215%. The short term value effect for the acquirer is neither evident nor clear in this study as well as previous research, it seems as if too many other factors such as geography, type of target, payment method etc. are affecting the return (Capron and Pistre, 2002; Faccio, McConnell, and Stolin, 2006; Masulis, Wang, and Xie, 2007; Uysal, Kedia, and Panchapagesan, 2008).

Further, considering the long term value effects there are significant negative value effects for both one and two month event windows as implied by the CAAR20 and CAAR40 results. This is in line with several studies indicating that there is a negative long term value effect associated with acquisitions for the acquirer (Gregory, 1997; Loughran and Vijh, 1997; Rau and Vermaelen, 1998; Andre, Kooli, and L'her, 2004). However, as discussed in chapter 3, BHAR is usually preferred when measuring long-term abnormal returns, so further discussion regarding the long term value effects are provided in connection to the ABHAR result below.

4.1.3 Average buy and hold abnormal return

Looking at the average BHAR in Table 4.3 it is comforting to see that it displays similar results as the CAAR Table with insignificant short-term performance results but with significant negative long-term performance. For a one month event window the ABHAR display a -1.2% abnormal return significant at the 10%-level, while the two

month ABHAR exhibits a negative -2.0% abnormal return significant at the 5%-level. The results are in line with previous studies suggesting that post acquisition performance of acquiring firms are negative. For example the study by Rau and Vermaelen (1998) displayed a -4% significant abnormal return using a 36 month CAR and a study by Loughran and Vijh (1997) display a significant under-performance of -6.5% over a three year period BHAR. Although, other studies provide more insignificant result regarding the long term under performance suggesting that the long term value effect is also dependent on several different factors just as the short term value effect discussed earlier (Dutta and Jog, 2009; Mitchell and Stafford, 2000). Relating back to the theories presented in chapter 2 such as the Winners Curse hypothesis, asymmetric information, agency theory and Hubris hypothesis there is reason to regard our result as reasonable and consider the presence of long term under-performance of the acquirers in our sample (Flanagan and O'Shaughnessy, 2003; Amihud and Lev, 1981; Dionne, La Haye, and Bergères, 2014; Malmendier and Tate, 2008).

As only one and two months abnormal returns are significant these are the ones included in the regression studies for the personality traits. Only the ABHAR is considered as this is the preferred long term abnormal return measure.

Table 4.3: Average Buy and Hold Abnormal Return results of event study

In which the *ABHAR1* represent an event window of [-1,1], *ABHAR2* [-2,2] and *ABHAR5* [-5,5] an so on. The *ABHAR t-test value* and *ABHAR Skewness corr. t-test* display the statistical test significance where the latter is adjusted for skewness.

	ABHAR1	ABHAR2	ABHAR5	ABHAR20	ABHAR40
ABHAR	-0,002	-0,001	0,001	-0,012*	-0,020**
ABHAR t-test value	-0,513	-0,281	0,262	-1,847	-2,362
ABHAR Skewness corr. t-test	-0,486	-0,250	0,283	-1,855	-2,379

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ (skewness corrected t-value)

4.2 Regression analysis

In this section the results of the multiple regression analysis are presented, with the focus being more in line with the stated purpose of this thesis (to study personality traits in relation to M&A-transactions). First the models for the M&A-intensity are presented and then the models including the abnormal returns computed in the previous event study are presented. As only the long term value effects were significant in the event study, these are the only ones included as dependent variables in the regression analysis. For each regression three different models are made, where *model one* contain only the personality traits as independent variables, *model two* contains only the control variables and *model three* contain all independent variables. The standardized β_i presented in the tables make it possible to compare the different

variables as if they all had the same unit of measure, as this measure normalize the coefficient.

4.2.1 Personality traits impact on M&A-intensity

From Table 4.4 it is clear that only the constant or intercept is significant in the first model. This has no intrinsic meaning as neither of the independent variables can be zero (as they span from one to seven). The R-squared is also very low suggesting that the personality variables alone does not provide a good model explaining the variance in M&A-intensity in the sample.

Table 4.4: M&A-intensity - Model 1

This table present the regression of M&A-intensity and the personality traits. *AGREE*, *CONSC*, *EXTRA*, *NEURO*, *OPENN* represent the obtained personality scores for each trait in the Five-Factor Model on a scale from 1-7 where seven indicate high recognition of that trait. β_i represent the coefficient of the regression model, *Std. Error* represent the standard error, *Std. β* is the standardized β -coefficient normalizing the variable, *t* represent the t-statistic test and *Sig.* the p-value indicating the significance level.

Model 1: No control variables					
Dependent variable: MAINTENSITY	β_i	Std. Error	Std. β	t	Sig.
Constant	0,807***	0,146		5,530	0,000
AGREE	0,008	0,018	0,074	0,470	0,639
CONSC	0,019	0,020	0,111	0,959	0,340
EXTRA	-0,017	0,013	-0,163	-1,343	0,183
NEURO	-0,006	0,017	-0,046	-0,375	0,709
OPENN	-0,023	0,024	-0,151	-0,981	0,329
R-squared	0,042				
Observations	95				

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

In model two there is a strong relationship between deal-value and acquirer size as seen in Table 4.5. This is however rather unsurprising as deal-value is a factor in the MAINTENSITY variable. The acquirer size, measured as the sales of the acquiring company is also related to MAINTENSITY which most likely is explained by its correlation to market capitalization (included in the M&A-intensity measure).

Table 4.5: M&A-intensity - Model 2

This Table present the regression of M&A-intensity and the control variables defined in Table 3.1. β_i represent the coefficient of the regression model, *Std. Error* represent the standard error, *Std. β* is the standardized β -coefficient normalizing the variable, *t* represent he t-statistic test and *Sig.* the p-value indicating the significance level.

Model 2: Only control variables					
Dependent variable: MAINTENSITY	β_i	Std. Error	Std. β	t	Sig.
Constant	0,670***	0,031		21,502	0,000
CROSSBORDER	-0,005	0,006	-0,027	-0,856	0,394
SAMEINDUSTRY	-0,012	0,007	-0,049	-1,621	0,109
LN_DEALVALUE	0,055***	0,002	0,923	28,052	0,000
LN_ACQSIZE	-0,039***	0,002	-0,698	-20,986	0,000
R-squared	0,920				
Observations	95				

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

In the third and final model of M&-intensity the result displayed in Table 4.6 show that there are two personality traits that have a significant effect on M&A-intensity. Extraversion show a negative impact on M&A-intensity while neuroticism show a positive impact. The R-squared suggest that the variables included are relevant in explaining the M&A-measure, although on need to have in mind that this is mainly related to the control variables.

Table 4.6: M&A-intensity - Model 3

This table present the complete regression model of M&A-intensity considering the personality traits and the control variables. *AGREE*, *CONSC*, *EXTRA*, *NEURO*, *OPENN* represent the personality scoring of each trait in the five-factor model on a scale from 1-7 where seven indicate high recognition of that trait. β_i represent the coefficient of the regression model, *Std. Error* represent the standard error, *Std. β* is the standardized β -coefficient normalizing the variable, *t* represent the t-statistic test and *Sig.* the p-value indicating the significance level. The control variables are defined in Table 3.1.

Model 3: All variables					
Dependent variable: MAINTENSITY	β_i	Std. Error	Std. β	t	Sig.
Constant	0,602***	0,064		9,457	0,000
AGREE	0,001	0,005	0,005	0,112	0,911
CONSC	0,004	0,007	0,025	0,595	0,553
EXTRA	-0,011**	0,003	-0,099	-3,005	0,003
NEURO	0,013***	0,005	0,093	2,768	0,007
OPENN	0,008	0,007	0,053	1,128	0,262
CROSSBORDER	-0,002	0,006	-0,009	-0,300	0,765
SAMEINDUSTRY	-0,014	0,007	-0,057	-1,939	0,056
LN_DEALVALUE***	0,056**	0,002	0,938	29,110	0,000
LN_ACQSIZE***	-0,039**	0,002	-0,691	-16,748	0,000
R-squared	0,935				
Observations	95				

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Considering our first hypothesis 2.1 from section 2.3.5 our result suggest the opposite of what was expected. The reasoning for the hypothesis was that extravert CEOs is more likely to overestimate their own ability and also make more bold decisions which might then relate the urge to make larger deals (higher M&A-intensity). That does not seem to be the case in our study, a possible explanation to this could be that the companys included in our sample are very large which limit the impact each individual CEO might have over a deal. However, there are studies suggesting the opposite of our result, which would speak in favor of hypothesis 2.1. The study by Malhotra et al. (2018) showed that extraverted CEOs were more likley to engage in M&As as well as conduct larger ones. However, their measures differ from ours as they study the propensity (binary variable if the company has made an acquisition or not), frequency (number of deals each year) and finally they measure the M&A-size as the total value of deals made in a year by a company with its total assets. The latter measure is the one most similar to our measure of M&A-intensity but our study does instead consider each individual deal as one which give it a unique M&A-intensity. The study by Malhotra et al. (2018) is also more focused towards extraversion rather than all the factors in the FFM.

Next significant personality trait was neuroticism for which the hypothesis 2.2 suggested that it would be negatively correlated with M&A-intensity due to this trait being associated with anxiety, tension and low self-consciousness (Barrick, Mount, and Judge, 2001). However, our result suggest the opposite which is that neurotic CEOs is more likely to engage in larger M&A deals. This could perhaps be explained by the suggestion of Nettle (2006) that high degree of neuroticism in combination with other factors such as high intelligence and consciousness can act as a motivator of achievement in a competitive environment. The professional landscape of CEOs and large enterprises can most definitely be defined as an competitive advantage. However, our study does not conduct any cross-sectional analysis to find the combination of personality traits that are associated with the highest M&A-intensity, although this would be interesting.

