CEO Overconfidence: Personal Demographics and Exercising Power- US Setting

Student Name: Teeshany Sambo

Student number: 425724

Program: MSc. Accounting, Auditing and Control

Supervisor: Dr. Ying Gan

Co-reader: Dr. Michael Erkens

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Abstract

The objective of this study is to determine if there is a causal relation between personal demographics and exercising power of Chief Executive Officers (CEOs) and CEO overconfidence. Therefore the following research question is attempted to be answered in this paper: Does the personal demographics and exercising power of CEOs determine their overconfidence?

In order to answer the research question the following hypotheses are formulated:

H1: Personal demographics of CEOs determine their overconfidence

H2: The power that CEOs exercise in firms determines their overconfidence

This study observes these theoretical expectations using data of 1,291 CEOs for Hypothesis 1 and 667 CEOs for Hypothesis 2. The findings obtained in this study are unable to provide strong evidence that the overconfident behavior of CEOs are affected by their personal demographics, they only provide evidence that the gender of CEOs does not affect their overconfident behavior. Regarding the exercising power of CEOs, the results only provided indication that the tenure and share ownership of CEOs do not affect their overconfident behavior. These findings are valuable because they contribute to the existing body of literature and improve firm value through supplying useful evidence to shareholders regarding their executives.

1 Introduction

The purpose of this master thesis is to examine the relationship between personal demographics and exercising power of CEOs and CEO overconfidence. More specifically, this study will examine the characteristics relating to the personal demographics and exercising power of CEOs in the United Stated that determine their overconfidence for the years 2007-2012.

Consequently the following research question has been formulated and will be answered in this study:

RQ: Does the personal demographics and exercising power of CEOs determine their overconfidence?

Providing an answer to this research question is important, because the corporate setting these days requires CEOs to be excellent decision makers. The performance of firms largely depends on the ability of CEOs to make quick, widely-supported, and effective decisions. In predictable business theories, it is assumed that CEOs will act rationally when making business decisions (Vasile et al., 2012). In real business world, the decisions made by CEOs are different based on individuals' feelings. Firms in the same country, same industry, similar size and receiving similar investment opportunities act differently (Graham et al., 2013). Experimental psychology reports that CEOs tend to be overconfident, in which they believe to have more knowledge about future outcomes (Hackbarth, 2008). CEOs that are overconfident tend to overstate their capabilities and think of themselves as above average. This CEO overconfidence can have important implications for the value of firms, such as greater innovation, higher effort levels, higher motivation and possibly a more optimal investment level (Hirshleifer et al., 2012), but it also encourages more willingness to undertake risky projects, make not so rational decisions and also predict better outcome than actual, which can influence the variability of profits (Certo et al., 2008). Goel et al. (2008) finds that overconfident CEOs are more likely to diminish rather than to enhance firm value. Nevertheless, they suggest that some firms may need overconfident CEOs to aid in gaining more investment opportunities. Detecting the overconfident CEO is vital in preserving the sustainability and continuous success of the business, as the CEO is the decision-maker of the company.

There are only a few studies which explicitly examine the personal characteristics and exercising power of CEOs and how these may contribute to their overconfident behavior (Ben-David et al., 2007). Therefore, it is important to have a better understanding of these determinants that cause CEO overconfidence.

This study attempts to answer the research question by observing theoretical expectations empirically, covering the years 2007-2012. Using panel data of 1,291 CEOs to provide evidence for Hypothesis 1 (Personal demographics of CEOs determine their overconfidence) two personal demographics measures are applied following Ben-David et al. (2007), which are age and gender. For Hypothesis 2 (The power that CEOs exercise in firms determines their overconfidence) 667 CEOs are used, to measure exercising power of the CEOs. The proxy used for exercising power is the tenure, compensation, share ownership and influence on the board of directors of CEOs (Adams et al., 2005).

The results of this study are unable to provide strong evidence that the overconfident behavior of CEOs is affected by their personal demographics. The findings did not provide evidence that the age of the CEO is related to CEO overconfidence. However, the conclusion that can be made regarding the personal demographics of CEOs is that the gender of CEOs does not affect their overconfident behavior. Regarding the exercising power of CEOs, the results did not provide robust evidence that it is related to CEO overconfidence. The conclusion that can be made regarding the exercising power of CEOs is that the tenure and share ownership of CEOs do not affect their overconfident behavior. Regarding the compensation and influence on board of directors the results were insignificant.

Although the hypothesis in this study could not be accepted nor rejected, and the research question cannot be answered the results of this study gives support to other theoretical research. By, illustrating that CEOs should not necessarily be male, have a long tenure or high share ownership to be possibly beneficial for the more profitable and risky projects that a typically risk-averse CEO would not accept. As follows, shareholders and board of directors should not essentially have to take these CEO characteristics into account to recognize an overconfident CEO, and they can focus on other aspects of the CEO. This can increase firm value and hence benefit shareholders' welfare, through providing valuable information to investors and shareholders regarding their CEO, which can lead to continuous success of the businesses.

The remainder of this study is structured as follows, section 2 consists of the literature review that outlines the personal demographics and exercising power of CEOs. Section 3 formulates the two main hypotheses. Section 4 gives a detailed overview on the methodology used. Section 5 consists of an extensive discussion of the empirical results and analysis. Lastly, section 6 gives a summary and conclusion of the study; it also provides the implications, alternative explanations, limitations and future recommendations of the study.

2 Literature Review

A growing stream of literature on CEO overconfidence has been seen in the last years. Researchers have investigated how personal characteristics of CEOs can influence their investment decisions (Malmendier & Tate, 2005), whether overconfident CEOs are better innovators (Hirshleifer, Low, & Teoh, 2012) and if CEO overconfidence manifests itself in corporate policies (Ben-David, Graham, & Harvey, 2007). These previous researchers examine the relation between CEO overconfidence and a variety of corporate policies such as mergers and acquisitions, capital spending, payout and financing. However, the literature review in this master thesis will be based on the determinants of CEO overconfidence. More specifically, it is intended to investigate if the personal demographics and exercising power of the CEOs determine their overconfidence. In this section, the results of previous researches are examined, whereby definition of CEO overconfidence and its impact on corporate policies is provided and some determinants of CEO overconfidence are discussed.

2.1 Defining CEO overconfidence and its impact

Overconfidence has been an extensively used term in psychology and researchers in economic and finance fields have extended their meaning to explain for the phenomena that the standard theory does not explain (Skata, 2008). However, according to Langer (1975) 'overconfidence' is described as an overestimation of one's own skills and of outcomes relating to one's own personal conditions. Overconfidence can display itself in a variety of forms, whereby individuals may believe that their knowledge is more accurate than it really is (Lichtenstein, 1982). One well-established conventional fact is the "better than average" effect: when people compare their skills to the skills of their colleagues, they tend to overstate their intelligence in comparison to the average. They believe that they can control random responsibilities, and they are extremely optimistic about the future. Because individuals expect their behavior to produce success, they are more likely to direct outcomes to their actions, and not to luck, when they succeed rather than when they fail. The self-centered acknowledgement of outcomes, in turn, reinforces individual overconfidence (Langer, 1975). Overconfidence can lead managers to overestimate returns and underestimate risk which has impact on the corporate policies of firms. Such impacts involve top executives underestimating risk in cash flows, which may result in recognizing negative net

present value projects as lucrative and hence invest too much (Gervais, Heaton, & Odean, 2005). Overconfident CEOs also tend to opt for aggressive capital structure for companies, underestimate the instability of risky procedures and see the firm's cash flows as safer than what they actually are, which causes that these CEOs reacquire shares more strongly in reaction to a decrease in share prices, or may be more unwilling to issue new shares subsequent to run-ups in price, in expectation of more increases in share prices (Hackbarth, 2006). Literature proposes that CEO overconfidence can seldom be an asset to shareholders, an exceedingly inaccurate view of risk-return profiles can damage shareholder value. Therefore determining what causes top executives overconfidence is fundamental (Ben-David, Graham, & Harvey, 2007).

