



Master Thesis Financial Economics

CEO Narcissism and Firm Valuation

The Effects of CEO Narcissism on Investor Sentiment

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Abstract

This research investigates the relationship between CEO narcissism and firm valuation. To conclude whether narcissism is a pathological trait or simply imply higher or lower management skills, the effects on firm valuation are compared to the effects on firm performance. This study provides one overall narcissism measure, composed of nine objective narcissism indicators that fit the main concept of narcissism by Emmons (1987), using a dataset of 29,196 firm-years with a time frame from 1992 until 2017. Firm valuation is measured by Tobin's Q and firm performance is measured by the return on assets. Consistent with expectations, the study shows a positive relationship between CEO narcissism and firm valuation. Contrary to expectations, results also show a positive relationship between CEO narcissism and firm performance. Comparing the results show that the effect on firm valuation are more than ten times the effect on firm performance. This suggests that either investors perceive CEO narcissism as a signal for future firm value or growth perspectives, or investors are biased through heuristics when making investment decisions, which may originate from availability bias or familiarity bias. Further research is necessary to investigate the effects of CEO narcissism using other statistical techniques, such as natural experiments or instrumental variables.

Keywords: CEO narcissism, firm valuation, firm performance, investor sentiment, Tobin's Q, ROA

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1. Introduction

Over the past few decades, there has been a significant change in the importance of corporate governance. Before the 1980s, hostile takeover occurred rarely, shareholders were not that active and executive compensation was barely mentioned in academic research. In 2002, the New York Times quoted “corporate governance” in only six articles and within two years this number climbed up to 426 stories. Scandals like Enron, WorldCom and the Lehman Brothers have triggered researchers to investigate corporate governance and its impact on company performance, valuation and fraud. Codes of conduct have erupted to prevent companies from comparable frauds (Verwijmeren, 2016). A code of conduct however, won't be effective when top management doesn't behave the way its ethics describe. To change employees' behavior or shape the ethical climate of the organization, executives must set a good example (Sims and Brinkmann, 2002). Event further, research suggests that different personality traits of executives can have different effects on organizational performance (Peterson et al., 2003).

Various personality traits effecting firm performance have been examined in literature, like overconfidence (Malmendier and Tate, 2005, 2008). This study focuses on the extreme form of executive overconfidence: narcissism. Narcissism is one of the least researched personality traits among executives, but also one of the most complex ones. Psychological mechanisms that link CEO personality to strategic influence and performance are still underexplored (Chatterjee and Hambrick, 2007). Over the past years, scientists have been claiming that we are in the midst of an exceptionally narcissistic period where narcissism spreads as an ‘epidemic’. Recent research shows a relationship between the continuing rise of social media and higher narcissism levels among millennials (Twenge and Campbell, 2009; Bergman et al., 2011). Since the rise of narcissism among people in general, CEO narcissism is an important issue to address. Most literature is primarily focused on effective leadership of executives, whereas there is need for also understanding destructive leadership behavior which may occur due to narcissism. More recent events such as the collapse of organizations as Enron, Tyco and Worldcom have started the debate and consideration of destructive leadership behavior and emphasized the need for more empirical research to explore the nature, consequences and potential antecedents of this behavior (Higgs, 2009).

Kets de Vries (2004) argues that narcissism “lies at the heart of leadership” and that a solid dose of narcissism is essential to reach the top of an organization. The term narcissism refers to the degree to which someone has an excessive level of self-admiration, a need for admiration and a lack of empathy. Since CEOs possess the highest position within a company and they are treated as special and renowned individuals, it may happen that they become biased towards self-valuation.

Furthermore, CEOs receive a constant stream of confirmation and praise, which satisfies their narcissistic needs (Rijsenbilt and Commandeur, 2012).

Despite these findings, people with more narcissistic traits are more likely to end up in leading positions due to their dominance and desire for social status. Different studies show a link between narcissism and leadership, suggesting that their narcissistic strategy actually works (Brunell et al., 2008). Narcissists seem to rise to leadership quickly and effectively.

Previous researchers primarily investigate how CEO narcissism affects firms' return on assets (ROA) and other KPIs to determine overall firm performance. Instead of firm performance, this research will focus on the relationship between CEO narcissism and firm valuation. The most common way to measure firm value is Tobin's Q, the ratio of market value to book value of assets. Whereas ROA expresses firm performance based on accounting data, Tobin's Q captures future growth opportunities of the company viewed by the investors on the stock market, including the value of intangible assets (Dybvig and Warachka, 2016). Tobin's Q is an indicator of mispricing which can arise due to investors' sentiment. Tobin's Q is therefore a suitable measure to investigate whether CEO narcissism has an effect on how investors value a firm's future. It is important to understand how CEO behavior affects firm valuation beyond affecting firm performance, especially from a shareholders' perspective. Currently, there is a literature gap on understanding how CEO narcissism impacts investors' beliefs or preferences that could make a stock over- or undervalued. In order to address this gap, this study asks the following research question:

What is the relationship between CEO narcissism and firm valuation?

Malmendier et al., (2007) find that the market reaction to a merger announcement is significantly more negative for overconfident CEOs than for non-overconfident CEOs. This finding may be an indicator that the market has an opinion about narcissistic CEO, consciously or unconsciously. This study will measure to what extent the CEO narcissism has an influence on market beliefs and preferences. In other words, it will try to investigate whether investors perceive CEO narcissism as value-creating or value-destroying phenomena.

The contribution in this paper is threefold. First, this study investigates CEO narcissism across all industries with a timespan from 1992 until 2017, whereas previous studies were limited to 2008 and focused only on the technology sector or computer industry specifically (Chatterjee and Hambrick, 2007, 2011; Resick et al., 2009; Rijsenbilt and Commandeur, 2012; Gerstner et al., 2013; O'Reilly et al., 2013; Reina et al., 2014; Zhu and Chen, 2015). Therefore, this research takes the years after the financial crisis into account where the importance of governance and codes of conduct have soared. Second, this paper uses a forward-looking measure of firm valuation and examines whether investors' sentiment about firms' future value is influenced by CEO narcissism. Most of the previous studies

used only accounting measures focused on historical and tangible variables. Third, this paper provides an overall measure for narcissism that consist of nine different narcissism indicators. So far, narcissism measures consisted of indicators of which some data needed to be conducted manually, which limited the possibility of use for larger datasets. This paper tackles this issue by analyzing narcissism using indicators where data can be collected directly from the datasets.

2. Literature Review

This chapter provides a background discussion of the development of narcissism, the behavior of investors and the concepts of firm valuation and firm performance. The aim of the theoretical background is to provide a clear story of narcissism as CEO behavior and investor's sentiment on how to value a company.

2.1. Narcissism

The term "narcissism" originates from the Greek mythology, whereby a young Greek named Narcissus fell in love with his own reflection in a pool of water. According to the traditional Greek legend, he was frustrated since he could not fulfill his own love which led him to become a flower, the narcissus. At that time, exaggerated pride or self-confidence was labeled 'hubris' in Greece. More formally, narcissism was introduced as a psychological term in 1898 by the British physician and psychologist Havelock Ellis. Since then, narcissism had a profound influence on Freud who published 'On Narcissism: An Introduction (1914)'. In his work, Freud argued that some degree of narcissism is an essential part of the human psyche (Rijsenbilt and Commandeur, 2012).