Another study in the area of M&A-intensity considering all personality traits in FMM by Gay et al. (2019) which find openness to be the most significant personality trait associated with initiation of M&A-transactions. Our sample does not provide a significant result, but the β -coefficient is slightly positive which at least indicate that there could be a positive relationship. The suggestion that openness is related to an increased M&A-intensity is in line with our hypothesis 2.3. The reasoning is that a CEO with a high degree of openness to experience is related to seeking risk and excitement which could be translated to larger deals (Judge et al., 2002). However, the study by Gay et al. (2019) also very different from ours as they employ social media as the source of content to analyze and score personality traits, while our study use transcribed spoken words from earnings calls or press-conferences. It does however seem possible to identify some sort of relationship between personality traits in the FMM and M&A-intensity, while it is unclear exactly how strong this relationship is and which traits are associated with the largest effect. According to our study extraversion is associated with lower M&A-intensity and neuroticism related to higher M&A-intensity. As for our hypothesis 2.4 that the relationship of agreeableness is ambiguous seem true as our study does not show any sign of relationship. The final personality trait not mentioned yet is conscientiousness. Which according to our hypothesis 2.5 was expected to have a negative effect on M&A-intensity but this is not seen in our model.

4.2.2 Personality traits impact on M&A performance

This section present the result of the regression analysis considering the abnormal returns as dependent variables. Unfortunately, neither of the models presented below show significant result for any of the independent variables when testing the relationship against the two abnormal return measures. In general the R-squared is very low signaling that the parameters included in the models does not provide a very good degree of explanation to the variance in the dependent variables. However, it is still

possible to look for indicative results and compare these to the theories presented as well as the hypothesis established in section 2.3.5. Also, the multicollinearity test following the regression models indicate significant relationship considering only one personality trait at a time, similar to computing a single/simple regression with one personality trait as independent variable. The tables are presented on an ongoing basis where they are shortly commented upon and then a more general analysis and conclusion of the obtained results is presented.

Buy and hold - one month

Table 4.7: BHAR20 - Model 1 only personality traits

This table present the regression model of one month BHAR only considering the personality traits. *AGREE*, *CONSC*, *EXTRA*, *NEURO*, *OPENN* represent the personality scoring of each trait in the five-factor model on a scale from 1-7 where seven indicate high recognition of that trait. β_i represent the coefficient of the regression model, *Std. Error* represent the standard error, *Std. β* is the standardized β -coefficient normalizing the variable, *t* represent the t-statistic test and *Sig.* the p-value indicating the significance level.

BHAR20 - Model 1: No control variables					
	β_i	Std. Error	Std. β	t	Sig.
Constant	-0,058	0,106		-0,544	0,588
AGREE	-0,010	0,013	-0,119	-0,761	0,448
CONSC	0,008	0,014	0,065	0,559	0,578
EXTRA	-0,002	0,009	-0,028	-0,234	0,816
NEURO	0,012	0,012	0,125	1,016	0,313
OPENN	0,003	0,017	0,024	0,159	0,874
R-squared	0,049				
Observations	95				

As seen in the table no significant results are obtained and the R-squared is very low, suggesting that the variables included only explain 4.9% of the variations in BHAR20. The most significant variable is *neuroticism* which would be significant on a 30% level, but this is still not anywhere near to be considered significant.

Table 4.8: BHAR20 - Model 2 only control variables

This table present the regression model of one month BHAR only considering the control variables defined in table 3.1. β_i represent the coefficient of the regression model, *Std. Error* represent the standard error, *Std. β* is the standardized β -coefficient normalizing the variable, *t* represent the t-statistic test and *Sig.* the p-value indicating the significance level.

BHAR20 - Model 2: Only control variables					
	β_i	Std. Error	Std β	t	Sig.
Constant	0,102	0,079		1,298	0,198
CROSSBORDER	0,005	0,015	0,038	0,344	0,732
SAMEINDUSTRY	-0,007	0,018	-0,037	-0,355	0,723
LN_DEALVALUE	-0,007	0,005	-0,164	-1,434	0,155
LN_ACQSIZE	-0,002	0,005	-0,042	-0,365	0,716
R-squared	0,035				
Observations	95				

For the control variables the most significant variable is the deal value, which suggest that a lower deal value is associated with a better performance. It is not significant at any of the conventional levels, it would be regarded as significant at the 15%-level.

Table 4.9: BHAR 20 - Model 3 all variables

This table present the complete regression model of one month BHAR considering the personality traits and the control variables. *AGREE*, *CONSC*, *EXTRA*, *NEURO*, *OPENN* represent the personality scoring of each trait in the five-factor model on a scale from 1-7 where seven indicate high recognition of that trait. β_i represent the coefficient of the regression model, *Std. Error* represent the standard error, *Std. β* is the standardized β -coefficient normalizing the variable, *t* represent he t-statistic test and *Sig.* the p-value indicating the significance level. The control variables are defined in table 3.1.

BHAR 20 - Model 3: All variables					
	β_i	Std. Error	Std β	t	Sig.
Constant	0,028	0,176		0,161	0,872
AGREE	-0,008	0,013	-0,098	-0,604	0,547
CONSC	0,003	0,019	0,026	0,166	0,869
EXTRA	-0,003	0,010	-0,044	-0,349	0,728
NEURO	0,011	0,013	0,115	0,904	0,368
OPENN	0,003	0,020	0,027	0,152	0,880
CROSSBORDER	0,008	0,016	0,056	0,490	0,625
SAMEINDUSTRY	-0,003	0,019	-0,019	-0,174	0,862
LN_DEALVALUE	-0,005	0,005	-0,121	-0,991	0,324
LN_ACQSIZE	0,000	0,006	0,007	0,044	0,965
R-squared	0,065				
Observations	95				

In the final model for one month BHAR there are no significant variables but the variables displaying the strongest significance is neuroticism and deal value.

Buy and hold - two months**Table 4.10: BHAR40 - Model 1 only personality traits**

This table present the regression model of two month BHAR only considering the personality traits. *AGREE*, *CONSC*, *EXTRA*, *NEURO*, *OPENN* represent the personality scoring of each trait in the five-factor model on a scale from 1-7 where seven indicate high recognition of that trait. β_i represent the coefficient of the regression model, *Std. Error* represent the standard error, *Std. β* is the standardized β -coefficient normalizing the variable, *t* represent the t-statistic test and *Sig.* the p-value indicating the significance level.

Model 1: No control variables					
Dependent variable: BHAR40	β_i	Std. Error	Std. β	t	Sig.
Constant	-0,078	0,136		-0,569	0,570
AGREE	-0,017	0,017	-0,166	-1,048	0,298
CONSC	-0,005	0,018	-0,033	-0,284	0,777
EXTRA	-0,001	0,012	-0,007	-0,057	0,954
NEURO	0,013	0,016	0,101	0,810	0,420
OPENN	0,024	0,022	0,172	1,106	0,272
R-squared	0,029				
Observations	95				

For the two month BHAR the most significant (yet not statistically significant) traits seem to be *agreeableness* and *openness* when not considering the control variables. The R-squared is very low, similar to the one month BHAR.

Table 4.11: BHAR40 - Model 2 only control variables

This table present the regression model of two month BHAR only considering the control variables defined in table 3.1. β_i represent the coefficient of the regression model, *Std. Error* represent the standard error, *Std. β* is the standardized β -coefficient normalizing the variable, *t* represent the t-statistic test and *Sig.* the p-value indicating the significance level.

Model 2: Only control variables					
Dependent variable: BHAR40	β_i	Std. Error	Std. β	t	Sig.
Constant	0,027	0,101		0,265	0,792
CROSSBORDER	0,021	0,019	0,120	1,086	0,280
SAMEINDUSTRY	0,003	0,024	0,015	0,138	0,890
LN_DEALVALUE	0,000	0,006	-0,004	-0,037	0,970
LN_ACQSIZE	-0,004	0,006	-0,071	-0,607	0,545
R-squared	0,016				
Observations	95				

For the two month BHAR the dummy control variable *crossborder* is the most significant (yet not statistically significant).

Table 4.12: BHAR 40 - Model 3 all variables

This table present the complete regression model of two month BHAR considering the personality traits and the control variables. *AGREE*, *CONSC*, *EXTRA*, *NEURO*, *OPENN* represent the personality scoring of each trait in the five-factor model on a scale from 1-7 where seven indicate high recognition of that trait. β_i represent the coefficient of the regression model, *Std. Error* represent the standard error, *Std. β* is the standardized β -coefficient normalizing the variable, *t* represent the t-statistic test and *Sig.* the p-value indicating the significance level. The control variables are defined in Table 3.1.

Model 3: All variables					
Dependent variable: BHAR40	β_i	Std. Error	Std. β	t	Sig.
Constant	0,053	0,226		0,233	0,817
AGREE	-0,016	0,017	-0,155	-0,946	0,347
CONSC	-0,018	0,025	-0,111	-0,706	0,482
EXTRA	-0,002	0,012	-0,017	-0,137	0,892
NEURO	0,014	0,016	0,108	0,845	0,400
OPENN	0,029	0,025	0,208	1,168	0,246
CROSSBORDER	0,022	0,020	0,128	1,096	0,276
SAMEINDUSTRY	0,003	0,025	0,015	0,136	0,892
LN_DEALVALUE	0,000	0,007	0,005	0,038	0,970
LN_ACQSIZE	-0,007	0,008	-0,132	-0,834	0,407
R-squared	0,047				
Observations	95				

As seen in the tables 4.10, 4.11 and 4.12 there are no variables showing significant relationship with the abnormal return measure, similar to the one month models. The difference from the one month return models is that the personality traits with the highest significance in the two month model is *openness* and *agreeableness* rather than neuroticism. The results of the study in as to how personality traits affect the performance of M&A is hence ambiguous. Recapping the hypothesis stated in section 2.3.5 we were expecting a negative relationship with the traits *extraversion*, *neuroticism* and *openness* while *agreeableness* and *conscientiousness* were expected to have a positive effect. If one consider the results from our regression models as an indicative result, however not significant, vague indications of how *neuroticism* might have a positive relation to the abnormal return, as both the BHAR20 and BHAR40 models display a positive coefficient for *neuroticism*. There is however to low of significance for this to have any actual statistical implications.