2.2 CEO overconfidence determinants

A variety of researches have explored various determinants for top executives' overconfidence. Ben-David et al. (2007) examined the personal determinants of Chief Financial Officer (CFO) overconfidence, whereby they explore persistence of overconfidence during time, the association with skills of CEO and the relation of the demographic attributes regarding the age, gender, education and professional experience of CEOs. According to Gabaix & Landier (2008) CEOs make decisions based on their ambitions, job histories and future aspirations which are characteristics that are related to overconfidence. Other researchers also found that past experiences (Xuan, 2006), too much dedication (Haunschild, Davis-Blake, & Fichman, 1994), self-competence (Westerberg, Singh, & Häckner, 1997), tenure (Brookman & Thistle, 2009) and turnover (Huson, Malatesta, & Parrino, 2005) are associated to CEO overconfidence. However, this master thesis is related to the determinants regarding personal demographics and exercising power of CEOs. According to Shefrin (2005b) these variables measure the overconfidence, risk aversion and optimism of CEOs, and illustrate the relationship between overconfidence and firm performance.

2.2.1 Personal demographics

According Epstein et al. (1985) personal demographics are associated with CEO overconfidence and explain in what way firms behave differently. Personal demographics are dispositional characteristics signifying that they are relatively permanent preferences on an individual's part of

thinking or acting in a specific manner. According to Hambrick and Finkelstein (1987) the effect of personal demographics on CEOs is dependent on the amount of managerial judgment. Some of the personal demographics that may influence CEO overconfidence are: age, gender, educational background and experience (Ben-David, Graham, & Harvey, 2007). Graham et al. (2013) mention that younger CEOs are more confident and more risk-tolerant compare to elder CEOs, they have more pertinent knowledge, are more flexible and give more support to implement new strategies (Staw & Ross, 1987). In addition, older CEOs tend to be inflexible in changing precedent lucrative strategy and are less probable to engage in risky projects that may affect their status. However, some studies supply mixed evidence about age-related differences in risky choices, and discover no findings that aging is related with less risk-taking (Mather, 2006). According to Shefrin (2005a) overconfidence appears to increase with age, due to more past experience but it increases till age 70 and then declines. Related to the gender of CEOs many study's in psychology and sociology provide indication signifying that men and women notably vary in their characteristics. These researches suggest that men are more overconfident than women, especially in finance related matters (Fox et al., 1994). According to Barberis & Thaler (2003) men are seen as more risk-tolerant, are more prone to believe that they take correct decision that will cause that the company achieves its goals in the future. The psychological point of view of men and women can ultimately be the reason for a better or worse company performance (Shefrin, 2005a). The personal demographic regarding the education of CEOs can specify the wisdom that they have and what type of ability they have gained throughout their study. Whether, if their background is from accounting, finance, legal, sales, or other routes, could affect the viewpoint and comfort level of CEOs in several kinds of decisions, and also influence their overconfidence (Graham et al., 2013). According to Hambrick & Mason (1984) the kind of education of executives is a critical variable, because it points out their skills and what kind of values they have. According to Chevalier & Ellison (1999) top executives with an MBA degree or graduates from esteemed institutions have a higher degree of knowledge because they have access to enhanced networks and data. CEOs with a MBA degree are associated with a higher risk tolerance, which is related to overconfidence. Ferris, Jayaraman, & Sabherwal (2013) discovered that there is a difference in the degree of overconfidence between a CEO who has an undergraduate business degree, MBA or PhD. Shefrin (2005a) also finds that superior educated top executives have inclination to exhibit overconfidence.

However, some studies find no association between education and overconfidence, and it is not clear whether overconfidence leads individuals to achieve superior education levels or whether education leads to overconfidence (Ben-David, Graham, & Harvey, 2007; Ge, Matsumoto, & Zhang, 2011). Concerning the experience of CEOs, Malmendier et al. (2010) concluded that early-life experiences of CEOs, which are likely to shape beliefs and choices later in life, affects their overconfidence. Malmendier & Nagel (2011) also observed that past macroeconomic experience are likely to affect the risk taking behavior of individuals. According to Cremers & Grinstein (2009) top executives work over different industries during their lifetime. The experience that CEOs gain in their industry may influence their ability to achieve the company's objectives. Therefore, industry-specific bargaining ability is an important skill for companies, for instance CEOs that were successful in the past may believe that they are more experienced than what they really are, which might strengthen their overconfidence propensity. However, according to Certo, Connelly, & Tihanyi (2008) irrational managers might also learn from their past experience to make more rational decisions and be more risk averse which weakens their overconfident behavior.

2.2.2 CEO Power

Power is the ability of a person to exercise his will. CEO power is described as the capability of the CEO to manipulate the actions and outcomes of his organization. The degree of power that a CEO can exercise is established by the size and past performance of the firm (Haleblian & Finkelstein, 1993). According to Adams et al. (2005) CEOs with exercising power display more excessive performance, since the CEO is not required to compromise with the members of the board and management team. The CEOs who have more power will more likely become overconfident as they have the ability to constantly affect the important decisions within organizations and have more authority to direct the firm in certain direction. The power that CEOs can exercise has to do with their tenure, influence on the board of directors, compensation and share ownership (Ben-David et al., 2007; Harjoto et al., 2009). According to Harjoto et al. (2009) CEOs with longer tenure tend to opt for power concentration, which can cause overconfidence. CEO tenure can be described as the time calculated in years that the CEO has worked within a firm. The skills of CEOs can help them to hold a position for an extended period in an organization which can impact the functioning of the business positively (Berger, Ofek, &

Yermack, 1997). At first, the CEO has an adjustment period whereby the CEO boots the organization's performance. However, holding a position for a lengthy period can cause that an executive becomes more rigid, which can negatively impact the organization. This negative performance association can be enclosed by the entrenchment theory, which entails that the CEO will become more conservative, since the CEO will rigorously abide to past policies and grow into being more overconfident that these past policies will lead to success (Staw & Ross, 1987; Hambrick, Henderson, & Miller, 2006). Furthermore, according to Cremers & Grinstein (2009) CEOs who work for numerous years within a company acquire certain knowledge; consequently they can be classified as experts, which might cause that they believe that they know everything, which causes overconfidence. Adams et al. (2005) discovered that a CEO who has power over the board of directors or is part of the board will have greater decision influences in the organization and the greater power will result in the increase of firm performance variability and overconfidence. However, Goel et al. (2008) concluded that internal organizational governance persuades boards to appoint a CEO that is overconfident, but if the CEO becomes too overconfident due to his power over the board, the CEO must be fired. According to Adams et al. (2005) CEOs that are also chairman of the board of directors have more power in establishing their own compensation and imposing their decisions, which reinforces their confidence. Therefore, Denis et al. (1997) suggests for a chairman separation, in which the CEOs have to seek advice from and convince the chairman of their decisions which will probably lead to less value destroying decisions and less overconfidence. According to Brown & Sarma (2007) powerful CEOs are inclined to have higher salaries; the personal compensation area is where executives are most probable to exercise their power. When the executive can decide his own personal compensation, he will become more powerful. CEO compensation is defined as the total compensation of the CEO including options granted. It is expected that overconfident CEOs who are expected to perform well and take risky projects should be more willing to accept compensation that are more positive sensitive to performance and risk, such as stock options. Overconfident top executives most likely have superior equity intensity, option intensity, and minor cash intensity than their non-overconfident equivalents. Huge CEO compensation packages suggest that there is probability for weak corporate governance mechanisms inside the corporation, with a board of directors that is not employing its responsibility to supervise and discuss CEO pay, in turn providing the executives with more power to obtain personal benefits,

which reinforces overconfidence (Hatzel, Ofek, & Yermack, 2004). Sen et al. (2015) also argued that CEOs are overconfident about their firm's prospects only if they retain some of the shares received whenever they exercise company stock options. Adams et al. (2005) find that CEO shares ownership is positively associated with overconfidence. Share ownership is defined as the number of shares held, divided by the total shares outstanding. Share ownership power reflects the CEO's ownership position and his association to the founder of the company. This power is usually exhibited in being the founder or having a substantial investment in the company. CEO share ownership power relates to the quantity of investment the CEO has invested in the firm. The higher the amount of personal capital that the CEO has invested in the firm the more probable his involvement in decision making process of the firm and the more powerful and overconfident the CEO will become (Tushman & Scanlan, 1981).