Rasking and Hall (1979) were the first authors to develop a way to measure narcissism. They constructed the Narcissistic Personality Inventory (NPI), a 54-item, forced-choice questionnaire designed to measure individual differences in narcissism as a personality trait, based on the DSM-III criteria for the narcissistic personality disorder. Using factor analysis of the scale, Emmons (1984) later reduced the 54 items to 4 robust narcissism components.

1. Self-admiration *I am preoccupied with how extraordinary and special I am*
2. Entitlement *I insist upon getting the respect that is due to me*
3. Authority/leadership *I like to be the center of attention*
4. Superiority/arrogance *I am better than others*

Narcissism is a psychological issue when an individual is obsessed with the self, seeking for approval and admiration from others, while neglecting other people's emotions. The image that narcissists often expose to the world may serve as a cover for their feelings of insecurity and low self-esteem (Kets de Vries, 2004). In this state, one may get assaulted by the slight criticism and may fail at creating relationships beyond ones that serve to satisfy their own need for attention. At the extreme, these traits can indicate the clinical form: Narcissistic Personality Disorder (NPD). The most important characteristics of NPD are grandiosity, seeking excessive admiration and a lack of empathy. Usually, NPD patients battle with strong feelings of low self-esteem and self-confidence and try to compensate by acting being important with a denigrating attitude. NPD patients are also incapable of

receiving disapproval or rejection which ultimately affects their functioning in society as well as those around them, especially since their overall disrespect of others (Ronningstam and Weinberg, 2013).

The Diagnostic and Statistical Manual of Mental Disorders (DSM) defines narcissism as “a pervasive pattern of grandiosity (in fantasy of behavior), need for admiration and a lack of empathy, beginning by early adulthood and present in a variety of contexts” (American Psychiatric Association, 2012). Accordingly, narcissism can be described as a personality dimension on which individuals can score low to high, rather than a binary state which labels individuals as narcissistic or not.

2.2. Narcissistic Epidemic

Over the past few years, scientists have been claiming that the world we live in today suffers from an increasing narcissism. Research shows that narcissistic traits are increasing faster than predicted: college students' scores on the Narcissistic Personality Inventory (NPI) increased by 30% rose twice as fast in the period from 2002 to 2007 than in an earlier study from 1982 to 2007. Narcissism scores were higher by 30% in the 2000s than they were in the 1980s and 1990s (Twenge et al., 2008). Stinson (2008) interviewed almost 35.000 adults from a nationally representative sample about narcissistic personality disorder (NPD) symptoms. Statistically, one could expect that older people score higher on NPD symptoms they have experienced in the past, since they have lived for more years. However, authors find an inverse relationship of NPD with age, with the sharpest decline after 29 years of age. These results suggest that we may display more narcissistic symptoms than ever before and that we are amid an exceptionally narcissistic period that spreads as an ‘epidemic’.

Twenge and Campbell (2009) emphasize the importance of understanding the narcissism ‘epidemic’ we might live in, since its long-term consequences may be highly destructive to society. According to authors, societal level of self-esteem is soaring from a healthy dose towards narcissistic self-centeredness.

2.3. The Narcissistic CEO

To reach the top of an organization, one needs a relatively high base level of narcissism, since narcissistic traits can convince an individual of its own correctness and can be the key for successful leadership (Kets de Vries, 2004). Previous studies show that people with more narcissistic traits are more likely to end up in leading positions due to their dominance and desire for social status. The link between narcissism and leadership suggests that their narcissistic strategy works (Brunell et al., 2008).

CEOs have an impact on firm performance, on firm's reputation and relationships with stakeholders. Because of the unique role a CEO possesses, their personality traits can get reflected in their personal preferences and behaviors, but also influence corporate strategies, structure and performance of their organization (Resick et al., 2009). Even though a healthy dose of narcissism is key for successful

leadership, it can also become destructive. Narcissistic leaders tend to become obsessed with achieving power, status, prestige, superiority and at any cost. They would rather not share any power or receive any form of criticism and therefore surround themselves with employees who will agree with them. Due to that, narcissistic leaders do not learn much from failure and when a failure occurs, as they tend to blame the organization. They can be harsh and insulting and when things do not go their way, even burst into rage. Given the power that narcissistic leaders have, they can have a destructive impact on their environment and organization (Kets de Vries, 2004).

Previous research has investigated in many and various ways in the relationship between CEO narcissism and firm performance. Results are ambiguous and have provided mixed and sometimes conflicting findings. Earlier study by Chatterjee and Hambrick (2007) argues that CEO narcissism is not related to firm performance. They find that narcissistic CEOs tend to take more risks and generate more volatility in gains and losses, but do not score systematically better or worse in terms of overall performance. Investigating the issue further, Campbell et al., (2011) find that narcissistic leaders might be successful in the short term but are most likely to destroy the value for their organization in the long term. Furthermore, Rijssenbilt and Commandeur (2012) find a positive relationship between CEO narcissism and fraud, which may suggest CEO can influence firm's ethical standards and behavior. Further research emphasizes the different sides of narcissism. On the positive side, narcissists are inspirational and creative people seeking for new challenges. On the negative side, narcissists are more likely to violate ethical standards, are harsh on their employees and make risky decisions that can be destructive for their organization (O'Reilly et al., 2013).

The latest study by Reina et al., (2014) explains that the relationship between CEO narcissism and firm performance depends mainly on a CEO's level of identification with its organization. According to authors, when narcissistic CEOs identify themselves with various aspects of their organization, their narcissism will positively influence firm performance and vice versa.

Narcissistic CEOs overconfidence may result into systematically overestimating the return to their investment projects and the value of the company they manage. They tend to overinvest if they have sufficient internal funds and tend to underinvest if they do not have sufficient internal funds (Malmendier and Tate, 2008). And, they may be more reluctant to issue new equity since they perceive their stock to be undervalued by the market (Malmendier and Tate, 2005). Graham (2001) also surveyed CFOs of whom two-third argued that their stock was undervalued. Across different industries, 50% - 80% of the CFOs thought that their stock was undervalued.

2.4. Firm Valuation

A widely-used proxy for firm valuation is Tobin's Q, a ratio developed by James Tobin (Tobin and Brainard 1968; Tobin 1969, 1978) as a predictor of a firm's future investments. The ratio is calculated

as the market value of a company divided by the replacement value of the firm's assets (the price in the market for newly produced commodities). Ever since the studies of Demsetz and Lehn (1985) and Morck, Shleifer and Vishny (1988), Tobin's Q has been used as a measurement of firm valuation. Prior studies suggest Tobin's Q as a more suitable and reliable metric than traditional performance measures as ROI and ROA, since those measures are based on historical accounting data (Chen and Lee, 1995).