4.2.3 Multicollinearity test

The correlation matrices below portrays how there does not seem to be any issues in regards of multicollinearity for either of the models. A common pointer is that if it

exceeds more than 0.7 one can assume there to be existing issues and the only variable even close to that is deal-value in relation to M&A-intensity, this is as previously mentioned not so surprising since the first is a factor in the calculation of the latter. Further checks against linearity, normality and homoscedasticity is done using P-P plots and scatter plots of the standardized residuals and the predicted values, these are presented in appendix A.4. Only the plots for the third model of each dependent variable is included although the checks were made for each model.

Along with a multicollinearity test the tables also display the correlation and significance of each variable if one were to examine them independently against the dependent variable. This can as mentioned be used as a proxy for what a simple regression model would displaying in terms of standardized β . Hence, one must be aware that the correlation coefficients displayed in the tables are not in the unit of measure for the variable. Further information regarding Pearson correlation and standardized regression β s the reader is referred to the article by Peterson and Brown (2005).

M&A-Intensity

For M&A-intensity there are signs that also a univariate level (single regression) *extraversion* seem to have a significant negative effect on M&A-intensity on a 10% significance level. This is as earlier mentioned the opposite of our hypothesis that extravert CEOs would engage in larger deals. This is contradictory to other studies showing a positive relationship between extraversion and engaging in M&As (Malhotra et al., 2018). This was discussed following the table 4.6 of the third M&A-intensity model.

Table 4.13: Correlation matrix M&A Intensity

This table display the correlation between the variables included in the regression models for M&A-intensity. The *Pearson Correlation* display the correlation between the variables of that row and column, while *Sig.(1-tailed)* display the significance of that correlation, considering a one-sided t-test. The Collinearity statistics display the collinearity tests where VIF is the one used and it should not be over five, which it not for any of the variables.

		Correlations										Collinearity Statistics	
		LN_MA_INTENSITY	CROSSBORDER	SAMEINDUSTRY	LN_DEALVALUE	LN_ACQSIZE	AGREE	CONSC	EXTRA	NEURO	OPENN	Tolerance	VIF
Pearson Correlation	LN_MA_INTENSITY	1.000											
	CROSSBORDER	-0.290***	1.000									0.829	1.207
	SAMEINDUSTRY	-0.130	-0.089	1.000								0.895	1.117
	LN_DEALVALUE	0.692***	-0.115	-0.131	1.000							0.739	1.354
	LN_ACQSIZE	-0.383**	0.230	-0.054	0.345	1.000						0.451	2.218
	AGREE	-0.068	0.098	0.136	0.267	0.386	1.000					0.419	2.386
	CONSC	0.024	0.100	-0.058	-0.344	-0.497	-0.087	1.000				0.451	2.216
	EXTRA	-0.156*	0.240	-0.088	-0.009	0.088	0.335	0.321	1.000			0.703	1.422
	NEURO	0.024	-0.108	0.014	-0.221	-0.204	-0.527	-0.007	-0.251	1.000		0.686	1.458
	OPENN	-0.130	0.240	0.046	0.191	0.404	0.676	0.189	0.435	-0.458	1.000	0.354	2.824
	LN_MA_INTENSITY												
Sig. (1-tailed)	CROSSBORDER	0.002											
	SAMEINDUSTRY	0.105	0.195										
	LN_DEALVALUE	0.000	0.133	0.104									
	LN_ACQSIZE	0.000	0.013	0.302	0.000								
	AGREE	0.256	0.172	0.095	0.004	0.000							
	CONSC	0.407	0.168	0.287	0.000	0.000	0.202						
	EXTRA	0.065*	0.000	0.198	0.466	0.198	0.000	0.001					
	NEURO	0.408	0.148	0.447	0.016	0.024	0.000	0.473	0.007				
	OPENN	0.105	0.010	0.331	0.032	0.000	0.000	0.033	0.000	0.000			

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Buy and hold - one month

On one month ABHAR there is significant independent correlations considering *deal value*, *agreeableness* and *neuroticism*. Where *deal value* and *agreeableness* have negative value effects while *neuroticism* have positive value effects. The negative relation with *deal value* is in line with other research showing that smaller acquisitions are related to better performance compared to larger deals. An example is the study by Alexandridis et al. (2013) showing that even though the premium paid is generally lower for large acquisitions it tend to destroy more value than smaller ones, suggesting there to be a negative relationship of abnormal return and increasing deal size. In regard of *agreeableness* the indication that it is negatively related to M&A-performance is the opposite of our hypothesis 2.4 suggesting it to be related to a better performance. The negative relationship could perhaps be explained by the idea that high perceived agreeableness is related to a more passive and compliant person, which can cause the CEO to be a terrible negotiator, which in the end result in the acquirer having to pay a higher premium. Finally, the *neuroticism* display a positive relationship which is in line with the insignificant result of the regression model in Table 4.9. This is the opposite of hypothesis 2.2 suggesting that *neuroticism* would be negatively related to acquirer performance. An explanation to this could be the research suggesting that most successful leaders have a low degree of neuroticism (Bass and Stogdill, 1990). However, as previously argued for there are studies suggesting a high degree of neuroticism to serve as a motivator of achievement in competitive environments, this could be a possible explanation to the positive relationship in our sample.

Table 4.14: Correlations table BHAR20

This table display the correlation between the variables included in the regression models for one month BARR. The *Pearson Correlation* display the correlation between the variables of that row and column, while *Sig.(1-tailed)* display the significance of that correlation, considering a one-sided t-test. The Collinearity statistics display the collinearity tests where VIF is the one used and it should not be over five, which it not for any of the variables.

		Correlations										Collinearity Statistics	
		BHAR5_20	CROSSBORDER	SAMEINDUSTRY	LN_DEALVALUE	LN_ACQSIZE	AGREE	CONSC	EXTRA	NEURO	OPENN	Tolerance	VIF
Pearson Correlation	BHAR5_20	1.000											
	CROSSBORDER	0.050	1.000									0.829	1.207
	SAMEINDUSTRY	-0.017	-0.089	1.000								0.895	1.117
	LN_DEALVALUE	-0.178**	-0.115	-0.131	1.000							0.739	1.354
	LN_ACQSIZE	-0.088	0.230	-0.054	0.345	1.000						0.451	2.218
	AGREE	-0.184**	0.098	0.136	0.267	0.386	1.000					0.419	2.386
	CONSC	0.070	0.100	-0.058	-0.314	-0.497	-0.087	1.000				0.451	2.216
	EXTRA	-0.068	0.240	-0.088	-0.009	0.088	0.335	0.321	1.000			0.703	1.422
	NEURO	0.184**	-0.108	0.014	-0.221	-0.204	-0.527	-0.007	-0.251	1.000		0.686	1.458
	OPENN	-0.114	0.240	0.046	0.191	0.404	0.676	0.189	0.435	-0.458	1.000	0.354	2.824
	Sig. (1-tailed)	BHAR5_20											
CROSSBORDER		0.314											
SAMEINDUSTRY		0.435	0.195										
LN_DEALVALUE		0.043	0.133	0.104									
LN_ACQSIZE		0.198	0.013	0.302	0.000								
AGREE		0.037	0.172	0.095	0.004	0.000							
CONSC		0.251	0.168	0.287	0.000	0.000	0.202						
EXTRA		0.255	0.009	0.198	0.466	0.198	0.000	0.001					
NEURO		0.037	0.148	0.447	0.016	0.024	0.000	0.473	0.007				
OPENN		0.136	0.010	0.331	0.032	0.000	0.000	0.033	0.000	0.000			

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Buy and hold - two months

No variables show significant correlations for BHAR40 so no further analysis will be made on how returns are affected by personality traits. The difference between the results of one and two month BHAR is interesting where the longer time horizon is related to lower explanation measured by the R-squared, but also the lack of significant variables in the correlation matrix.

Table 4.15: Correlations matrix BHAR40

This table display the correlation between the variables included in the regression models for one month BARR. The *Pearson Correlation* display the correlation between the variables of that row and column, while *Sig.(1-tailed)* display the significance of that correlation, considering a one-sided t-test. The Collinearity statistics display the collinearity tests where VIF is the one used and it should not be over five, which it not for any of the variables.