The literature review explored different philosophies regarding the determinants of CEO overconfidence. These philosophies will be used to develop the hypotheses in the following section. Table 2 in the Appendix provides a summary of some of the main current papers on CEO overconfidence used in this study.

3 Hypothesis Development

In this section, different theories are explored and consequently two hypotheses are developed with the objective of formulating a fundamental conceptual framework to the research's purpose.

The first hypothesis is based on the upper echelons theory which acknowledges that individual-specific demographics of CEOs influence their judgment and decision making. Specifically, upper echelons theory proposes that CEOs' personal demographics affect how they interpret or assess their circumstances and therefore influence their decisions, the reason therefore is that personal demographic characteristics are related to numerous perceptions, values and cognitive bases (Hambrick & Mason, 1984; Ge, Matsumoto, & Zhang, 2011). According to House, Shane, & Herold (1996) the personal demographics of CEOs such as risk attitudes, intrinsic motivation and overconfidence influence the cognitive procedures that lead to decision making process. Literature suggests that some of the personal demographics that are associated with CEO overconfidence are: age, gender, educational background and experience. According to Graham et al. (2013) younger CEOs are more overconfident and risk-tolerant than older CEOs. However Shefrin (2005a) states that elder CEOs are more overconfident due to more past experience. The evidence provided by researchers is opposing, but it is predicted that older top executives are less overconfident, risk averse and optimistic. Literature also advocates that men are more overconfident and more risk tolerant than women (Fox, Lundenberg, & Puncochar, 1994; Barberis & Thaler, 2003). Regarding the education of executives, researchers discussed that the sort of educational background of CEOs is important to determine what type of skills, knowledge and values CEOs have and how it affects their decision making and in turn their overconfidence (Hambrick & Mason, 1984). Shefrin (2005a) discovered that superior educated CEOs have tendency to be overconfident. Relating to the experience of CEOs, studies suggest that early-life experiences (Malmendier, Tate, & Yan, 2010), past macroeconomic experience (Malmendier & Nagel, 2011) and industry-specific experience (Cremers & Grinstein, 2009) enhances their overconfidence. Consequently, when taking into account these variables that describe the personal demographics of CEOs the following alternative hypothesis can be formulated:

H1: Personal demographics of CEOs determine their overconfidence.

The second hypothesis is based on the agency theory which discusses the relationship between the agent and the principle. In this case, the principle being the shareholders of the company and the agent being the overconfident CEO. Agency theory assumes that information asymmetry occurs between the principle who has external information and the agent who has internal information of the company, resulting that the overconfident CEO knows more than the shareholders. The agency problem happens when an organization is funded by its shareholders and is managed daily by its CEO, whereby the interest of the CEO and shareholders differentiate. The information asymmetry gives the CEO the chance to exploit his interest instead of the interest of the shareholder. The CEOs who can exercise more power will have a greater opportunity to utilize information asymmetry to maximize their own gains, as they have the ability to constantly affect the important decisions within organizations. By using company resources to maximize his own interest indicates that the CEO is likely a risk taker, which implies overconfidence (Jensen & Meckling, 1976). It is assumed that overconfident CEOs are part of the board of directors, have longer tenure, higher share ownership and higher compensation, which causes that they can exercise their power in the firm and be overconfident. CEOs that have power over the board of directors or are part of the board can have more power in directing the firm, this is also the case with CEOs who have a long tenure and therefore have more knowledge, in which will likely result in the increase of overconfidence (Berger, Ofek, & Yermack, 1997; Adams, Almeida, & Ferreira, 2005). Having share ownership also causes overconfident behavior. However, having share ownership may reduce the agency problem, since the CEO and shareholders' interests will be aligned (Tushman & Scanlan, 1981). Another variable that impacts the overconfidence of CEOs are huge compensation packages, which suggests that there is a likelihood of weak corporate governance mechanisms inside the corporation. This indicates that the board does not supervise and discuss CEO pay appropriately, whereby the agency problem can manifest, giving the executives more power to obtain personal benefits, which reinforces overconfidence (Hatzel, Ofek, & Yermack, 2004). Thus, after considering these variables that describe CEO power the following alternative hypothesis can be formulated:

H2: The power that CEOs exercise in firms determines their overconfidence

4 Research Design

In this section, the dependent variable, the logistic regression model and variables are discussed, subsequently the sample and the data sources are deliberated and afterward the endogeneity concerns are debated.

4.1 Measurement CEO Overconfidence

The biggest challenge of this research is the means to create a plausible measure of CEO overconfidence. Biased beliefs obviously challenge direct and precise measurement (Brown & Sarma, 2007). Different measures are used to determine CEO overconfidence. Malmendier et al. (2005) explored the CEO's beliefs about the future performance of their company from their personal portfolio transactions. More specifically, they exploited the high degree of under-diversification faced by CEOs in US corporations. It is assumed that CEOs that are overconfident receive extensive stock-based compensation, often in the form of restricted stock and non-tradable options. One method to measure overconfidence is to look at CEOs who hold options beyond rational thresholds. Malmendier & Tate (2008) also analyzed the executives' personal portfolios to recognize dissimilarities among CEOs' in executive option exercise. According to Hall & Murphy (2002) CEO's that are risk-averse normally exercise options quickly when there is an adequate high stock price. The threshold for early exercise is associated with the benefit of continuing to hold the option. The precise threshold varies across the residual option duration, the amount of under diversification, individual capital and risk aversion. Sen & Tumarkin (2015) found that CEOs are optimistic about their firm's prospects if and only if they retain some of the shares received every time they exercise company stock options. This study uses the same indicator as Sen & Tumarkin (2015) to measure overconfidence which is Share retainer. Share retainer, is established by examining an executive's stock transactions that relates to option exercise. This measure for overconfidence has been chosen, because it is straightforward to compute Share retainer. Share retainer is only dependent on whether a CEO sells or retains shares obtained on option exercise to decide if a CEO is overconfident. It is robustly associated with financing, leverage and acquisitions, and it is not dependent on capital, risk aversion and the firm' stock characteristics.

In addition, Share retainer is invulnerable to acceptable variation in unobservable traits of CEOs and is moderately unaffected by the discrepancy in the stock price history. Subsequently, Share retainer can be used to examine the effects of CEO overconfidence in small companies. It also displays a distinctive characteristic between overconfidence indicators in which it can recognize overconfidence in transactions in which CEOs reduce their dollar exposure to the company. Such as a CEO's viewpoint which can change from highly to mildly overconfident due to stock price increase, this change may be a reason for the CEO to sell shares or exercise options, impairing the capability of other overconfident indicators to properly recognize that the CEO remains overconfident. Therefore, Share retainer is a good measure because it can still identify the CEO's residual overconfidence, due to the fact that the CEO's option exercise policy still results in retained shares.

4.2 Logistic Regression Model and Variables

There are two main hypotheses, H1: Personal demographics of CEOs determine their overconfidence and H2: The power that CEOs exercise in firms determines their overconfidence. To test these hypotheses, the research design of this paper will use logistic regression and pooled cross-sectional time series data. This regression aims to determine whether CEO overconfidence is affected by the personal demographics and exercising power of executives.