Especially where accounting measures fail to identify intangible assets that may impact the firm performance, economic research uses Tobin's Q (Bharadwaj et al., 1999). Tobin's Q is a more forward-looking and risk-adjusted metric (Montgomery and Wernerfelt, 1988) and consistent with the forward-looking nature of the capital markets, as it measures market power from existing assets but also from the future growth potential of a firm (Bharadwaj et al. 1999). The two factors that are not recorded by accountant but can be measured with Tobin's Q are: intellectual capital and market hype, or intangible assets. Intellectual capital refers to the contribution of unmeasured goodwill, knowledge, technology and other intangible assets that can influence Tobin's Q. Market hype is the speculation about what the company might do in the future. It reflects investors' expectations about a company's prospects, rumors about the company and changing psychology, for example changing beliefs in a company's executives. Therefore, Tobin's Q is also measure for the quality of a company's management (Shepherd, 1986). As the market value of a company is determined by supply and demand in the capital market and may not necessarily represents a firm's fundamental value, it can be highly over- or undervalued due to a company's reputation.

Prior studies find a positive relation between better governance and firm valuation using Tobin's Q as a proxy for firm valuation (Shleifer and Vishny, 1997, Brown and Caylor, 2006; Black et al., 2006). Good governance leads to better monitoring, higher transparency and better alignment between investors and managers. This leads to an increase in investor' trust and a decrease of managers' expropriation. Further research argues that good governance should lead to more outsiders and financial experts on boards and less CEO power. This could prevent a management team to be taken over by the dangers of narcissistic CEOs (Klapper et al., 2006; Durnev and Kim, 2005).

Tobin's Q shows the current estimate of the stock market on the value of return on each dollar of extra investment. It goes up and down depending on market beliefs. A ratio below 1 implies that the cost to replace a firm's assets is greater than the value of its stock and that the company is undervalued by the market. This suggests that investors could be pessimistic about future asset returns of this company due to various reasons, for example because of their belief in a company's strategy or CEO. The market seems to believe that a company's assets will not earn sufficient returns and therefore the company should accept a discount to the replacement value to sell their assets in the market.

Overvaluation of stocks can be also reflected by Tobin's Q. A Q above 1 implies overvalued stock. The company would generate more profits than the cost of its assets, meaning that investing in this company is perceived to be profitable. Deviations where Q is significantly greater than 1 are interpreted as a significant and unmeasured source of value, generally attributed to intangible value of a company, for example R&D, advertising or the belief in a firm's executives (Bharadwaj et al., 1999).

2.5. Firm Performance

A widely used proxy for firm performance is the return on assets (ROA), calculated as the net income divided by net assets (Chatterjee and Hambrick, 2007; Reina et al., 2014). The ratio shows how much profit a firm earns, generated from its overall assets.

2.6. Behavioral Finance

Traditionally, it has been argued that asset prices fully and correctly reflect all the available information and are therefore equal to their fundamental values. Analyzing past stock prices to predict future prices would be useless since any information coming from such analysis is already incorporated in the price. This is called the efficient market hypothesis. The hypothesis states that a change in price would only reflect the news on the day of the price change and is therefore random. Even if some irrational traders create mispricing, rational traders will immediately see the arbitrage opportunity and exploit the mispricing, suggesting that no investment strategy can earn excess risk-adjusted average returns (Malkiel, 1989; Barberis and Thaler, 2003).

The theory holds when managers and investors are fully rational. However, some agents are not fully rational and asset prices systematically deviate from their fundamental value. Mispricing is not always a riskless profitable arbitrage opportunity. Even when rational agents can identify a mispriced asset, there are limits to arbitrage due to the risk and costs of the strategies. Effective learning is only possible when accurate and immediate feedback is available about the situational condition and the appropriate response (Tversky and Kahneman, 1986). Strategies of rational investors to correct the mispricing can be therefore ineffective.

Human judgement is limited due to bounded rationality: limited availability, time constraints and cognitive limitations. When people have to make a difficult choice, such as investment decisions, people use heuristics. These are mental shortcuts that focus on one aspect of a complex problem while ignoring other aspects. They lead to systematic biases, causing people to make the "wrong" decision (Tversky and Kahneman, 1974). Systematic biases causing investors to be irrational arise either from personal beliefs (how they form expectations) or preferences (how they evaluate risky decisions) (Barberis and Thaler, 2003).

Overconfidence

Overconfidence causes people to overestimate their knowledge, underestimate risks and exaggerate their ability to control events. They have excessive confidence about having accurate information, since they overestimate their ability to predict the future and underestimate the probability and volatility of random effects. Only 36% of the realized returns fall within the 80% expected confidence interval by CEOs (Ben-David et al., 2013). Furthermore, overconfident managers think they are better than the average. Surveys conducted in previous studies show that two-third of questioned CFOs think their stock is undervalued. Across different industries, 50% to 80% of CFOs think that their stock is undervalued (Graham, 2001).

Overconfident CEOs systematically overestimate the return to their investment projects and the value of their company. CEOs overinvest if they have sufficient internal funds and are not disciplined by the capital market or corporate governance mechanisms. They overestimate the returns on their projects. CEOs may underinvest, if they do not have sufficient internal funds. They are reluctant to issue new equity because they perceive the stock of their company to be undervalued by the market. By doing so, CEOs may believe that they act in the best interests of shareholders (Malmendier and Tate, 2005).

Overconfidence might come from two other biases, self-attribution bias and hindsight bias. The first bias refers the people's tendency to ascribe their successes to their own talents and their failures on bad luck or their organization. The latter refers to people's tendency to believe that they predicted an event before it happened, after the event has occurred. These biases lead to people believing in their own talent and their ability to predict the future (Barberis and Thaler, 2003).

Optimism and wishful thinking

People overestimate their own abilities. In surveys, more than 80% believes themselves to be above the median on various dimensions, like driving and humor (Barberis and Thaler, 2003).

Representativeness

The definition is based on research of Tversky and Kahneman (1974). They showed that people often determine the probability of an event or sample by the degree to which its characteristics align to its parent population. The first bias generated by representativeness is base rate neglect. Agents put too much weight on representativeness and too little weight on the base rate. The second bias is sample size neglect. Agents make conclusions too quickly based on too few data points, fail to take the sample size into account and they expect that even a small sample will reflect the properties of the population.

Conservatism

If a data sample is representative of an underlying model, people overweight the data due to representativeness. However, when the data doesn't fit the model, people underreact to the data and rely too much on prior information (Barberis and Thaler, 2003).

Belief perseverance

Once people have formed an opinion, they hold on their opinion too tightly and for too long. People are reluctant to search for evidence that contradicts their beliefs and if they find contradicting evidence they are skeptical about it (Barberis and Thaler, 2003).

Anchoring

People use arbitrary, but irrelevant values as a reference point when estimating values. Evidence shows that adjustment after the initial anchor value is insufficient (Tversky and Kahneman, 1974).

Availability bias

People search their memories for relevant information when judging the probability of an event. This provides biased estimates since not all memories are equally available. People put too much weight on more recent or more important events (Tversky and Kahneman, 1974).