		Correlations										Collinearity Statistics	
		BHAR5_40	CROSSBORDER	SAMEINDUSTRY	LN_DEALVALUE	LN_ACQSIZE	AGREE	CONSC	EXTRA	NEURO	OPENN	Tolerance	VIF
Pearson Correlation	BHAR5_40	1.000											
	CROSSBORDER	0.103	1.000									0.829	1.207
	SAMEINDUSTRY	0.008	-0.089	1.000								0.895	1.117
	LN_DEALVALUE	-0.044	-0.115	-0.131	1.000							0.739	1.354
	LN_ACQSIZE	-0.045	0.230	-0.054	0.345	1.000						0.451	2.218
	AGREE	-0.102	0.098	0.136	0.267	0.386	1.000					0.419	2.386
	CONSC	0.011	0.100	-0.058	-0.344	-0.497	-0.087	1.000				0.451	2.216
	EXTRA	-0.024	0.240	-0.088	-0.009	0.088	0.335	0.321	1.000			0.703	1.422
	NEURO	0.112	-0.108	0.014	-0.221	-0.204	-0.327	-0.007	-0.251	1.000		0.686	1.458
	OPENN	0.004	0.240	0.046	0.191	0.404	0.676	0.189	0.435	-0.458	1.000	0.354	2.824
	BHAR5_40	0.160	0.160	0.468	0.334	0.331	0.162	0.459	0.410	0.141	0.484		
	CROSSBORDER	0.160											
	SAMEINDUSTRY	0.468	0.195										
	LN_DEALVALUE	0.334	0.133	0.104									
Sig. (1-tailed)	LN_ACQSIZE	0.331	0.013	0.302	0.000								
	AGREE	0.162	0.172	0.095	0.004	0.000							
	CONSC	0.459	0.168	0.287	0.000	0.000	0.202						
	EXTRA	0.410	0.009	0.198	0.466	0.198	0.000	0.001					
	NEURO	0.141	0.148	0.447	0.016	0.024	0.000	0.473	0.007				
	OPENN	0.484	0.010	0.331	0.032	0.000	0.000	0.033	0.000	0.000			

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Chapter 5

Conclusion

This section summarizes the conclusions that have been accumulated during the study.

In this thesis the purpose was to study how the characteristics of CEOs affect the intensity and performance of acquisitions using the Five-Factor Model. Starting with an event study of 99 deals in the US ranging from April 2010 and February 2020 where the acquiring companies were part of the S&P500 as well as active in the computer software industry. The result from the event study did not yield any significant results regarding short term value effects, but provided a significant result on long term under-performance of the acquiring firm, following the announcement of an acquisition. The abnormal return measure average buy and hold (ABHAR) yielded an under-performance of -1.2% using a one month significance on the 10%-level and -2.0% using a two month significance on the 5%-level.

Next up, the multiple regression analysis which was made with the aim to help answer the research questions of this thesis being:

- **RQ1a:** Does the personality traits of CEOs affect the size of M&A activity (M&A-intensity)?
- **RQ1b:** Which personality traits of CEOs has the most influence over the size of M&A activity (M&A-intensity)?
- **RQ2a:** Does the personality traits of CEOs affect the M&A performance?
- **RQ2b:** Which personality trait of CEOs has the most influence on the M&A performance?

For the first question (RQ1a) regarding M&A-intensity, which is the relative size of the deal for the acquirer, we found the personality traits to have quite small effect on the outcome, although yet significant. The R-squared for the model considering personality traits implied the variables of personality traits to explain only 4.2% of the variations in M&A-intensity. The final regression model including control variables displayed two personality traits to have significant relationship with M&A-intensity. *Extraversion* displayed a negative effect of -0.011 with a significance on the 5%-level, while *neuroticism* showed a positive relationship of 0.013 on a 1% significance level.

This indicates that *neuroticism* and *extraversion* have the greatest influence over the size of M&A-activity (M&A-intensity), answering RQ1b. To conclude the finding relating to RQ1 it seems like personality traits of CEOs does have an effect on M&A-intensity, although the effect is rather small, the most influential traits are *extraversion* and *neuroticism*.

As for question RQ2a, concerning the influence of personality traits on M&A-performance, which in this thesis is measured using average BHAR for one and two months, there were no significant results. The R-squared was very low for these regression models and none of the personality traits displayed a significant relationship in the multiple regression models. This makes it difficult to provide an appropriate answer for RQ2b regarding which personality trait that has the most influence on acquisition performance. When taking into account the traits that are the closest to significance (yet well over the 10%-level) for the one month BHAR the trait of *neuroticism* seemed to be closest to significance, indicating a positive relationship of 0.011, although the significance-level being at 37%, why this is not of any useful information here. For the two month BHAR it was *openness* that seemed to be the most significant out of the examined traits (yet highly insignificant) with a relation of 0.029 on a 28%-level, *agreeableness* showed a negative relationship of -0.016 at 35%-level and *neuroticism* showed a positive relationship of 0.014 on a 40%-level. In conclusion, the result of the study are ambiguous as to how much personality traits affect the M&A-performance but the result show vague indications of neuroticism to have a positive relationship with performance in acquisition deals.

Chapter 6

Discussion

This chapter begins with a discussion. The discussion then culminates in proposals for further research.

The starting point of this thesis was to understand and study if one could use content analysis of CEOs to better understand the performance of companies. The authors have gained insight in the topic of personality scoring using linguistic analysis and how this relate to the behavior and strategic decisions taken within companies. Even though the empirical study in this thesis did not yield as significant or convincing result as one would have hoped for it still gave indications that it is possible to use personality scoring of CEOs to understand the decisions or performance of companies. Not least the thesis have provided a road-map as to how these kind of studies can be conducted as well as summarizing and concentrating the current knowledge in the field. Being reflective on how the empirical study was done it is clear to the authors that one major weakness and mistake was the use of to small data sample. The major concern for the authors early on was how to deal with large data samples and how to create personality scores of each CEO. At first there was a concern the text analysis would be related to major manual work. However, with the discovery of the OLCPT by Harrison et al. (2019) the issue of processing large amount of text data automatically was solved, but by then the event study data sample had already been set and analysis started. Also, due to the ongoing pandemic the authors had limited access to databases which they are used to be working in. This made the data collection more time consuming which led to the data sample to be more limited. We would have of course preferred to have more outstanding results of the empirical study which most likley would have benefited from a larger data sample, but sometimes things do not work out as intended.

Discussing the outcome of the study, an explanation as to why the personality traits might have a limited effect on the intensity and performance of M&A-activity is that the companies studied are large global corporations where the CEO might have a limited power to influence the decisions made. One could argue that the CEO have the last say and is the leader of the company, but with some of these large corporations there might be other persons who have the same degree of power when it comes

to M&A decisions. Also, as mentioned in the analysis chapter it is likely that it is different combinations of personality traits that have the greater effect on decisions and performance. It was discussed how the indicative result that neuroticism had a positive effect on both M&A-intensity and performance might be explained by the idea that neuroticism combined with other traits such as high personality would yield a competitive person (Nettle, 2006).

All in all, the authors do think that the major ambition of the thesis was fulfilled. Which was to understand if it is possible to analyze CEO personality and relate it to corporate decisions and performance, and to establish a starting point and way of working for future researchers.

6.1 Proposal for future research

The most obvious suggestion for future research is to repeat this study and examine the character traits in a similar fashion but with a larger and improved sample. In view of the results from this study, it is also considered to be of interest to further examine some of the personality traits that have shown significance or tendencies of significance but have not been studied as much previously, such as the trait of neuroticism. Since the currently available research in this field is very limited at the moment, there are relatively few barriers of what can be explored. A few suggestions could be to study the personality traits of the target company's CEO, and whether the target CEO is to keep his position afterwards or not (with regard to personality of both the acquirer and the target). It is also considered to be of interest to investigate potential synergies in terms of the personalities of CEOs at both the acquirer and the target company to see which acquisitions tend to generate the greatest value creation. At present, no one has provided an analysis of a combined analysis of the different parties involved in terms of personalities of the CEOs. There also exists great opportunities to apply the model to other areas of decision-making where the CEO play an important role.

In this study, we focused on the personality traits (included in the Five Factor Model) of CEOs, since they undoubtedly have the most central role in decision-making concerning acquisitions. However, generally speaking it is not the CEO who make these decisions on their own. They, of course, consult with their colleagues both within the management team but also with advisors outside their inner circle. This being said, it is considered particularly interesting by the authors of this paper to consider the personality traits of the CEO's closest associates. For example, the CFO tend to play a major role in the due diligence work related to acquisitions. It could then be investigated how different personalities of individuals who are part of the management team produce different types of significant results. In the authors' view, it would also be interesting to conduct a study of the total composition of personalities in the entire

management team, this could be done by for example studying all parts of the QA sessions and not excluding the parts where other individuals in the management team speak, this could provide a better reflection of the actual decision-making process in acquisitions where other people involved often contribute to some extent.

We are also aware of how conference calls may be a limiting factor as to whether the tools are able to measure personality traits in a legitimate way. There is a possibility of some of the personality traits included in the FFM being suppressed due to the CEO being nervous or perhaps less experienced while some (mostly extraverted) CEOs may be more easy to obtain a correct assessment for in terms of certain traits. Therefor other approaches needs to also be considered.

In psychology, the HEXACO model (which also includes the personality trait of *Honesty*) has become an increasingly used model, it may be of interest to carry out a study where the HEXACO model is applied instead. However, this requires finding a suitable tool to measure the trait of honesty. This being said, just like the researchers referred to in this report, we can conclude that the available research where FFM have been applied in "corporate finance"-related settings is currently very slim. The lack of existing research, implies that there exists promising opportunities for future research to analyze the influence of personalities in corporate related decision-making.