The model that will be tested takes the following form and will be estimated using OLS regression:

$$\mathrm{CO}^{i,t} = \alpha + \beta 1\ \mathrm{AGE} + \beta 2\ \mathrm{GENDER} + \beta 3\ \mathrm{TEN} + \beta 4\ \mathrm{BOD} + \beta 5\ \mathrm{COMP} + \beta 6\mathrm{OWNER} + \beta 7\ \mathrm{BOARDSIZE} + \beta 8\ \mathrm{SIZE} + \beta 9\ \mathrm{LEVERAGE} + \beta 10\ \mathrm{Q} + \beta 11\ \mathrm{ROA} + \beta 11\ \mathrm{CASH} + \beta 12\ \mathrm{IND} + \beta\ 13\ \mathrm{YEAR} + \varepsilon^{i,t}$$

CO is the dependent variable which is CEO overconfidence, the proxy that is used for CEO overconfidence is Share retainer, which is a dummy variable. Share retainer is measured by looking whether the CEO retains shares obtained on option exercise (Sen & Tumarkin, 2015). The independent variables measure the personal demographics and exercising power of CEOs. The CEO's age (AGE) is a numerical variable which reflects the birth year of the CEO. Malmendier, Tate, and Yan (2011) displayed that quantifiable managerial characteristics such as

the CEO's age have substantial explanatory power for corporate finance decisions in whereby overconfidence can be displayed. The variable age is measured by subtracting the fiscal year by the birth year of the CEOs. According to Fox et al. (1994) men and women especially vary in their characteristics, whereby the psychological point of interpretation of men and women can ultimately define their overconfident behavior (Shefrin, 2005a). The variable gender (GENDER) is a dummy which equals 1 when the CEO is male and 0 otherwise. These independent variables measure the personal demographics of the CEO which test the first hypothesis, which implies that personal demographics of CEOs determine their overconfidence. However, according to literature the experience and education of CEOs are also import variables in determining how the personal demographics of executives affect their overconfidence (Graham et al., 2013; Certo et al. 2008). Nevertheless, these variables are not included in the regression model, because it is very difficult and time-consuming to hand collect this data. According to Malmendier & Nagel (2011) the variable age also provides insight regarding the experience of CEOs. Older CEOs tend to have more experience which enhances their overconfidence. The tenure of CEOs can also measure experience, especially industry-specific experience (Cremers & Grinstein, 2009), this variable is also used to measure how the exercising power of CEOs determine their overconfidence, which tests the second hypothesis.

The following independent variables measure the second hypothesis, which implies that the power that CEOs exercise in firms determines their overconfidence. Literature suggests that overconfident CEOs tend to have longer tenure, the variable CEO tenure (TEN) is measured as the amount of years a CEO holds a position in an organization (Taylor and Brown, 1988). The influence of CEOs on the board of directors is also related to the power that CEOs can exercise (Ben-David et al., 2007; Harjoto et al., 2009). The variable board of directors (BOD) is used as a corporate governance measure and is measured by dummy variables, which equals 1 if the CEO is member or chairmen of the compensation committee and/or chairman of the board of directors, and 0 otherwise. This variable is also strongly related to the variable compensation because, if the executives are part of the compensation committee they are more powerful and they are prone to have higher salaries, since the personal compensation area is where executives are most probable to exercise their power. Thus, the compensation (COMP) of CEOs is a critical variable to access how the power of CEOs determines their overconfidence. The total compensation is measured by the logarithm sum of salary, bonus, other annual restricted stock

grants, LTIP payouts, all other compensations and the value of options exercise (Brown & Sarma, 2007). The variable share ownership (OWNER) is defined as the number of shares held, divided by the total shares outstanding. The CEO share ownership is measured by the logarithm of 1 plus the percentage of total shares owned by CEOs, excluding the options granted. According to Tushman & Scanlan (1981) share ownership power reflects the CEOs' ownership position, which is an important variable in determining the power that CEOs have and how this affect their overconfident behavior.

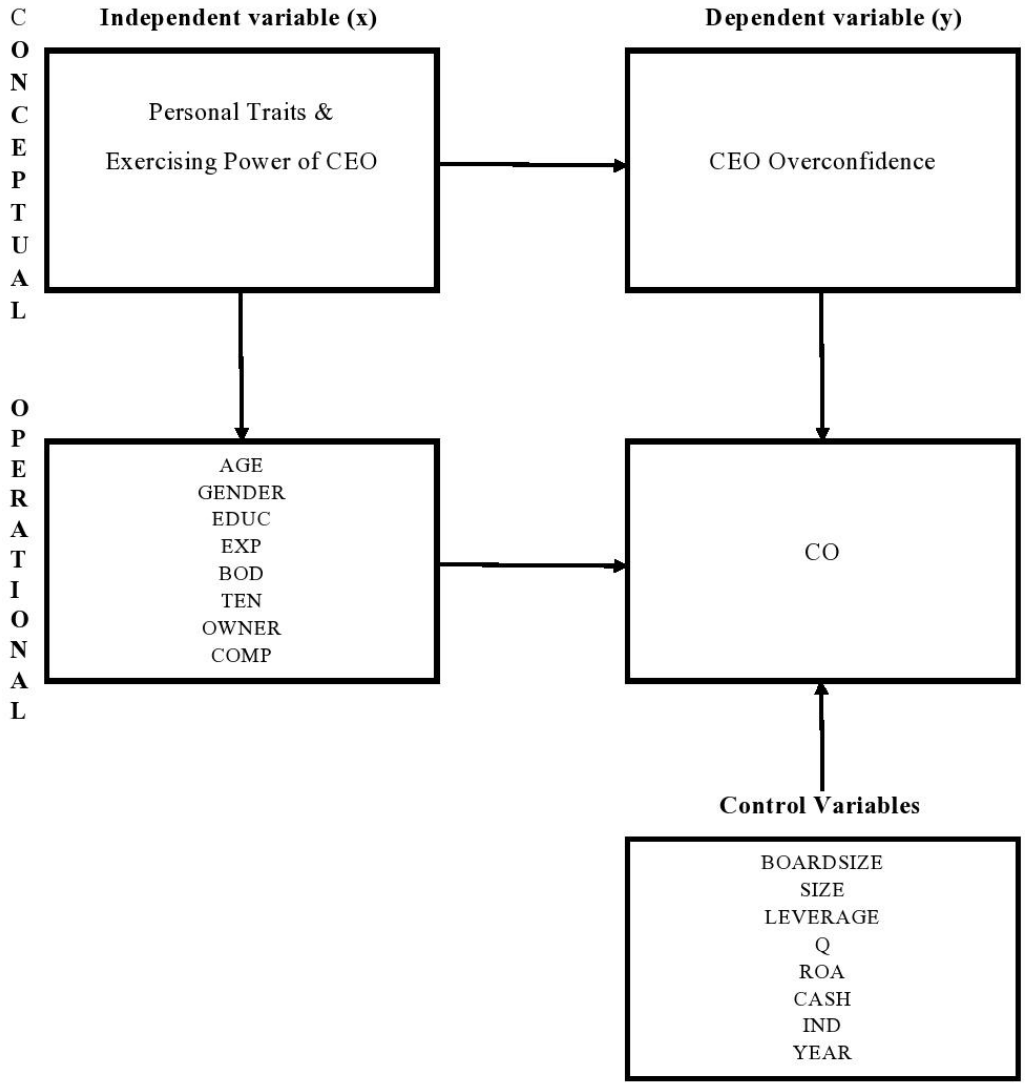
Control variables are also included in the logistic regression model in order to control for other aspects that may be related to CEO overconfidence. Literature suggests that board size (BOARDSIZE) can be used as a measure of corporate governance, and firm fixed effects (Malmendier and Tate, 2008). Preceding studies also indicated that outsider-dominated boards of moderate size can diminish the influence of overconfidence on firm outcomes, therefore board size is used as a control variable and is measured by the size of the board (Kolasinski and Li, 2013). According Sanders (2001) firm size (SIZE) has been found to have an effect on CEO power as well as overconfidence. The amount of power that a CEO possesses is largely determined by organization's corporate governance structure. Therefore, in order to control for firm size the natural logarithm of the book value of assets is used as a proxy. Consequently leverage (LEVERAGE) is also included as a control variable, measured as the natural logarithm of total liabilities divided by the total equity. Prior research found that leverage is a predictor of executive behavior and the amount of leverage is connected to the risk a CEO has to tolerate (Sen & Tumarkin, 2015). To control for Tobin's Q (Q) the logarithm of market value of assets to book value of assets is used as a measure, which is the book value of long-term debt and debt in current liabilities plus the market capitalization of the firm divided by total book assets (Malmendier and Tate, 2008). This variable accounts for investment opportunities whereby executives can display irrational behavior and decision making, which is related to CEO overconfidence. According to Huson, Malatesta, & Parrino, (2005) return on assets (ROA) measures the firm overall profitability and is closely related to CEO overconfidence. The return on assets of the firm is measured as logarithm of net income divided by the total assets. The variable cash flow (CASH) is also included as a control variable to measure free cash flow of the firm. Free cash flow is measured by the logarithm of total interest and related expense divided by short and long-term debt. As stated by Jensen (1986) when firms have more cash available,