Prospect Theory

Kahneman and Tversky (1979) designed a descriptive model on how we evaluate risky gambles. It is a descriptive model on how we behave and how we think about risk. Utility of the model is defined over gains and losses rather than over final wealth. Furthermore, the model suggests that people are risk averse over gains while risk seeking over losses. Loss aversion refers to the greater sensitivity to losses than to gains. Finally, small probabilities are overweight and people are more sensitive to differences in probabilities at higher probability levels. The certainty effect states that people place much more weight on outcomes that are certain relative to outcomes that are merely probable.

Prospect theory can explain why people make different choices in situations with the same final wealth levels. Framing refers to the effects of problem description, or the shift in preferences depending on the way a problem is posed for the decision maker.

Ambiguity Aversion

People do not like situations where the probability distribution of a gamble is unknown. They prefer known risk over unknown risks. This can explain why people diversify insufficiently in their stock portfolio. They prefer stocks from their home country (home bias), stocks they know by name or through media (familiarity bias) and stocks from their own company (Barberis and Thaler, 2003).

3. Hypothesis Development

Multiple studies have found a positive relationship between corporate governance and firm value (Black et al., 2006; Klapper et al., 2006; Durnev and Kim, 2005; Brown and Caylor, 2006). Other research suggests that CEO overconfidence is a product of corporate governance. For example, high salaries and positive feedback signals success to a CEO which can result in overconfidence (Paredes, 2005). A possible effect of overconfidence is a negative impact on firm value, since overconfident CEOs are more likely to underinvest in good projects and overinvest in bad projects due to their biased views about the company. Individuals with a high level of narcissism are particularly prone to overconfidence (Kruger and Dunning, 1999). This view is supported by Rijsenbilt and Commandeur (2012), who find a positive relationship between CEO narcissism and fraud, which implies an additional negative effect on firm performance. Since CEO narcissism is related to an increase in fraud and big risks that might lead to bigger wins but also bigger losses and no overall effect on firm performance, investors can detect CEO narcissism as an indicator that could negatively impact a company's future performance.

If investors would be fully rational and fully aware of all available information, they could detect CEO narcissism as an indicator that could negatively impact a company's (future) performance and therefore to undervalued stock. However, investors are irrational and make decisions based on their beliefs and preferences. Because of bounded rationality, investors use heuristics when making investment decisions. Narcissistic CEOs like to be the center of attention, do more interviews, go to more events and appear more on the news, on social media and in magazines (Bergman et al., 2011). They pay high acquisition premiums since they feel entitled and think they can do better than their targets, which causes them to be appear even more on the news and they might even become infamous characters (Malmendier and Tate, 2008; Foster et al., 2009). When judging investment opportunities, investors search their memories for relevant information. Since there are probably more memories available of narcissistic CEOs, investors put too much weight on the importance and relevance of this available information. This so-called availability bias could be one of the reasons that investors decide to invest in companies with narcissistic CEOs. This study investigates whether CEO narcissism is associated with firm valuation and therefore hypothesizes:

H1: CEO narcissism is positively related to firm valuation.

In case CEO narcissism is related to firm valuation, it can either be due to narcissism being a personal trait or due to higher or lower management skills of narcissistic CEOs. To test whether it's the first of the latter case, the effects on firm valuation are compared to the effects on firm performance. Since CEO narcissism is positively associated with fraud and bigger losses and there is no clear relationship with firm performance found in recent research, the second hypothesis is developed:

H2: CEO narcissism is negatively related to firm performance.

If narcissistic CEOs possess higher skills, narcissism leading to higher firm valuation should be accompanied by narcissism leading to higher firm performance. If higher firm valuation is due to pathological behavior, higher firm valuation may occur when firm performance is increasing less or even decreasing. This research expects narcissism to be pathological behavior that is not directly perceived directly by investors. Because of bounded rationality, investors might (over)invest in companies managed by narcissistic CEOs while the company's performance is not increasing. The third hypothesis therefore hypothesizes:

H3: CEO narcissism has a larger effect on firm valuation than on firm performance.

4. Research Design

This chapter discusses the research design of this study: the selected sample, independent, dependent and control variables, and the regression model. This research uses available data from the ExecuComp and Compustat database to examine the relationship between CEO narcissism and Tobin's Q ratio, and CEO narcissism and ROA. Compustat's database is produced by Standard and Poor's and provides a wide range of financial statement related data. Executive data are from the ExecuComp database and all financial items are from Compustat Fundamentals.

4.1. Sample

The unit of analysis in this study is CEO. The selected CEOs in this study are of all the S&P 500 companies available on the Compustat ExecuComp database. Data on Compustat starts from 1992 up until 2017. Following Chatterjee and Hambrick (2007, 2011) and Rijssenbilt and Commandeur (2012), I identified CEOs for every firm-year from 1992 till 2017 and then imposed two filters. The first filter selects only CEOs that started their tenure in 1992 or later. The second filter selects only CEOs with a tenure of more than three years, since CEOs who just started may need some time to develop a personal vision about how to manage the organization. These two filters result into a sample of 4639 CEOs in 2986 unique firms across all twelve Fama French industries. Furthermore, I only included years with one active CEO, due to anomalies associated with succession where both the new CEO and its successor is active. The variables are measured annually for each of the subsequent years of the CEO's tenure, yielding a total of 29,196 firm-years. I have also included several CEO-, firm and industry-level controls all of which was collected from ExecuComp database.

4.2. Independent Variable: CEO Narcissism

The primary drawback of investigating CEO narcissism is the practical difficulty of the Narcissistic Personality inventory (NPI), a 54-item forced choice survey based on the 220 item DSM II. Conducting large-scale CEO surveys is a troublesome task, especially when aiming to provide generalized insights across all types of industries. Furthermore, top executives of public companies may be reluctant to participate in survey research, especially about personal traits. Research would realize low response rates and could be influenced by social desirability bias (Chatterjee and Hambrick, 2007).

Thus, research has come up with multiple proxies for CEO narcissism, eliminating the need of surveys. Chatterjee and Hambrick (2007) developed an index of CEO narcissism using four indicators, based on the four narcissism categories of Emmons (1987): the prominence of the CEO's photograph in annual reports, the CEO's prominence in press releases, the CEO's use of first-person singular pronouns in interviews and the CEO's compensation relative to the second-highest-paid firm

executive. This approach is followed by multiple other studies (Chatterjee and Hambrick, 2011; Gerstner et al., 2013; Zhu and Chen, 2015) due to its practical applicability.

Rijsenbilt and Commandeur (2012) came up with the most recent and comprehensive measurement of CEO narcissism. They propose an objective overall measure of CEO narcissism that is theoretically grounded in the four narcissism categories of Emmons (1987): authority, superiority, self-admiration and entitlement. They measure CEO narcissism by focusing on four determinants of CEO behavior, namely CEO compensation, CEO exposure, CEO power and CEO acquisition behavior. These four determinants consist of 15 objective indicators, acting as proxies that fit the main concept of narcissism. The “at the distance” measure they propose shows strong content validity and overlaps with the narcissism scale developed by Emmons (1987) and with the way the NPI operationalizes narcissism.