Appendix A

Appendix

A.1 Summary of personality traits

BFI-2 domains and facets	NEO PI-R facets (McCrae & Costa, 2010)	AB5C facets (Goldberg, 1999; Hofstee et al., 1992)	Lexical subcomponents (Saucier & Ostendorf, 1999)	Big Five aspects (DeYoung et al., 2007)
Extraversion				
Sociability	Gregariousness	Gregariousness	Sociability	Enthusiasm
Assertiveness	Assertiveness	Assertiveness	Assertiveness	Assertiveness
Energy Level	Positive Emotions/Activity	—	Activity-adventurousness	Enthusiasm
Agreeableness				
Compassion	Altruism	Understanding	Warmth-affection	Compassion
Respectfulness	Compliance	Cooperation	Gentleness	Politeness
Trust	Trust	Pleasantness	—	—
Conscientiousness				
Organization	Order	Orderliness	Orderliness	Orderliness
Productiveness	Self-Discipline	Efficiency	Industriousness	Industriousness
Responsibility	Dutifulness	Dutifulness	Reliability	—
Negative Emotionality				
Anxiety	Anxiety	Toughness (R)	Emotionality	Withdrawal
Depression	Depression	Happiness (R)	Insecurity	Withdrawal
Emotional Volatility	Angry Hostility	Stability (R)	Irritability	Volatility
Open-Mindedness				
Intellectual Curiosity	Ideas	Intellect	Intellect	Intellect
Aesthetic Sensitivity	Aesthetics	Reflection	—	Openness
Creative Imagination	Fantasy	Ingenuity	Imagination-creativity	—

Figure A.1: Summary of personality traits (Soto and John, 2017)

A.2 Scatter plots of variables - detection of outliers

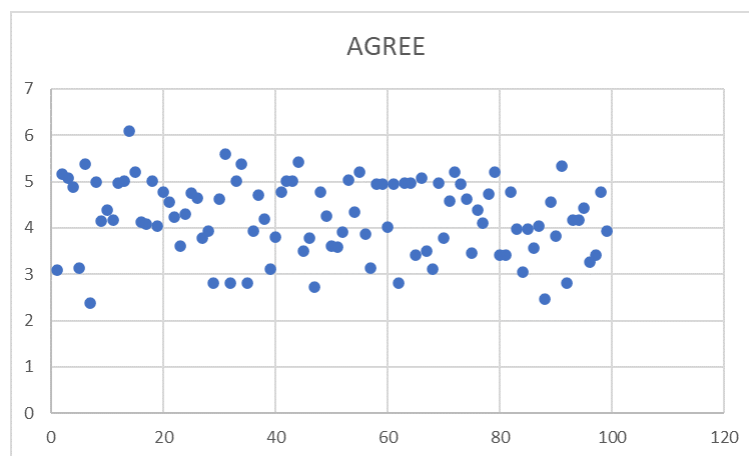
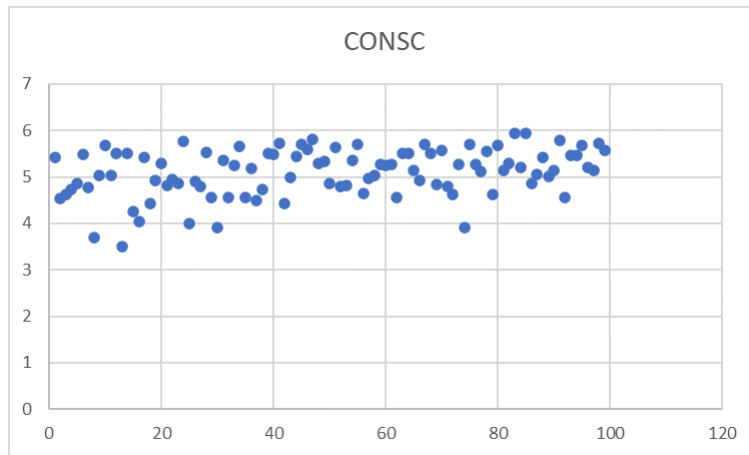
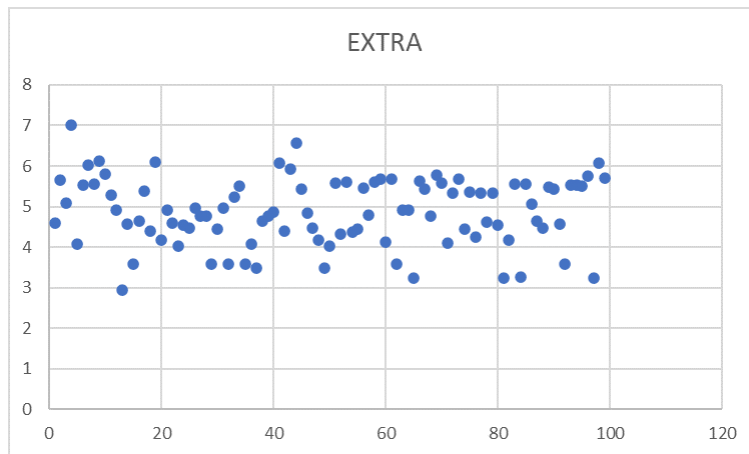
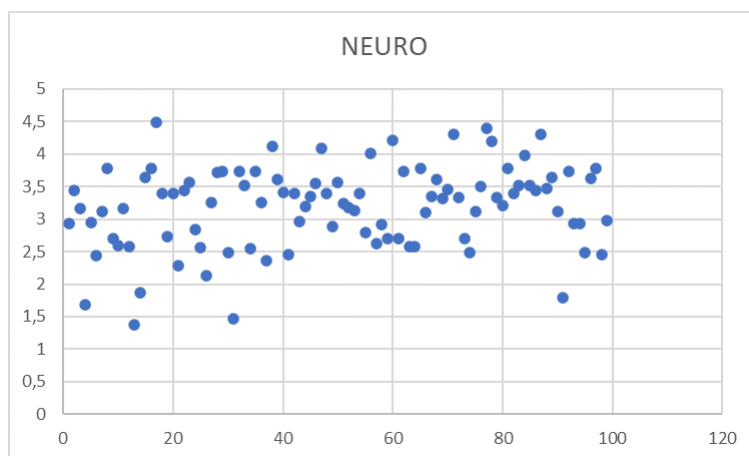