CEOs have higher incentives to spend the cash on low benefit or even value destroying investment opportunities, which influence the overconfidence of executives. According to Hambrick and Finkelstein (1987) the amount of managerial discretion is related to the type of industry (IND) in which an executive operates. In some industries, like financials and utilities, which are highly regulated, managerial discretion is very limited, while in industries such as advertising or high-technology, individual input of the CEO can determine the success of the business, which is highly related to overconfident behavior. Firm industry is measured by using the first digits of SIC codes to define the industry. Finally, dummy variables are used to control for year effects (YEAR), to determine if the regression is affected by time fixed effects. An overview of variables' measure and expected influence is presented in Table 1 of the Appendix.

These variables have been chosen, because according to literature they determine the personal demographics and exercising power of CEOs, whereby they influence the overconfident behavior of CEOs. The predictive validity framework ("Libby boxes") presented in Table 3 shows how the conceptual relation examined in this thesis is operationalized.

Table 3: Predictive Validity Framework

The libby boxes shows how the conceptual relationship examined is operationalized.



4.3 Sample and Data Sources

The sample of this thesis consists of 1,291 CEOs in the United States from January 2007 to December 2012. All the data is acquired through databases within the Wharton Research Data Services (WRDS) system. The data collection is done through several phases. First, information regarding the CEO's name, gender, tenure, percentage of share ownership, total compensation, and industry categories (SIC codes) are obtained through ExecuComp database, this data is flagged to make sure that only data from employees that are CEOs is obtained. Identifiers CUSIP codes and Ticker symbol are identified. Second, financial accounting data that is needed to calculate the control variables are acquired from the Compustat database, such as the total assets, common shares outstanding, debt in current liabilities, long –term debt, common ordinary equity, net income, operating activities net cash flow, capital expenditures and closing price to control for firm size, leverage, ROA, cash and Tobin's Q. Afterwards, data regarding the birth date of the CEO is obtained from Capital IQ. Moreover, corporate governance data whether the CEO is on the compensation committee or chairman of the board of directors and board size is extracted from ISS (formerly Risk Metrics) to determine the CEO's influence on board of directors. Finally, the data from these databases are merged together in STATA with the data of Share retainer, these databases are merged together using the variable "gvkey" and "FiscalYear". Initially, a time span from January 1993 to December 2012, was selected, because share retainer data is available in this period. However, after merging the databases together with the corporate governance data from ISS database the sample period became from January 2007 to December 2012. The reason here for is that the corporate governance data is available as of 2007. After merging all the databases together, the duplicates in the "gvkey" and "FiscalYear" are removed. Subsequently, dummy variables are created for the variables gender and board of directors. Afterwards, control variables are generated and the missing values are dropped leaving a total of 1,971 observations. For the industry variables a 2-digit SIC industry membership is created, whereby the variable "SICcode" is transformed from a numeric into a string variable. Then, the SIC codes are changed to ensure that the ensuing variable has 4 digits. A new variable is generated equal to the first 2 digits of "SICcode", a variable that contains a unique value for each group of 2-digit industry and year is created, and 680 observations are dropped where less than 10 firms are presented in an industry-year group. Subsequently, the variables are winsorized at

the 1st and 99th percentiles of their distributions, whereby the non-missing values of the variables are taken and identical variables are created except that the highest and lowest values are replaced to limit extreme values to reduce the effect of possible outliers leaving a total of 1,291 observations.

4.4 Endogeneity

In this study, there might be endogeneity bias. Endogeneity bias is not a modest violation to deal with, because it has severe consequences for the estimates. In the manifestation of endogeneity, the OLS regression model can generate bias and inconsistent parameter estimates. Whereby, the hypotheses tests can be seriously misleading. The endogeneity concerns in this study primarily relate to the fact that the observations are not randomly assigned. Therefore, CEO overconfidence (the dependent variable) and the personal demographics and exercising power of the CEOs (the independent variables) are also potentially correlated with other variables. Not including these variables in the analysis might bias the statistical tests on the association between CEO overconfidence and personal demographics and exercising power of the CEOs. Therefore, the control variables described in section 4.2 are held constant in the statistical analysis by including them as explanatory variable in the OLS regression model. The second endogeneity concern is related to the second hypothesis which is H2: The power that CEOs exercise in firms determines their overconfidence. Literature suggests that CEOs who have more power will more likely become overconfident, however researchers also stated that because the CEOs are overconfident they will seek to get more power (Ben-David et al., 2007; Harjoto et al., 2009). This problem is called reverse causality, in which cannot be assured whether the independent variable power affects the dependent variable CEO overconfidence, or that the dependent variable CEO overconfidence affects the independent variable power. The independent variable power is defined by the tenure, compensation, share ownership and influence on board of directors (whether the CEO is member of chairman of the compensation committee or chairman of the board of directors) of the CEO. To deal with the endogeneity bias of reverse causality, these independent variables are lagged by one period. According to Nichols (2007) by lagging the independent variables one can control for reverse causality. Thus, the endogeneity concerns are addressed as best as possible in this thesis which results in a moderately high internal validity for this study. However, after lagging the variables tenure, compensation, share ownership

member of compensation committee, chairman of the compensation committee and chairman of the board of directors by one period the observations for these variables dropped to 667 observations. This is related to the external validity which refers to how well the results from this study can be applied to other settings and to which extent can the results based on the sample in this thesis be generalized to the population of interest. It could be the case that personal demographics and exercising power of CEO in other regions of the world have a different influence on CEO overconfidence. Whereby, the results cannot be generalized in other settings, only to the extent of CEOs in the US.

5 Empirical Results and Analysis

This section describes the results from testing the hypotheses. First, the descriptive statistics and correlations are observed. Subsequently, the results of the regression analyses are discussed.