Whereas Chatterjee and Hambrick (2007) focus exclusively on the computer hardware and software industries and Rijsenbilt and Commandeur (2012) solely to companies where fraud was committed, this research aims to collect a dataset as big as possible to increase the explanatory power. Some indicators, such as CEOs’ photograph in annual reports or first-person pronouns in interviews, need manual data collection for each CEO. To achieve a large dataset that requires no manual data selection, this research provides one overall measure with indicators that can be measured on a large-scale and that simultaneously reflect the four main conceptual dimensions of narcissism by Emmons (1987). A total of nine different indicators are measured along the four dimensions of Emmons and with the data collected from Compustat’s ExecuComp database.

4.2.1. CEO compensation

The first five narcissism indicators within this study are measured around CEO compensation: absolute cash and total compensation, relative cash and total compensation and the CEO’s rank within the organization in terms of salary and bonus. Prior studies show that narcissistic CEOs with longer tenures receive more total direct compensation, receive more money in their shareholding and have bigger differences in compensation relative to the other company members (O’Reilly et al. 2012).

The amount of absolute compensation is measured in dollar terms for every fiscal year in which compensation is paid. The absolute compensation of CEOs falls within the narcissism concept of self-admiration. Cash compensation consists of salary and bonus and total compensation consists of cash compensation plus all other forms of compensation: total value of restricted stock granted, total value of stock options granted, long-term incentive payouts, deferred compensation, option grants and all ‘other’ compensation. Relative compensation measures the CEO compensation versus the compensation of the second best paid executive. A high ratio indicates a narcissistic CEO who feels entitled to a higher compensation relative to its colleagues

The CEO's rank within the organization in terms of salary and bonus is the fifth indicator of narcissism. In case the CEO is the highest paid employee of the company (in terms of salary and bonus), the CEO has a ranking score of 1. Being the second best paid employee, the CEO has a ranking score of two and so on, with a maximum of eight. The relative compensation and a CEO's rank within the organization in terms of salary and bonus falls within within Emmon's (1987) concept of entitlement. Accordingly, highly narcissistic CEO tend to have the lowest ranking score (Rijsenbilt and Commandeur, 2012).

4.2.2. CEO role titles

Another determinant for CEO narcissism is a CEO's official title and falls within Emmon's (1987) concept of authority. Narcissistic CEOs seeking for authority and leadership might feel more powerful longer official titles. Having multiple or longer role titles can indicate CEO narcissism as it states a CEO's feeling of self-importance (Rijsenbilt and Commandeur, 2012). The sixth and seventh indicator of CEO narcissism are therefore the number of official role titles and the length of the official role title of the CEOs.

Different titles include: 1. CEO; 2. Chairman; 3. President; 4. Director and 5. Member of Board or Member of Executive Committee. A CEO gets a ranking of five when he has all five titles and one when he has only the title of CEO. As a proxy, a higher ranking is likely to indicate a more narcissistic CEO. The length of a CEO's official title is measured in number of characteristics in the title as retrieved from Compustat's ExecuComp database.

Furthermore, CEO power depends on their position within its management team. CEO can have a stronger position relative to their shareholders due to CEO duality, or a weaker position due to two-tier boards where there is an executive board and a separate supervisory board.

CEO duality is the eighth proxy of CEO narcissism and refers to the case where the CEO is also the chairman of the board, which happens in a one-tier board typical for some US-based corporations. As a chairman of the board one must control the conduct of the business in the interests of the shareholders and support the economic performance of the business. In the case of CEO duality, the CEO has enormous power and therefore agency problems can arise between the managers and the shareholders of a company (Boyd, 1995). The variable equals 1 if there is CEO duality, when the CEO is also chairman of the board, and 0 if this is not the case (Rijsenbilt and Commandeur, 2012).

4.2.3. CEO Acquisition Behavior

The ninth and last indicator of CEO narcissism belongs to CEOs' acquisition behavior. Highly narcissistic people are particularly prone to overconfidence (Kruger and Dunning, 1999) and overconfident CEOs underestimate the range of potential outcomes (Ben-David et al., 2013). They think they are better than the average CEO, overestimating the future return of their projects and

therefore paying higher acquisition premiums. They are 65% more likely to make acquisitions and are also more likely to make 'bad' diversifying mergers in unrelated sectors (Malmendier and Tate, 2005).

This implies that the ill-considered acquisition behavior of CEOs can be linked to their level of narcissism and it falls within the superiority and arrogance concept of Emmons (1987). Highly narcissistic CEOs tend to try to 'win the contest' in acquiring the target company and they may overestimate their capabilities because they believe in their superiority over the target company.

The costs of acquisitions are measured as the cash outflow of funds used for and/or the costs relating to acquisition of the company in the current year. To compare CEOs among different firm sizes, the acquisition costs are divided by the total revenue of the company in that year.

4.3. Developing a CEO Narcissism Scale

To create one overall narcissism index for each CEO per year tenure, Chatterjee and Hambrick (2007) calculated the simple mean of the five narcissism indicators after standardization. For example, a CEO who had an average standard deviation of one above the mean on each of the five indicator variables, would then have a narcissism score of +1.00.

The CEO narcissism measure of Chatterjee and Hambrick (2007) is a widely adapted measure for CEO narcissism. They did two analyses to test within-firm and within-person persistence in CEO narcissism and concluded that their measure of narcissism is a descriptor of the individual and not of the firm. Furthermore, they did a validation test with five security analysts who rated the degree of narcissism to some of the CEOs from their sample. They found a high level of agreement, concluding that their measures are good proxies for CEO narcissism.

For this reason and due to practical reasons, this research will follow the measurement of Chatterjee and Hambrick (2007) to convert all nine indicators into one overall CEO narcissism score. Most indicators suggest a positive relationship with narcissism, meaning that a higher value implies a higher value of narcissism. The only indicator that indicates an inverse relationship with narcissism is CEO rank. To achieve positive relationships for all nine indicators, CEO rank scores are multiplied by minus one. The mean for the nine variables is calculated after standardization. Table 1 shows how the nine indicators align with the elements of narcissism of Emmon's (1987) literature. Descriptive statistics and correlations between the nine variables are listed in Table 2.