Figure A.2: AGREE

**Figure A.3: CONSC****Figure A.4: EXTRA****Figure A.5: NEURO**

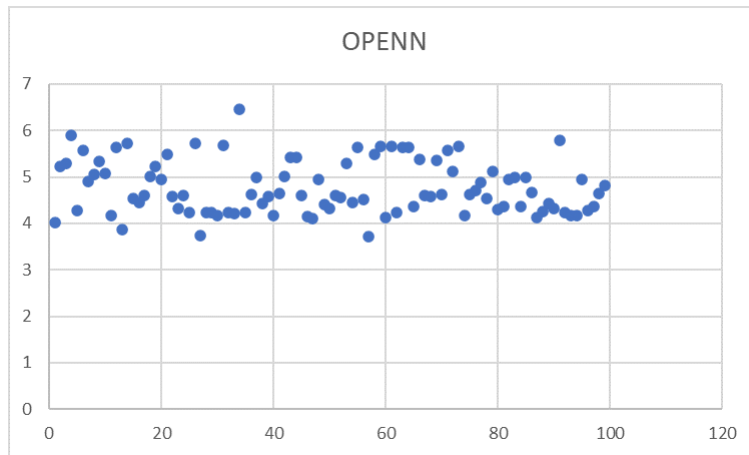


Figure A.6: OPENN

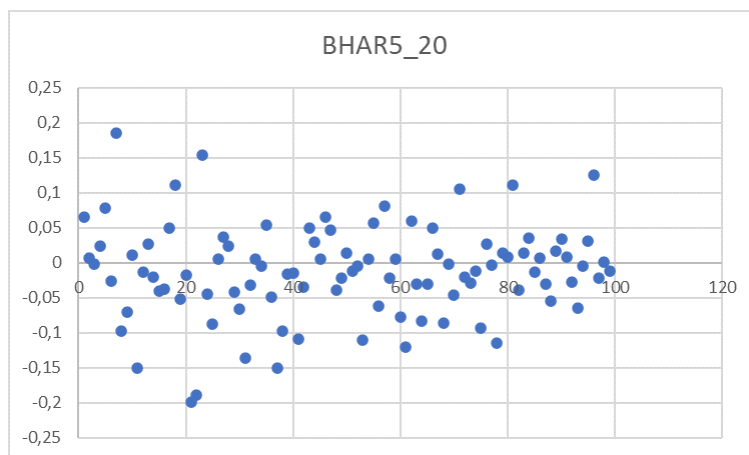


Figure A.7: BHR20

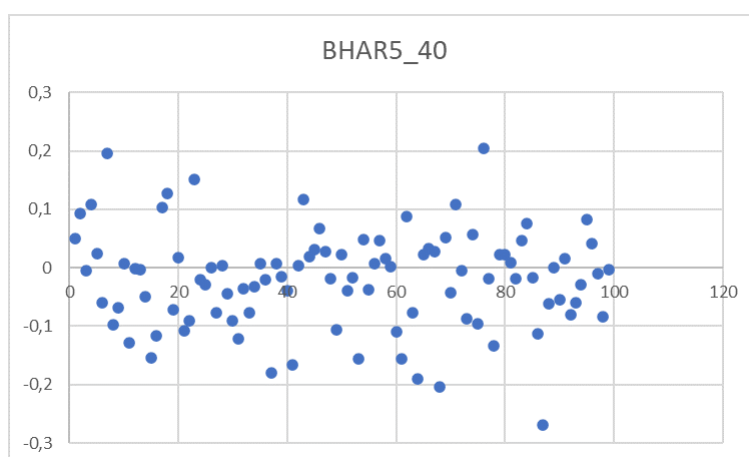
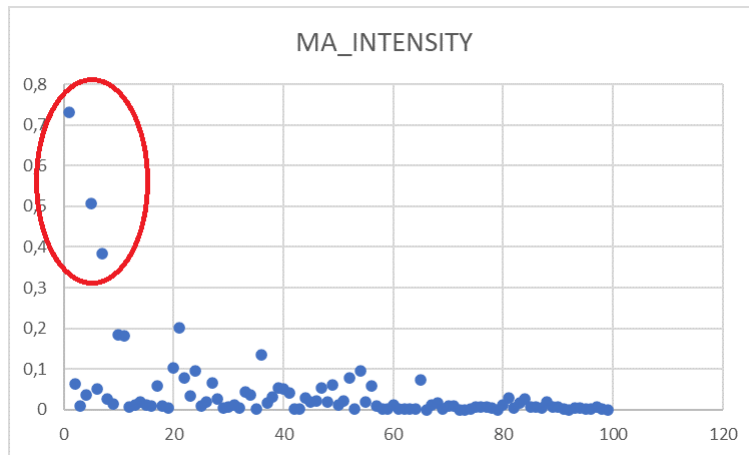
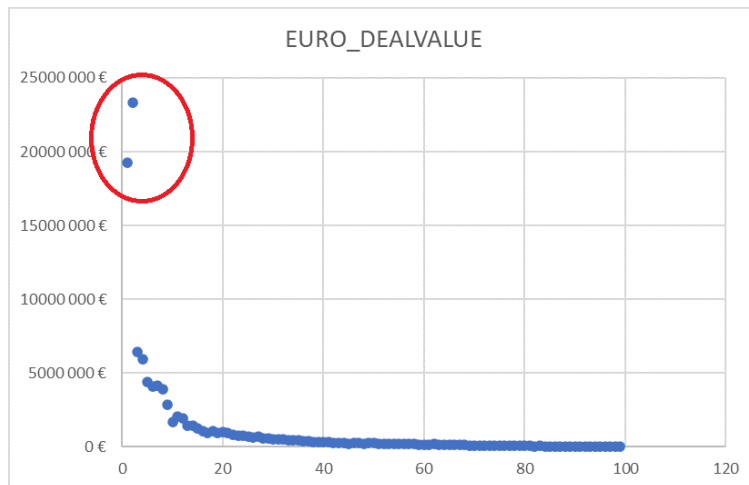
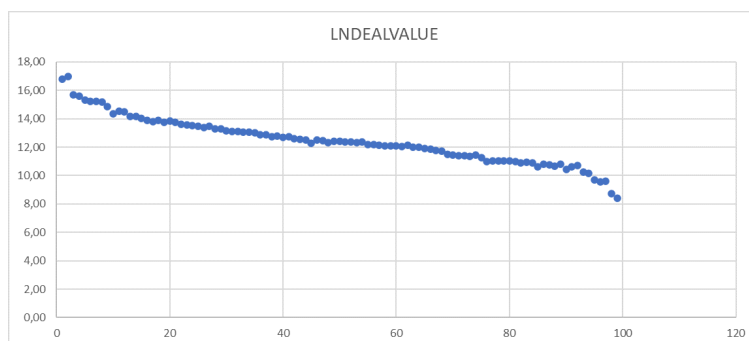