5.1 Descriptive Statistics

Descriptive statistics present the data in a more meaningful way, which allows simpler interpretation of the data. The descriptive statistics are presented in Table 4. The descriptive statistics show that the number of observations is 1,291 CEOs, except for the variables that measure the power of the CEO, since these variables have been lagged by one period to deal with the reverse causality concern and therefore the observations for these variables have been dropped to 667 CEOs. The statistics display that 48% of the CEOs are overconfident, because they retain their shares obtained on option exercise, and the other 52% of the CEOs exercise their options on time and therefore are not classified as overconfident. The youngest CEO is 37 and oldest CEO is 73, which can also indicate that CEOs may need some experience to become a CEO since 37 is the youngest CEO in this sample. The mean age is 53.54 and the standard deviation is 7.15 which signify that the age of the CEOs is not close to the mean, which means that most of the CEOs are younger or older. The mean of the gender of CEOs is 97%, which points out that most CEOs are male. The mean tenure of the CEOs is 9.91 and the standard deviation is 4.07 which signify that most of the CEOs have an amount of years working for the company, which are not close to the mean tenure. The other variables have a small standard deviation which indicates that the values in a statistical data are close to the mean of the data set, this is also displayed in the difference between the mean and median of the variables where one can see that the difference is not big. By looking at the share ownership one can see that most of the CEOs do not have a high amount of ownership in the organization. The descriptive statistics also illustrate that there are more CEOs who are member of the compensation committee, than there are CEOs that are chairman of the compensation committee, and that the amount of CEOs that are chairman of the compensation committee are equal to the amount of CEOs that are chairman of the board of directors. Regarding the control variables, the board sizes of the companies are big varying from 6 to 15 members. The control variables do not have a big

difference between the mean and median and they also have a moderately low standard deviation. After winsorizing the variables at the 1st and 99th percentiles of their distributions and log transforming the variables in order to tackle outliers, the skewness and kurtosis show that most of the variables are normally distributed, expect for the variable gender, which is 34.91. To be normally distributed the skewness and kurtosis should be close to 0. Since, the variable gender is a dummy variable, winsorizing this variable has no effect and no changes were made, therefore the kurtosis is still high.

Table 4: Descriptive Statistics

This table gives the number of observations, means, standard deviations, minimum observations, maximum observations, median, skewness and kurtosis of the variables included in this study. The reported numbers concern the full sample of CEO years.

Panel A: Dependent and Independent Variables

Variable	N	Mean	Std. Dev.	Min	Max	Median	Skewness	Kurtosis
Share Retainer	1,291	0.48	0.50	0	1	0	0.08	1.01
Age	1,291	53.54	7.15	37	73	53	0.25	2.99
Gender	1,291	0.97	0.16	0	1	1	-5.82	34.91
Tenure	667	9.91	4.07	1	20	9	0.58	2.71
Compensation	667	8.45	0.86	6.26	11.35	8.49	0.07	2.95
Share Ownership	667	0.58	0.67	0	3.99	0.33	2.26	8.85
Member Compensation Committee	667	0.30	0.46	0	1	0	0.87	1.75
Chairman Compensation Committee	667	0.11	0.31	0	1	0	2.55	7.51
Chairman Board of Directors	667	0.11	0.32	0	1	0	2.43	6.90

Panel B: Control Variables

Variable	N	Mean	Std. Dev.	Min	Max	Median	Skewness	Kurtosis
Board Size	1,291	9.32	2.30	5	16	9	0.52	2.98
Size	1,291	8.09	1.55	5.17	12.17	7.98	0.38	2.68
Leverage	1,291	-1.25	1.82	-7.42	1.73	-0.82	-1.53	5.40
Q	1,291	-0.44	0.35	-1.84	-0.07	-0.34	-2.19	7.76
ROA	1,291	-2.97	0.92	-5.85	-1.41	-2.77	-0.97	3.67
Cash	1,291	5.28	1.60	1.31	9.52	5.17	0.22	3.08

5.2 Correlations

Table 5 reports the pairwise correlations between CEO overconfidence and the personal demographics and exercising power of CEOs. The presented results indicate that multicollinearity is not a problem, because it is apparent that correlations exist between the independent and dependent variables. In general, the correlations range from -0.238 to 0.321, where the strongest significant negative correlation is between whether the CEO is chairman of the compensation committee and whether the CEO is member of the compensation committee, this can be explained due to the fact that the CEO can be chairman or member of the compensation committee. The strongest positive significant correlation is between share ownership and tenure. Share ownership is the variable that is the highest correlated with the dependent variable (0.211). The other independent variables that are significantly correlated with Share retainer are gender and compensation. The correlations are fairly low between the variables, which points out that the relationship between them are also fairly low.

Table 5: Correlations

This table illustrates the pair wise correlations between Share retainer and the different measures for personal demographics and exercising power.

	Share Retainer	**Age**	**Gender**	**Tenure**	**Comp.**	**Share Ownership**	**Member Comp. Comm.**	**Chair Comp. Comm.**	**Chair BOD**
Share Retainer	1.000								
Age	0.036	1.000							
	0.201								
Gender	0.075*	0.017	1.000						
	0.007	0.533							
Tenure	0.053	0.089*	0.077*	1.000					
	0.057	0.001	0.006						
Compensation	-0.120*	0.046	0.042	0.047	1.000				

	0.000	0.097	0.134	0.093					
Share Ownership	0.211*	0.010	0.020	0.321*	-0.218*	1.000			
	0.000	0.728	0.465	0.000	0.000				
Member Comp. Comm.	0.001	0.006	0.008	-0.060*	-0.051	-0.030	1.000		
	0.967	0.821	0.777	0.031	0.065	0.285			
Chairman Comp. Comm.	-0.020	-0.027	-0.061*	-0.006	-0.003	0.038	-0.238*	1.000	
	0.469	0.335	0.029	0.827	0.903	0.175	0.000		
Chairman BOD	-0.025	-0.023	0.010	0.072*	0.006	0.043	-0.178*	-0.090*	1.000
	0.379	0.420	0.712	0.010	0.844	0.123	0.000	0.001	

5.3 Regressions Results

The results of the OLS regressions are presented in Table 6. The first three regressions do not include control variables except for year fixed effects and industry fixed effects. Fixed effects are included because they often capture a lot of the variation in the data. Year fixed effect are incorporated to capture the influence of aggregate time-series development and the industry fixed effects are involved to capture the amount of managerial discretion that is related to the type of industry. The first regression includes the variables for personal demographics to capture how the personal demographics individually affect the CEO overconfidence and the second regression only includes exercising power to examine how it affects CEO overconfidence exclusively. The third regression comprises variables for both, this regression examines if the effect of the personal demographics and exercising power of CEOs on CEO overconfidence is affected, after controlling for these variables simultaneously. The reason for running these different regressions are that including or excluding some of these explanatory variables provides different results.

Together, these findings about CEO overconfidence and personal demographics and exercising power differ when compared to the findings of literature. The expected results for age were ambiguous, studies supply mixed evidence about age-related differences regarding CEO overconfidence.

Some researchers found that younger CEOs are more confident (Graham et al., 2013) and other researchers discovered that overconfidence appears to increase with age (Shefrin, 2005a). However, in all the regressions of the OLS regression the coefficient of the age of the CEO is insignificant, thus no assumption can be derived. Gender has shown to have a positive significant coefficient in all the regressions. These findings provide support to the first hypothesis, since the p-value is less than the significance level, which supports the null hypothesis that the gender of CEOs does not determine their overconfidence. Barberis & Thaler (2003) found that men are seen as more risk-tolerant and therefore are considered more overconfident, which is exact the opposite what the results illustrated.

According to Ben-David et al. (2007) & Harjoto et al. (2009) the power that CEOs can exercise has to do with their tenure, compensation, share ownership and influence on the board of directors, which are expected to increase CEO overconfidence. However, the coefficient of both tenure and compensation of CEOs are negatively insignificant. The results do provide evidence that share ownership has a positive significant coefficient, which gives support to the second null hypothesis, that share ownership of CEOs does not determine their overconfidence. This finding is the contradictory with the results from Adams et al. (2005) that finds that CEO shares ownership is positively associated with overconfidence. Regarding the variables that determine the CEOs influence on the board directors all the three variables have insignificant coefficient, were no evidence can be provided about their influence on CEO overconfidence. These findings do not provide sufficient evidence to support or reject the hypothesis.