Table 1. Nine Narcissism Indicators of CEOs

| Conceptual Elements of Narcissism from Emmons (1987) | | | | |
|--|--|--|---|-------------------------------------|
| | I | II | III | IV |
| | Self-admiration | Entitlement / Exploitativeness | Authority / Leadership | Superiority / Arrogance |
| Illustrative items from Narcissistic Personality Inventory (NPI) | I like to look at myself in the mirror | I insist on getting the respect that is due to me | I like to be the center of attention | I usually dominate any conversation |
| | I am an extraordinary person | I am envious of other people's good fortune | I like having authority over other people | I am a born leader |
| Interpretive Alignment with Narcissism Indicators | | | | |
| 1 | Cash compensation | I deserve the highest compensation | | |
| 2 | Total compensation | because I am an extraordinary person | | |
| 3 | Relative cash compensation | I deserve far more compensation than | | |
| 4 | Relative total compensation | anyone else in this organization | | |
| 5 | CEO rank | I am better than others | | |
| 6 | CEO duality | Leadership is a solo endeavor | | |
| 7 | Number of official titles | Power puts me in the center of attention | | |
| 8 | Length of official role title | I am the central figure in this company | | |
| 9 | Costs of acquisitions | I pay high premiums because I can do a better job than target CEOs | | |

Table 2. Descriptive statistics and correlations of narcissism indicators ($n = 29,196$)

| | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|-------------------------------|-------|-------|------------|-----------|------------|------------|-----------|-----------|-----------|------------|
| 1 Cash compensation | 1.15 | 0.99 | | | | | | | | |
| 2 Total compensation | 5.27 | 5.61 | 0.5514*** | | | | | | | |
| 3 Relative cash compensation | 1.7 | 0.52 | 0.3555*** | 0.1290*** | | | | | | |
| 4 Relative total compensation | 2.47 | 1.61 | 0.0883*** | 0.3659*** | 0.3489*** | | | | | |
| 5 CEO rank | -1.18 | 0.59 | 0.0868*** | 0.0017 | 0.1518*** | -0.0549*** | | | | |
| 6 CEO duality | 0.51 | 0.5 | 0.1988*** | 0.1607*** | 0.1397*** | 0.0332*** | 0.0844*** | | | |
| 7 Number of role titles | 2.5 | 0.73 | -0.0441*** | 0.0305*** | 0.0845*** | 0.0587** | 0.1062*** | 0.1586*** | | |
| 8 Length of role title | 39.5 | 38.47 | -0.0670*** | 0.0362*** | -0.0258*** | 0.0017 | 0.0396*** | 0.0685*** | 0.6357*** | |
| 9 Costs of acquisitions | 0.04 | 0.11 | -0.0034 | 0.0429*** | 0.0149** | 0.0367*** | 0.0101* | -0.0116** | -0.0107* | -0.0336*** |

Notes. Cash compensation and total compensation are expressed in millions

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

4.4. Dependent Variables

4.4.1. Firm Value

Tobin's Q is a market-based measure used as a proxy for firm valuation. It is a measure of the market expectation relative to its actual worth and is therefore by definition forward-looking. The ratio can be used to differentiate between the true value of a publicly traded company and investor speculation or preference.

Tobin's Q is calculated as the market value of a firm divided by the replacement value of the firm's assets. Since the replacement value of a firm's assets is difficult to determine the original formula is modified where the replacement costs of the assets are replaced with their book values.

$$Tobin's\ Q = \frac{Market\ Value\ of\ Assets}{Book\ Value\ of\ Assets} \quad (1)$$

This research adopts the standard definition of Tobin's Q in empirical literature where the numerator is computed as the book value of total assets plus the market value of equity minus the book value of equity, while its denominator is the book value of total assets (Connolly and Hirschey, 2005; Dybvig and Warachka, 2016). Retrieving data from Compustat's fundamental database yields the following equation:

$$Tobin's\ Q = \frac{AT + (CSHO * PRCC_F) - CEQ}{AT} \quad (2)$$

Where:

AT = Book value of total assets;

$CSHO * PRCC_F$ = Market value of equity: shares outstanding times share price

CEQ = Book value of common equity

4.4.2. Firm Performance

To test whether the overall measure for CEO narcissism captures narcissism as a pathological behavior, or merely as higher or lower CEO skills, it is necessary to compare investors' sentiment with management's actual performance. For this reason, I also run a regression with firm performance as a dependent variable, measured as the return on assets (ROA). ROA is calculated as net income, or profit after taxes, divided by total assets. It is a profitability ratio that shows how much profit a firm earns, generated from its overall resources. The higher the return, the more productive and efficient management is utilizing economic resources and therefore indicates better management.

$$ROA = \frac{NI}{AT} \quad (3)$$

Where:

NI = Net income

AT = Book value of total assets;

4.5. Control Variables

To conclude that CEO narcissism is negatively related to firm value, it is necessary to isolate the effect from any other variables that could affect firm value. Several CEO-, firm- and industry-specific variables are included as control variables that could influence the firm valuation measure.

4.5.1. CEO controls

Following the research of Chatterjee and Hambrick (2007), the first control variable is ‘CEO tenure’. Simsek (2007) finds that CEO tenure is positively related to firm performance. Long-tenured CEOs are more risk-taking, have bigger influences on the rest of the management team and could therefore influence firm valuation. Financial performance can be affected by life-cycle learning (Rijsenbilt and Commandeur, 2012). The second control variable is ‘CEO age’. Age also influences a CEO’s degree of risk seeking. Older CEOs could have learned from the past or from colleagues which could influence firm valuation. They might evaluate decisions more carefully and thoughtfully, reducing the chance of value-destroying mistakes.

4.5.2. Firm controls

Firm size can affect firm value. Previous research show different results on the effect of firm size on firm value. A bigger firm size can give positive signals to investors due to its advantages of economies of scale and other efficiencies. Bigger firms have more market power and greater access to capital markets as a source of external funds to increase firm value (Setiadharm and Machali, 2017). Besides that, bigger firm could have more incentives to adopt good governance that leads to more outsiders and financial experts on boards with less CEO power (Klapper et al., 2006; Durnev and Kim, 2005). To control for firm size, I use the natural logarithm of the book value of total assets.

4.5.3. Industry controls

Dummies for the twelve Fama French Industry codes are taken as control variables, since different industries have different economic environments. Using industry fixed effects in the model controls for specific production technology and market condition within each industry (Rijsenbilt and Commandeur, 2012).

4.6. Model and Estimation

4.6.1. Estimation Model

The dataset is implemented into Stata. This research uses panel data analysis since it analyzes two-dimensional panel data, namely cross-sectional among CEOs and longitudinal over time. The

dependent variables are regressed using the xtreg and fe command in Stata on the following equation, including firm and year fixed effects:

$$\begin{aligned} \text{Tobin's } Q = & \alpha + \beta_1[\text{CN}] + \beta_2[\text{Tenure}] + \beta_3[\text{Age}] + \beta_4[\text{FS}] + \beta_{5i}[\text{FF}_i] \\ & + \beta_{6i}[\text{Year}_i] + \beta_{7i}[\text{Firm}_i]\varepsilon \end{aligned} \quad (4)$$

$$\begin{aligned} \text{ROA} = & \alpha + \beta_1[\text{CN}] + \beta_2[\text{Tenure}] + \beta_3[\text{Age}] + \beta_4[\text{FS}] + \beta_{5i}[\text{FF}_i] + \beta_{6i}[\text{Year}_i] \\ & + \beta_{7i}[\text{Firm}_i]\varepsilon \end{aligned} \quad (5)$$

Where

CN = CEO Narcissism

Tenure = CEO Tenure

Age = CEO Age

FS = Firm size

FF_i = Fama French industry codes

4.6.2. Fixed Effects Model

In regression analysis, variables can be either fixed or random. Fixed effects are constant variables across individuals and random effects are unpredictable. In regression analysis, variables that might affect the outcome of analysis should not be treated as random variables and fixed effects models can treat them as constant (Hedges and Vevea, 1998). Furthermore, fixed effects models remove omitted variable bias by measuring changes within groups across time.