Figure A.8: BHR40

**Figure A.9: MA-intensity****Figure A.10: DEALVALUE****Figure A.11: LNDEALVALUE**

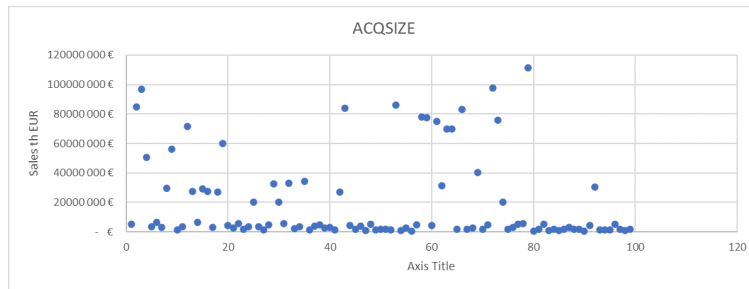


Figure A.12: ACQSIZE

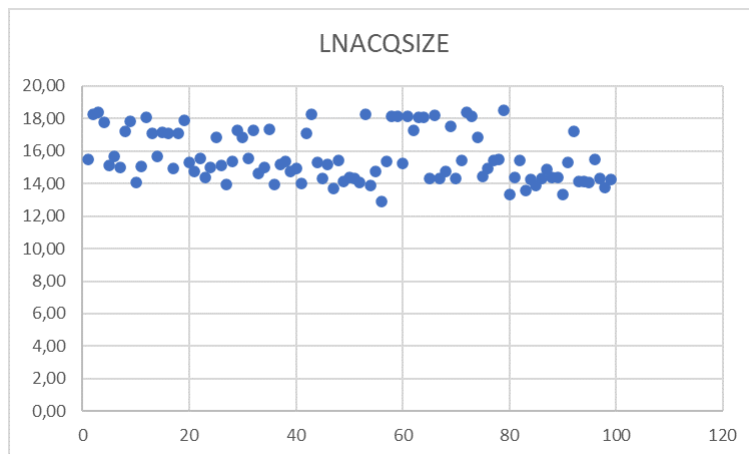


Figure A.13: LNACQSIZE

A.3 Histograms before and after transformation

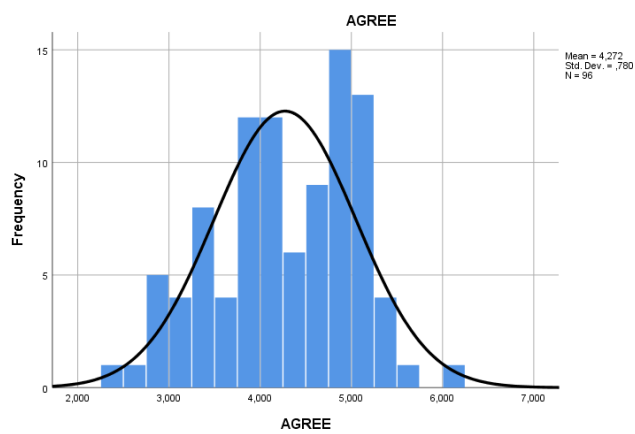


Figure A.14: Agree histogram

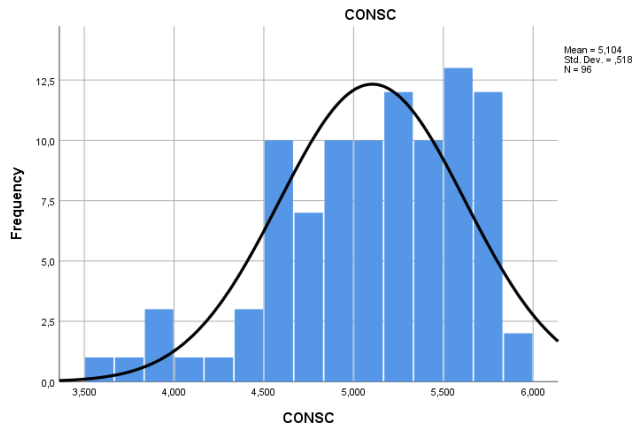


Figure A.15: Consc histogram

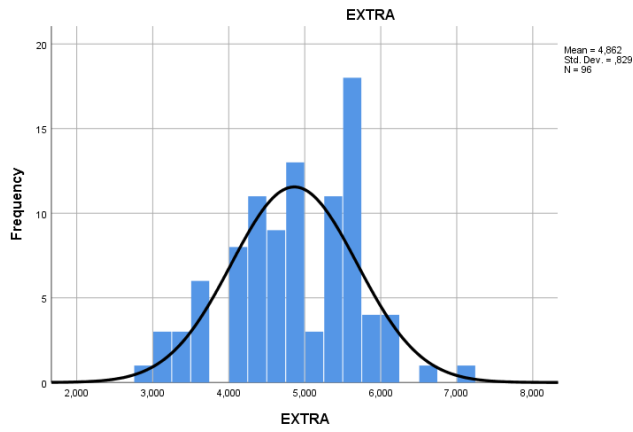


Figure A.16: Extra histogram

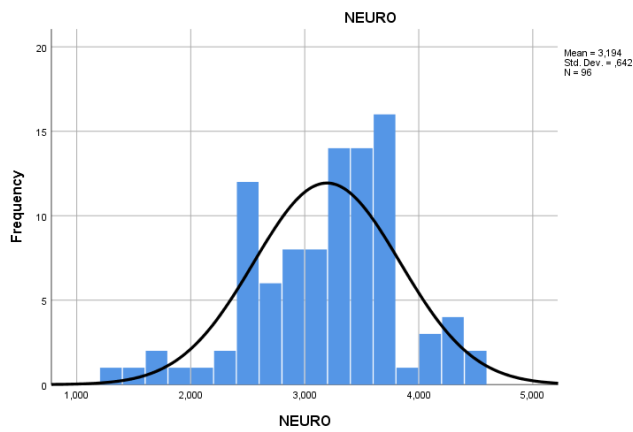


Figure A.17: Neuro histogram

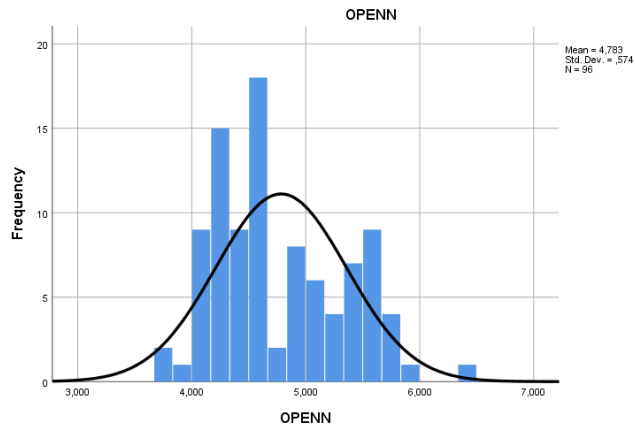


Figure A.18: Openn histogram

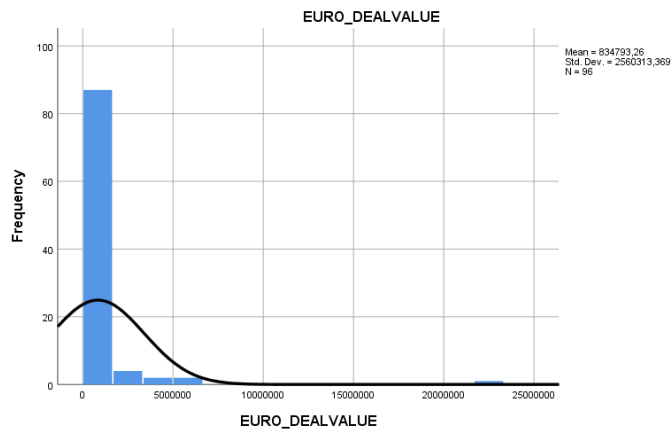


Figure A.19: Deal-value Euro histogram, before transformation

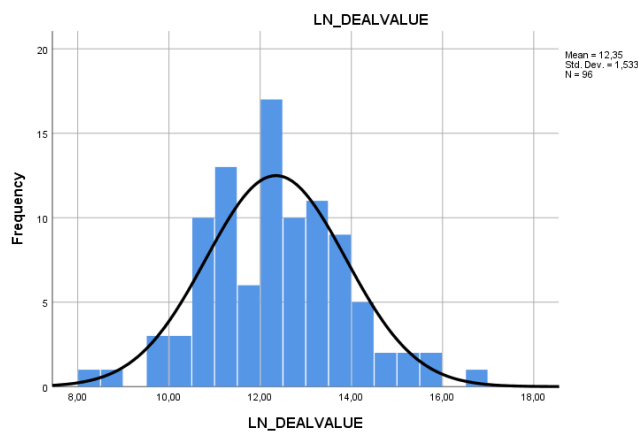


Figure A.20: Log deal-value histogram, after transformation

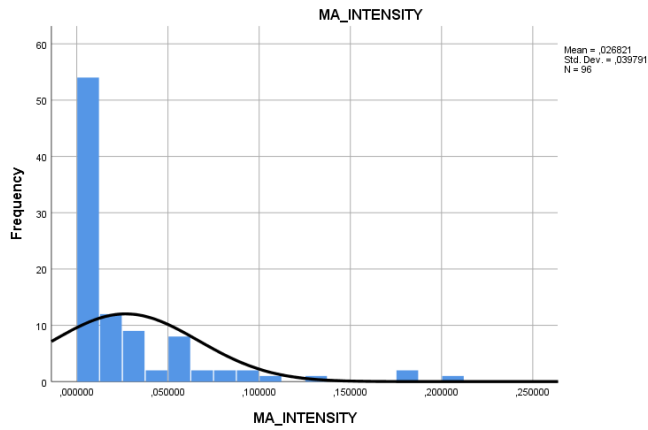


Figure A.21: M&A-intensity histogram, before transformation

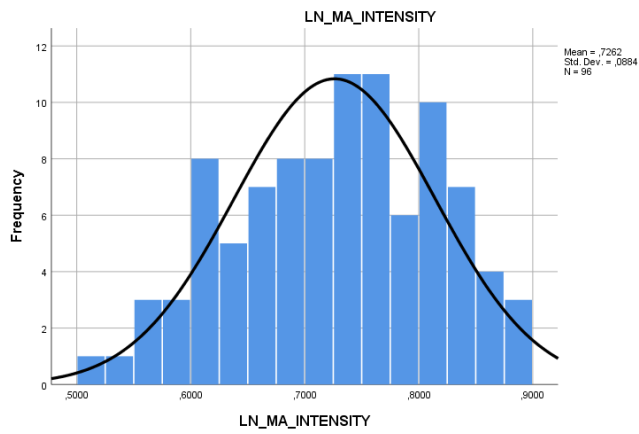


Figure A.22: Log M&A-intensity histogram, after transformation

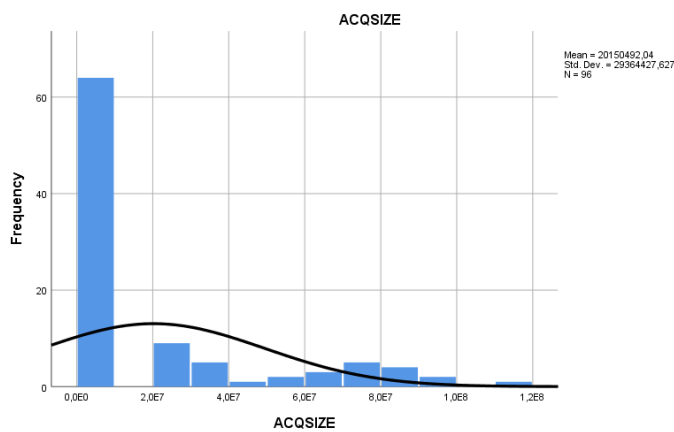


Figure A.23: Acquirer size histogram, before transformation

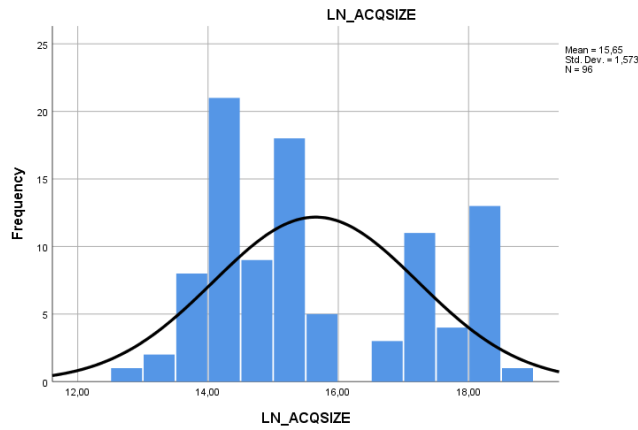
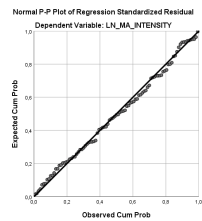
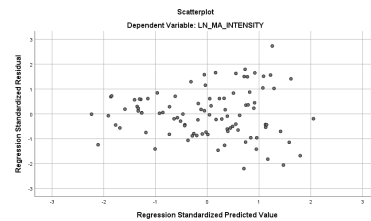