Regressions four to six contain all control variables and consequently test whether the relationship between the personal demographics and exercising power of CEOs and their overconfidence is affected after controlling for factors that are known to influence CEO overconfidence. The reason for adding these control variables to the regression is to control for other aspects that may be related to CEO overconfidence, not including these variables in the analysis might bias the statistical tests on the association. Unfortunately, adding control variables to the regressions do not alter the results of the simple OLS regression. Only the coefficients of the variables gender and share ownership remained positively significant. Regarding the control variables, the coefficient of board size is positively significant. Kolasinski and Li (2013) found that outsider-dominated boards of moderate size can diminish the influence of overconfidence on

firm outcomes, thus the expected results were that board size has a negative effect on CEO overconfidence, which are contradictory to the findings in this study. For regression 4, which includes the personal demographics of CEOs and all control variables, firm size and Tobin's Q seem to be negatively associated with CEO overconfidence. The predictions for firm size were unambiguous (Sanders, 2001) and for Tobin's Q they were positive (Malmendier and Tate, 2008). For leverage and ROA the coefficient seems to be significantly positive. The predictions for leverage and ROA were also positive (Sen & Tumarkin, 2015). Cash has an insignificant coefficient, and for the regression 5 and 6, all the other control variables except board size also have insignificant coefficients. The constant variable, which is the variable that includes all other factors that affect the relationship between the dependent and independent variables, has a significant coefficient for all the regressions. As can be seen in Table 6 the R2 of the different models including control variables lies around 0.10, this can be considered as an indication that the models do not fit the data well, since it is considerately below 0.50.

Table 6: Regressions-OLS

This table presents OLS regressions where the dependent variable is Share retainer as specified in Table 1, and the independent variables are the different measures of personal demographics and CEO exercising power. The robust standard errors are clustered at the firm level, and the associated t-statistics are reported in parentheses, where; *, **, and *** state the 10%, 5%, and 1% significance level respectively.

Dependent variable= Share Retainer

	1	**2**	**3**	**4**	**5**	**6**
Age	0.208		0.779	0.215		0.876
	(1.26)		(0.28)	(1.24)		(0.16)
Gender	0.028**		0.001***	0.006***		0.001***
	(2.21)		(3.41)	(2.76)		(3.46)
Tenure		0.349	0.256		0.395	0.308
		(-0.94)	(-1.14)		(-0.85)	(-1.02)
Compensation		0.134	0.146		0.572	0.628
		(-1.50)	(-1.46)		(-0.57)	(-0.49)
Share Ownership		0.000***	0.000***		0.000***	0.000***
		(5.40)	(5.42)		(4.81)	(4.81)
Member Compensation Committee		0.759	0.697		0.791	0.743

		(0.31)	(0.39)		(0.26)	(0.33)
Chairman Compensation Committee		0.292	0.322		0.322	0.355
		(-1.06)	(-0.99)		(-0.99)	(-0.93)
Chairman Board of Directors		0.115	0.133		0.127	0.144
		(-1.58)	(-1.50)		(-1.53)	(-1.46)
Board Size				0.063*	0.006***	0.005***
				(1.86)	(2.79)	(2.83)
Size				0.010***	0.388	0.402
				(-2.59)	(-0.86)	(-0.84)
Leverage				0.085*	0.566	0.471
				(1.72)	(0.57)	(0.72)
Q				0.001***	0.381	0.343
				(-3.37)	(-0.88)	(-0.95)
ROA				0.074 *	0.417	0.390
				(1.79)	(0.81)	(0.86)
Cash				0.516	0.870	0.977
				(-0.65)	(0.16)	(0.03)
Constant	0.079*	0.000***	0.024**	0.000***	0.000***	0.026**
	(1.76)	(4.18)	(2.26)	(4.19)	(3.75)	(2.24)
Number of observations	1,291	667	667	1,291	667	667
Adjusted R2	0.0306	0.1046	0.1146	0.0714	0.1122	0.1223
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

The results of the FE regressions are presented in Table 7. The FE regressions include firm fixed effects to control for unobserved firm characteristics. In all the regressions of the FE regression the coefficient of the age and gender of CEOs are insignificant, thus no assumption can be derived and there is no evidence to support or reject the first hypothesis. The results do provide evidence that tenure has a positive significant coefficient, which gives support to the second hypothesis. The prediction of tenure is also positive (Taylor and Brown, 1988). However, the other variables that define exercising power of CEOs seem to have insignificant coefficients. Thus, there is no evidence to support or reject the second hypothesis.

Adding control variables to the regressions do not alter the results of the simple FE regression. Regarding the control variables, the coefficient of board size is positively significant, which disagrees with the negative prediction of the board size. The variables firm size, ROA and cash are not significant. Leverage appears to be consistent with the results of the OLS regression and is only significant for regression 4. The constant variable, which is the variable that includes all other factors that affect the relationship between the dependent and independent variables, has a significant coefficient only for regression 1. As can be seen in Table 7 the R2 of the different models including control variables lies around 0.05, the model is deteriorated due to the inclusion of firm fixed effects. Thus, the OLS regression model captures the results of this study better.

Table 7: Regressions- FE

This table presents FE regressions where the dependent variable is Share retainer as specified in Table 1, and the independent variables are the different measures of personal demographics and CEO exercising power. The robust standard errors are clustered at the firm level, and the associated t-statistics are reported in parentheses, where; *, **, and *** state the 10%, 5%, and 1% significance level respectively.

Dependent variable= Share Retainer

	1	**2**	**3**	**4**	**5**	**6**
Age	0.890		0.645	0.701		0.970
	(-0.14)		(0.46)	(-0.38)		(0.04)
Gender	0.989			0.546		
	(-0.01)			(-0.60)		
Tenure		0.052**	0.055*		0.064*	0.062*
		(1.95)	(1.92)		(1.86)	(1.87)
Compensation		0.647	0.605		0.697	0.693
		(-0.46)	(-0.52)		(-0.39)	(-0.40)
Share Ownership		0.146	0.149		0.167	0.165
		(-1.46)	(-1.45)		(-1.39)	(-1.39)
Member Compensation Committee		0.903	0.909		0.727	0.728
		(0.12)	(0.11)		(0.35)	(0.35)
Chairman Compensation Committee		0.583	0.563		0.557	0.564
		(-0.55)	(-0.58)		(-0.59)	(-0.58)

Chairman Board of Directors		0.217	0.234		0.283	0.291
		(-1.24)	(-1.19)		(-1.08)	(-1.06)
Board Size				0.000***	0.000***	0.000***
				(14.24)	(9.37)	(9.50)
Size				0.470	0.278	0.280
				(-0.72)	(-1.09)	(-1.08)
Leverage				0.045**	0.248	0.254
				(2.01)	(1.16)	(1.14)
Q				0.110	0.021**	0.022**
				(-1.60)	(-2.32)	(-2.31)
ROA				0.334	0.669	0.669
				(0.97)	(0.43)	(0.43)
Cash				0.199	0.465	0.478
				(-1.29)	(0.73)	(0.71)
Constant	0.001***	0.572	0.630	0.130	0.357	0.375
	(3.38)	(0.57)	(0.48)	(1.52)	(0.92)	(0.89)
Number of observations	1,291	667	667	1,291	667	667
Adjusted R2	0.0225	0.0599	0.0605	0.0475	0.1100	0.1100
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

6 Conclusion

In this section the summary and conclusion describe the main results, then the implications of this study are outlined, following the alternative explanations and afterwards the limitations and recommendations for future research are discussed.

6.1 Summary and Conclusion

The goal of this study is to describe the relation between the personal demographics and exercising power of CEOs and CEO overconfidence. Therefore the research question of this study is: Does the personal demographics and exercising power of CEOs determine their overconfidence?

Providing an answer to this research question is imperative, because the business environment of companies require CEOs to make outstanding decisions. The performance of businesses is mainly dependent on the ability of CEOs to make effective decisions. It is assumed that CEOs make rational decisions. However, CEOs are predisposed to become overconfident. In this study, CEO overconfidence is defined as an overestimation in one's own abilities and knowledge and the ability to influence business activities, which leads to an overestimation of the average of the businesses' future profitability and an underestimation of the risks that businesses encounter (Langer, 1975). This study consists of two parts: the first part explains the relevant literature on all aspects of the personal demographics and exercising power of CEOs and CEO overconfidence and integrates this into one framework, and the second part contains an empirical research of the expectations of the literature review section.