Since this research investigates the impact of CEO narcissism, a variable that changes over time, a fixed-effects model is appropriate. Each CEO has his own individual characteristics that may or may not influence firm value of firm performance. Year and company names should not impact firm value, or firm performance or CEO narcissism and therefore these variables need to be controlled for.

Removing the effects of time-invariant characteristics of year and company names contributes to estimate the net effect of CEO narcissism on firm valuation and firm performance.

4.6.3. Winsorizing

To control for outliers, some variables are winsorized to remove extreme outcomes. By winsorizing, no variables are eliminated, but outliers are replaced by variables at a certain level. The appropriate level to winsorize is determined by using histograms and scatter plots. Absolute compensation, relative compensation and the cost of acquisitions are winsorized at a 1% level, meaning at the 1st and the 99th percent. Since the dependent variables Tobin's Q and ROA displayed extreme outcomes, they are both winsorized at a 0.5% level.

5. Results

The aim of this chapter is to describe the statistical test and results in detail. The first part will describe the descriptive analysis of the dependent, independent and control variables. The second part will discuss the regression model and whether the results support the hypotheses of this study.

5.1. Descriptive statistics

Table 3 presents descriptive statistics for all variables of the sample. Tobin's Q has an average of 1.90, meaning that the average stock in this sample is overvalued and investors believe that investing in these companies could be profitable. This perception of profitability is generally attributed to either intellectual capital of the company or a company's reputation. The minimum of 0.68 is a slightly undervalued company and the maximum of 10.18 refers to a highly overvalued company. Return on assets has an average of 3%, meaning that on average, one dollar invested in assets generated 3 cents of net income in this sample. The minimum of -0.72 means that every dollar invested in assets translated to a loss of 72 cents for the company.

As can be seen from the table, the CEO narcissism index has an average of close to zero (0.00028) and standard deviation of 0.45. This is due to the standardization of the narcissism indicators with a mean of zero and a standard deviation of one. Within this sample, CEOs have an average age of 54 years and a tenure ranging from 3 to 26 years with an average of 11.54 years. Their average cash compensation is 1.15 million dollars and their total compensation 5.27 million dollars with a maximum of 32.29 dollars a year. CEOs earn on average 1.7 times more cash than the second best paid employee in the company and on average 2.47 times more total compensation. CEO duality is a dummy variable equal to one if CEOs also serve as chairman of the board, meaning that 51% of the CEOs also serve as chairman of the board. Furthermore, companies within this sample spend on average 4% of their total revenues on acquisitions.

Table 3. Descriptive statistics of the dependent, independent and control variables. Cash and total compensation are expressed in millions. CEO duality is a dummy variable equal to one if the CEO is also the chairman of the board. ROA and costs of acquisitions are expressed in percentages and firm size equals the natural logarithm of the book value of total assets.

| Variable | Mean | SD | Min | Max | <i>N</i> |
|--------------------------------|-------|-------|-------|-------|----------|
| Tobin's Q | 1.90 | 1.32 | 0.68 | 10.18 | 28,621 |
| ROA | 0.03 | 0.11 | -0.72 | 0.34 | 28,667 |
| CEO Narcissism | 0.00 | 0.45 | -4.38 | 6.28 | 29,196 |
| 1. Cash Compensation | 1.15 | 0.99 | 0.21 | 6.50 | 29,196 |
| 2. Total Compensation | 5.27 | 5.61 | 0.32 | 32.29 | 29,196 |
| 3. Relative Cash Compensation | 1.70 | 0.52 | 1 | 4.04 | 29,164 |
| 4. Relative Total Compensation | 2.47 | 1.61 | 0.42 | 11.57 | 29,185 |
| 5. CEO Rank | -1.18 | 0.59 | -8 | -1 | 29,196 |
| 6. CEO Duality | 0.51 | 0.50 | 0 | 1 | 29,196 |
| 7. Number of Official Titles | 2.50 | 0.73 | 1 | 5 | 29,196 |
| 8. Length of Official Title | 39.49 | 38.46 | 3 | 244 | 29,196 |
| 9. Costs of Acquisitions | 0.04 | 0.11 | -9.50 | 14.09 | 26,673 |
| CEO Age | 54.69 | 6.64 | 27 | 89 | 28,899 |
| CEO Tenure | 11.54 | 5.88 | 3 | 26.41 | 29,196 |
| Firm Size | 7.79 | 1.79 | -1.91 | 14.99 | 29,181 |
| Fama French Industries | 7.42 | 3.46 | 1 | 12 | 29,196 |

5.2. Regression results

Table 4 and Table 5 provide the regression results for testing the effects of CEO narcissism on firm valuation and firm performance, respectively. All industry dummies are omitted by the model because of collinearity with firm fixed effect, meaning that this is something already controlled for. Three models are presented: one with control variables, one that adds the nine narcissism indicators separately and one that adds the overall CEO narcissism measure.

From Table 4, it is apparent from the first model that all control variables are significantly related to firm valuation with $p < 0.01$. CEO age is positively associated with firm valuation and CEO tenure and firm size are negatively associated with firm valuation. As the second model shows, some narcissism indicators are negatively and some are positively associated with firm valuation. CEO rank, number of official role titles and length of official title show no significant relationship with firm valuation. The results in the third model show that the overall CEO narcissism measure is positively related to firm valuation ($p < 0.01$). This result supports the first hypothesis in this research: CEO narcissism is positively related to firm valuation. The overall measure of CEO narcissism, based

on nine different indicators, predicts a higher firm valuation after controlling for CEO age, CEO tenure, firm size, the twelve Fama and French industries and firm and year fixed effects.

Table 5 shows the regression results with return on assets as a dependent variable. As can be seen from the first model, CEO age and firm size show no significant relationship with firm performance and CEO tenure is positive related to firm performance ($p < 0.01$). The second model shows results as in the previous table, although CEO duality and length of official title show no significant relationship with firm performance. From the third model, it can be seen that CEO narcissism is positively related to firm performance with $p < 0.01$. This result thus rejects the second hypothesis that CEO narcissism is negatively related to firm performance.

Comparing results from Table 4 and Table 5, it can be seen that some coefficients have different effects. Interestingly, firm size is negatively related to firm valuation while it has a (small) positive effect on firm performance. Furthermore, CEO age shows a significant relationship with firm value, while it has no effect on firm performance. If we now turn to the third model in both tables where the overall narcissism index is tested, it can be seen that CEO narcissism has a positive effect on both firm valuation and firm performance with a high significance level ($p < 0.01$). However, the effect of CEO narcissism on firm valuation (0.202) is more than ten times bigger than the effect on firm performance (0.016), supporting the third hypothesis of this study that CEO narcissism has a larger effect on firm valuation than on firm performance.