Figure A.24: Log acquirer size histogram, after transformation

A.4 Checks for normality, linearity and homoscedacity

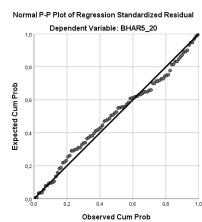


(a) M&A-intensity model 3

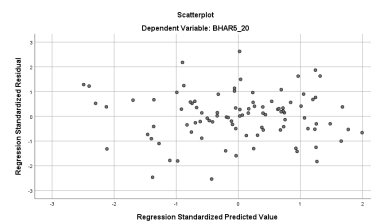


(b) Residual plot M&-intensity model 3

Figure A.25: Assumption checks

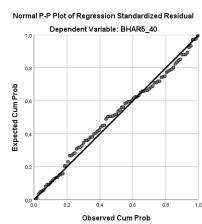


(a) BAHRS_20 model 3

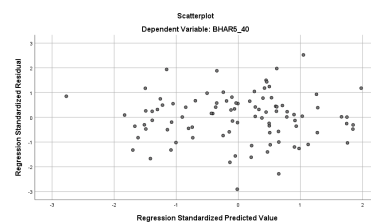


(b) Residual plot BAHRS_20 model 3

Figure A.26: Assumption checks



(a) BAHRS_40 model 3



(b) Residual plot BAHRS_40 model 3

Figure A.27: Assumption checks

A.5 Data sample

Table A.1: Sample data of deals

Event ID	Acquirer	Target name	Announced date	CEO
1	FISERV INC.	FIRST DATA CORPORATION	16-01-2019	Jeffery Yabuki
2	MICROSOFT CORPORATION	LINKEDIN CORPORATION	13-06-2016	Satya Nadella
3	MICROSOFT CORPORATION	GITHUB INC.	04-06-2018	Satya Nadella
4	MICROSOFT CORPORATION	SKYPE GLOBAL SARL	10-05-2011	Steve Ballmer
5	ACTIVISION BLIZZARD INC.	AMBER HOLDING SUBSIDIARY COMPANY	25-07-2013	Robert Kotick
6	ADOBE SYSTEMS INC.	MILESTONE TOPCO INC.	20-09-2018	Shantanu Narayen
7	SYMANTEC CORPORATION	BLUE COAT SYSTEMS INC.	12-06-2016	Michael A. Brown
8	ORACLE CORPORATION	MICROS SYSTEMS INC.	23-06-2014	Larry Ellison
9	MICROSOFT CORPORATION	NOKIA OYJ'S DEVICES AND SERVICES DIVISION	03-09-2013	Steve Ballmer
10	VERISK ANALYTICS INC.	WOOD MACKENZIE LTD	10-03-2015	Scott G. Stephenson
11	SYMANTEC CORPORATION	LIFELock INC.	20-11-2016	Greg Clark
12	MICROSOFT CORPORATION	MOJANG AB	15-09-2014	Satya Nadella
13	ORACLE CORPORATION	TALEO CORPORATION	09-02-2012	Larry Ellison
14	ADOBE SYSTEMS INC.	X.COMMERCE INC.	21-05-2018	Shantanu Narayen
15	ORACLE CORPORATION	ACME PACKET INC.	04-02-2013	Larry Ellison
17	ORACLE CORPORATION	RIGHTNOW TECHNOLOGIES INC.	24-10-2011	Larry Ellison
18	CERNER CORPORATION	SIEMENS AG'S HOSPITAL IT BUSINESS	05-08-2014	Neal L. Patterson
19	ORACLE CORPORATION	RESPONSYS INC.	20-12-2013	Larry Ellison
20	MICROSOFT CORPORATION	YAMMER INC.	14-06-2012	Steve Ballmer
21	SYMANTEC CORPORATION	VERISIGN INC.'S AUTHENTICATION SERVICES BUSINESS	19-05-2010	Enrique Salem
22	ELECTRONIC ARTS INC.	POPCAP GAMES INC.	12-07-2011	John Riccitello
23	NETAPP INC.	SOLIDFIRE INC.	21-12-2015	George Kurian
24	AUTODESK INC.	PLANGRID INC.	20-11-2018	Andrew Anagnost
25	FISERV INC.	OPEN SOLUTIONS INC.	14-01-2013	Jeffery Yabuki
26	ORACLE CORPORATION	ART TECHNOLOGY GROUP INC.	02-11-2010	Larry Ellison
27	ADOBE SYSTEMS INC.	FOTOLIA LLC	11-12-2014	Shantanu Narayen
28	ANSYS INC.	LIVERMORE SOFTWARE TECHNOLOGY CORPORATION	11-09-2019	Ajei Gopal
29	FISERV INC.	ELAN FINANCIAL SERVICES INC.'S DEBIT CARD PROCESSING BUSINESS	25-09-2018	Jeffery Yabuki
30	ORACLE CORPORATION	TEXTURA CORPORATION	28-04-2016	Safra Catz
32	ORACLE CORPORATION	PHASE FORWARD INC.	16-04-2010	Larry Ellison
33	ADOBE SYSTEMS INC.	TUBEMOGUL INC.	10-11-2016	Shantanu Narayen
34	ORACLE CORPORATION	OPOWER INC.	02-05-2016	Safra Catz
35	SYNOPSYS INC.	BLACK DUCK SOFTWARE INC.	02-11-2017	Dr. Aart de Geus
36	ADOBE SYSTEMS INC.	NEOLANE SA	27-06-2013	Shantanu Narayen
37	ORACLE CORPORATION	RAVELLO SYSTEMS LTD	22-02-2016	Safra Catz
38	SYNOPSYS INC.	MAGMA DESIGN AUTOMATION INC.	30-11-2011	Dr. Aart de Geus
39	ELECTRONIC ARTS INC.	RESPAWN ENTERTAINMENT LLC	09-11-2017	Andrew Wilson
40	NETAPP INC.	ENGENIO INFORMATION TECHNOLOGIES INC.'S ASSETS	09-03-2011	Tom Georgens
41	BROADRIDGE FINANCIAL SOLUTIONS INC.	DST SYSTEMS INC.'S NORTH AMERICAN CUSTOMER COMMUNICATIONS BUSINESS	14-06-2016	Richard J. Daly
42	FISERV INC.	CASHEDGE INC.	29-06-2011	Jeffery Yabuki
44	VERISK ANALYTICS INC.	ARGUS INFORMATION & ADVISORY SERVICES LLC	07-08-2012	Frank J. Coyne
45	ORACLE CORPORATION	BLUE KAI INC.	24-02-2014	Larry Ellison
46	MICROSOFT CORPORATION	ADALLOM INC.	08-09-2015	Satya Nadella
47	SYMANTEC CORPORATION	CLEARWELL SYSTEMS INC.	19-05-2011	Enrique Salem
48	VERISK ANALYTICS INC.	SEQULE BUSINESS HOLDINGS LTD	21-08-2017	Scott G. Stephenson
49	BROADRIDGE FINANCIAL SOLUTIONS INC.	RPM TECHNOLOGIES	21-05-2019	Tim Goley
50	VERISK ANALYTICS INC.	MEDICONNECT GLOBAL INC.	23-03-2012	Frank J. Coyne
51	SYMANTEC CORPORATION	PGP CORPORATION	29-04-2010	Enrique Salem
52	SYNOPSYS INC.	COVERITY INC.	19-02-2014	Dr. Aart de Geus
53	AUTODESK INC.	BUILDINGCONNECTED INC.	20-12-2018	Andrew Anagnost
54	VERISK ANALYTICS INC.	POWER ADVOCATE INC.	30-11-2017	Scott G. Stephenson
55	TAKE TWO INTERACTIVE SOFTWARE INC.	SOCIAL POINT SL	01-02-2017	Strauss Zelnick
56	MICROSOFT CORPORATION	TOUCHTYPE LTD	03-02-2016	Satya Nadella
57	SYNOPSYS INC.	VIRAGE LOGIC CORPORATION	10-06-2010	Dr. Aart de Geus
58	ADOBE SYSTEMS INC.	DAY SOFTWARE HOLDING AG	28-07-2010	Shantanu Narayen
59	ANSYS INC.	APACHE DESIGN SOLUTIONS INC.	30-06-2011	Jim Cashman
60	FISERV INC.	COMMUNITY FINANCIAL SERVICES INC.'S ASSETS	20-01-2016	Jeffery Yabuki
61	MICROSOFT CORPORATION	6 WUNDERKINDER GMBH	03-06-2015	Satya Nadella
62	MICROSOFT CORPORATION	N-TRIG LTD	12-02-2015	Satya Nadella
63	SYMANTEC CORPORATION	LUMINATE SECURITY LTD	12-02-2019	Greg Clark
65	MICROSOFT CORPORATION	EQUIVIO LTD	20-01-2015	Satya Nadella
66	ORACLE CORPORATION	CLEARSPRING TECHNOLOGIES INC.	05-01-2016	Safra Catz
67	MICROSOFT CORPORATION	AORATO LTD	13-11-2014	Satya Nadella
68	MICROSOFT CORPORATION	ACOMPLI INC.	01-12-2014	Satya Nadella
69	BROADRIDGE FINANCIAL SOLUTIONS INC.	MATRIX FINANCIAL SOLUTIONS	23-11-2010	Richard J. Daly
70	MICROSOFT CORPORATION	SECURE ISLAND TECHNOLOGIES LTD	09-11-2015	Satya Nadella
71	VERISK ANALYTICS INC.	LCI INC.	24-08-2017	Scott G. Stephenson
72	BROADRIDGE FINANCIAL SOLUTIONS INC.	INVESHARE INC.'S TECHNOLOGY ASSETS	19-09-2016	Richard J. Daly
73	CISCO SYSTEMS INC.	ITALTEL SPA	28-07-2017	Chuck Robbins
74	VERISK ANALYTICS INC.	G2 WEB SERVICES LLC	27-07-2017	Scott G. Stephenson
76	SYMANTEC CORPORATION	LIVEOFFICE LLC	16-01-2012	Enrique Salem
77	MICROSOFT CORPORATION	HEXADITE INC.	08-06-2017	Satya Nadella
78	MICROSOFT CORPORATION	SUNRISE ATELIER INC.	04-02-2015	Satya Nadella
80	ORACLE CORPORATION	ESERVGLOBAL LTD'S USP BUSINESS	26-05-2010	Larry Ellison
81	VERISK ANALYTICS INC.	MOORE STEPHENS CONSULTING LTD'S RULEBOOK DIVISION	03-12-2018	Scott G. Stephenson
83	NETAPP INC.	BYCAST INC.	07-04-2010	Tom Georgens
84	NETAPP INC.	RIVERBED TECHNOLOGY INC.'S STEELSTORE PRODUCT LINE	27-10-2014	Tom Georgens
85	NETAPP INC.	D DAY LABS LTD	27-05-2019	George Kurian
86	MICROSOFT CORPORATION	CLOUDYN SOFTWARE LTD	29-06-2017	Satya Nadella
87	ANSYS INC.	SPACECLAIM CORPORATION	30-04-2014	Jim Cashman
88	BROADRIDGE FINANCIAL SOLUTIONS INC.	NEWRIVER INC.	17-08-2010	Richard J. Daly
89	SYMANTEC CORPORATION	GUARDIANEDGE TECHNOLOGIES INC.	29-04-2010	Enrique Salem
90	VERISK ANALYTICS INC.	BLOODHOUND TECHNOLOGIES INC.	27-04-2011	Frank J. Coyne
91	BROADRIDGE FINANCIAL SOLUTIONS INC.	PALADYNE SYSTEMS INC.	08-09-2011	Richard J. Daly
92	VERISK ANALYTICS INC.	HEALTH RISK PARTNERS LLC	13-06-2011	Frank J. Coyne
93	AUTODESK INC.	SOCIALCAM INC.	17-07-2012	Carl Bass
94	NETAPP INC.	AKORRI NETWORKS INC.	12-01-2011	Tom Georgens
95	BROADRIDGE FINANCIAL SOLUTIONS INC.	EMERALD CONNECT LLC	26-02-2014	Richard J. Daly
96	AUTODESK INC.	TEAMUP TECHNOLOGIES INC.	05-11-2014	Carl Bass
97	ANSYS INC.	ESTEREL TECHNOLOGIES SA	29-05-2012	Jim Cashman
98	ADOBE SYSTEMS INC.	COMSCORE INC.'S DIGITAL ANALYTIX BUSINESS	05-11-2015	Shantanu Narayen
99	ORACLE CORPORATION	CROSSWISE LTD	14-04-2016	Safra Catz
100	AUTODESK INC.	BLUE RIDGE NUMERICS INC.	17-02-2011	Carl Bass
101	AUTODESK INC.	SCALEFORM CORPORATION	01-03-2011	Carl Bass
102	VERISK ANALYTICS INC.	MAPLECROFT.NET LTD	08-12-2014	Scott G. Stephenson
103	SYMANTEC CORPORATION	PASSWORDBANK TECHNOLOGIES INC.	18-07-2013	Steve Bennett
104	BROADRIDGE FINANCIAL SOLUTIONS INC.	FOREFIELD INC.	02-12-2010	Richard J. Daly
105	VERISK ANALYTICS INC.	ASPECT LOSS PREVENTION LLC	15-06-2012	Frank J. Coyne
106	VERISK ANALYTICS INC.	RISK INTELLIGENCE IRELAND LTD	14-04-2016	Scott G. Stephenson

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