Table 4. Fixed effects model: Tobin's Q is regressed against control variables, the nine narcissism indicators, and the overall narcissism measure. Data is from January 1992 – December 2017. F-tests were significant for all three models with $p < 0.01$.

| | (1) | (2) | (3) |
|-----------------------------|----------------------|-----------------------|----------------------|
| | Control Variables | Narcissism Indicators | Narcissism Index |
| CEO Narcissism | | | 0.202*** (0.016) |
| Cash Compensation | | 0.027*** (0.01) | |
| Total Compensation | | 0.048*** (0.002) | |
| Relative Cash Compensation | | 0.039** (0.015) | |
| Relative Total Compensation | | -0.037*** (0.004) | |
| CEO Rank | | -0.009 (0.011) | |
| CEO Duality | | 0.073*** (0.017) | |
| Number of Official Titles | | -0.003 (0.012) | |
| Length of Official Title | | 0.00 (0.00) | |
| Costs of Acquisitions | | -0.118** (0.052) | |
| CEO Age | 0.004*** (0.001) | 0.002 (0.001) | 0.002 (0.001) |
| CEO Tenure | -0.009*** (0.002) | -0.011*** (0.002) | -0.01*** (0.002) |
| Firm Size | -0.398*** (0.01) | -0.473*** (0.012) | -0.429*** (0.011) |
| Constant | 4.878*** (0.096) | 5.312*** (0.112) | 5.262*** (0.1) |
| Observations | 28,322 | 26,102 | 28,322 |
| R ² | 0.0636 | 0.1092 | 0.0682 |

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5. Fixed effects model: ROA is regressed against control variables, the nine narcissism indicators, and the overall narcissism measure. Data is from January 1992 – December 2017. F-tests were significant for all three models with $p < 0.01$.

| | (1) | (2) | (3) |
|-----------------------------|--------------------|-----------------------|---------------------|
| | Control Variables | Narcissism Indicators | Narcissism Index |
| CEO Narcissism | | | 0.016*** (0.002) |
| Cash Compensation | | 0.006*** (0.001) | |
| Total Compensation | | 0.001*** (0.00) | |
| Relative Cash Compensation | | 0.006*** (0.002) | |
| Relative Total Compensation | | -0.001*** (0.00) | |
| CEO Rank | | 0.005*** (0.001) | |
| CEO Duality | | 0.001 (0.002) | |
| Number of Official Titles | | 0.004*** (0.001) | |
| Length of Official Title | | 0.00 (0.00) | |
| Costs of Acquisitions | | -0.024*** (0.006) | |
| CEO Age | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) |
| CEO Tenure | 0.001*** (0.00) | 0.001*** (0.00) | 0.001*** (0.00) |
| Firm Size | 0.00 (0.001) | -0.002 (0.001) | -0.002* (0.001) |
| Constant | 0.025** (0.01) | 0.031*** (0.012) | 0.055*** (0.011) |
| Observations | 28,368 | 26,378 | 28,368 |
| R ² | 0.0005 | 0.0103 | 0.0014 |

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

6. Discussion and Conclusion

This study investigates the relationship between CEO narcissism and firm valuation. To conclude whether narcissism is a pathological trait or simply imply higher or lower management skills, the effects on firm valuation are compared relative to the effects on firm performance. CEO narcissism is measured with one overall narcissism index, composed of nine objective narcissism indicators that fit the main concept of narcissism by Emmons (1987). Firm valuation is measured by Tobin's Q that takes intangible assets as investor sentiment and market speculation into account and firm performance is measured by the return on assets.

Consistent with expectations, this study shows a positive statistically significant relationship between CEO narcissism and firm valuation. This implies that either investors perceive CEO narcissism as a signal for future firm value or growth perspectives, or investors are biased through heuristics when making investment decisions, which may originate from availability bias or familiarity bias. Contrary to previous research that found a negative or no relationship between CEO narcissism and firm performance, this study finds a positive relationship. This can be due to multiple factors. First, previous research used data up until 2008, while the dataset of this study goes until 2017. After the great recession, codes of conduct have erupted and corporate governance has increased to prevent companies from comparable frauds, possibly mitigating overruling behavior of narcissistic CEOs. Averaging the effects on different industries could be a second explanation. Whereas previous research focused only on the technology or computer industry, this research takes all industries into account.

Comparing the effects on firm valuation with the effects on firm performance gives us different insights. There is insufficient evidence to conclude that narcissism is a destructive pathological personality trait since CEO narcissism shows a positive relationship with firm performance. We do however find in the results that the effects of CEO narcissism are more than ten times higher on firm valuation than on firm performance. CEO narcissism doesn't necessarily lead to much higher firm performance, but it does lead to overvalued stock. This suggests that CEO narcissism is a pathological trait that should be taken seriously.

Overall, these results indicate that CEO narcissism has a significant effect on firm valuation that goes beyond the effects on firm performance. From the shareholders' perspective this is an important finding that could be used as an arbitrage opportunity by rational investors. From a management perspective, these findings should be taken seriously since it could cause their stock price to drop in the future. CEO narcissism appears to be a concept that should be taken seriously by managers and investors. Considerably even more important is the pattern of investor irrationality that is supported by this study. Acknowledging this pattern could help agents understand how irrational decisions arise which is the first step in adjusting their behavior and making better investment decisions.

7. Limitations and Future Research

One of the main limitations of measuring CEO narcissism with at-the-distance indicators and without surveys or evaluations from psychologists, is that it's unsure whether the scores are reliable and comparable to NPI scores. Future research should investigate the relationship between CEO narcissism and firm valuation and CEO narcissism and firm performance by using other statistical techniques, such as natural experiments or instrumental variables. These techniques could help achieve causation results beyond panel data analysis and allow us to compare different at-the-distance narcissism measures, such as proposed by Chatterjee and Hambrick (2007), Rijsenbilt and Commandeur (2012) and this study, to find the most suitable measure. Further research should be done on which narcissism need to be included in the overall measure. Findings of this study could be different when changing the composition of the narcissism index. One persistent and suitable narcissism measure could be a major scientific contribution, since it eliminates the need of psychologists or surveys.

The R^2 scores as reported in Table 4 and Table 5 are low, suggesting that CEO narcissism does not explain a significant part of firm valuation or firm performance. One possible reason could be that narcissism does not only predict firm valuation or performance directly, but also indirectly through various relationships. Overall, the low R-squared scores should not be considered as a big drawback of this study, since the fixed effects model removed omitted variable bias.

The major contribution of this paper is that it shows the effects of CEO narcissism over such a large sample and such a large time frame. Future research could investigate whether there are differences between industries and whether the effects changed over time. From the perspective of anyone who could suffer from managerial frauds or destructive managerial behavior, it would be valuable to have gain knowledge on whether the effects of CEO narcissism had different effects before and after the recession on firm valuation and firm performance. Further research could provide more insights in whether we learned from our mistakes and whether the taken measures were successful.

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