The first part of this study pointed out numerous effects. Firstly, it pointed out that personal demographics of CEOs are expected to determine their overconfidence, concurring with the upper echelons theory. Upper echelons theory acknowledges that individual-specific demographics of CEOs influence their judgment and decision making, which in turn affects their overconfidence behavior. Age and gender in particularly are personal demographics that have proven to affect CEO overconfidence (Ge, Matsumoto, & Zhang, 2011). This is the main intuition of Hypothesis 1 (Personal demographics of CEOs determine their overconfidence).

Secondly, many studies indicate that the overconfidence behavior of CEOs is influenced by their exercising power. Agency theory assumes that information asymmetry occurs between the principle (shareholder) who has external information and the agent (CEO) who has internal information of the company. The CEOs who can exercise more power will have a greater opportunity to utilize information asymmetry to maximize their own gains (Jensen & Meckling, 1976). Hypothesis 2 (The power that CEOs exercise in firms determines their overconfidence) tests this inference.

This study covered the years 2007-2012; merging data from Compustat, Execucomp, Capital IQ, ISS and the Share retainer data. CEO overconfidence proxy is displayed by Share retainer which examines an executive's stock transactions that relates to option exercise, in which CEOs are seen as overconfident when they retain shares obtained on option exercise. These classifications are based on empirically tested thresholds which have been discovered to produce truthful classifications in general.

The empirical results of this study did not provide strong evidence that the overconfident behavior of CEOs is affected by their personal demographics. The personal demographics of the CEOs are measured by their age and gender. The expected results for age were ambiguous, since some studies supply mixed evidence about age-related differences in risky choices. Some researchers found that younger CEOs are more confident and more risk-tolerant compare to elder CEOs (Graham et al., 2013), and others found that overconfidence appears to increase with age, due to more past experience (Shefrin, 2005a). The study of Mather (2006) has the same results as this study and finds no findings that aging is related with less risk-taking. Related to the gender of the CEOs, the OLS regression provides evidence which supports the null hypothesis that the gender of CEOs does not determine their overconfidence. Most studies discovered that men are seen as more risk-tolerant and are more prone to believe that they take correct decisions, which causes them to be overconfident. Thus, the actual results obtained in this study were different than the expected results, since it was expected that men would be more overconfident. This can provide new insights to existing body of knowledge in the literature, which implies that both woman and men can have an overconfident behavior. Unfortunately, since there were no findings regarding the age of CEOs Hypothesis 1 cannot be rejected nor supported. The

conclusion that can be made regarding the personal demographics of CEOs is that the gender of CEOs does not affect their overconfident behavior.

The empirical results regarding the exercising power of CEOs in this study, did not provide robust evidence that it is related to CEO overconfidence. The exercising power of the CEOs is measured by their tenure, compensation, share ownership and influence on the board of directors. The expected results for tenure were that CEOs with longer tenure tend to opt for power concentration, which can cause overconfidence (Harjoto et al., 2009). The OLS regression did not provide any evidence regarding the tenure of the CEOs, however when including firm fixed effects, the results showed that the tenure of the CEO is positively correlated with CEO overconfidence. But, when including the control variables the results exhibited that there is no relationship between tenure and CEO overconfidence, which provides evidence to the second null hypothesis. Regarding the compensation of CEOs the expected results were that the higher the compensation of CEOs the more power they have and the more overconfident they become (Hatzel, Ofek, & Yermack, 2004). The actual results provided no evidence to support or reject this assumption. The OLS regression provides evidence which supports the null hypothesis that the share ownership of CEOs do not determine their overconfidence. This evidence is contradictory to the expected results, which predicted that the higher the share ownership the more involvement in decision making process of the firm the CEO has and the more powerful and overconfident the CEO will become (Tushman & Scanlan, 1981). This evidence might provide new insight to literature that having share ownership may not lead to the CEO being overconfident. This result may be related to the fact that having more share ownership may reduce the agency problem, whereby their risk taking behavior will reduce, since the CEO and shareholders' interests will be aligned. Regarding the CEOs influence on the board directors, the expected results are that a CEO that is part of the board of directors is more overconfident (Goel et al., 2008). The results in this study did not provide any evidence that a CEO being on the board of directors or chairman of board of directors has an effect on CEO overconfidence. However, the control variable boards size, that is strongly related to the influence that the CEO has on the board of directors indicated that outsider-dominated boards of moderate size can diminish the influence of overconfidence on firm outcomes. Unfortunately, since there were no findings regarding some of the variables that portray the exercising power of CEOs Hypothesis 2

cannot be rejected nor supported. The conclusion that can be made regarding the exercising power of CEOs is that the tenure and share ownership of CEOs do not affect their overconfident behavior.

Thus, the research question (Does the personal demographics and exercising power of CEOs determine their overconfidence?) cannot be answered. However, since most of the independent variables that are significant showed to have no relationship with CEO overconfidence, the answer of this research question is inclining that the personal demographics and exercising power of CEOs do not determine their overconfidence.

6.2 Implications

Although the hypothesis in this study could not be accepted nor rejected, the results of this study have several implications. First of all this study contributes to the existing body of knowledge because it shows that a CEO should not necessarily be male, have a long tenure or high share ownership to be possibly beneficial for the more profitable and risky projects that a typically risk-averse CEO would not accept. In this way, shareholders and board of directors should not necessarily take into consideration the gender, tenure and share ownership of CEOs to recognize an overconfident CEO, and they can focus on other aspects of the CEO. This information can improve firm value, through providing important facts to investors regarding their CEOs, which can lead to uninterrupted achievement of firm goals.

6.3 Alternative explanations

There may be some alternative explanations that could explain why the overconfidence proxy Share retainer, which is measured by looking whether CEOs exercise or retain their share, may not always measure CEO overconfidence. The first alternative explanation could be related to private information of companies whereby, the CEOs postpone their option exercise, because they have private information about favorable future firm outcome. On the other hand, it could be that CEOs exercise their options early because they have negative private information about future prospects of their company. Another explanation that executives may hold their options beyond the threshold is that they want to show the capital market that their company's prospects

are better than the ones of other companies, and this may have nothing to do with an overconfident behavior. An additional explanation may be that CEOs delay their option exercise to defer the payment of taxes of their profits.

6.4 Limitations and Recommendations for future research

This study has some limitations. One of those limitations are the endogeneity concerns discussed in section 4.4 of this study. The endogeneity selection issue of CEO's is caused, because the CEO's are not randomly assigned. If CEO's are selected on personal demographics and exercising power indirect or directly, the dependent variables are not exogenous, which can fairly weaken the observed outcomes, but this is assumed in the regression methods. For instance observable personal characteristics could be selection criteria for CEOs. Nevertheless, some of the concerns are reduced by using control variables. The presence of unobserved firm characteristics is also an endogeneity concern that is alleviated by using FE models, where unobserved firm characteristics are controlled for. To further alleviate these concerns a recommendation for future research is to perform the research in a controlled environment in which the CEOs are randomly assigned, which makes the causality inference easier and also causes a higher external validity. However, to perform such an experiment the sample is usually smaller which affects the external validity.

Regarding the external validity of this study, the personal demographics and exercising power of CEOs in other countries may have a different influence on CEO overconfidence. Consequently, it is not possible to generalize these results to regions other than the US. A recommendation for future research is to examine how CEO overconfidence is affected by CEOs' personal demographics and exercising power in other countries.

One of the other limitations of this study is the collected data. Not all the CEOs that were active in the period of research are included in this study, because in some circumstances data regarding the independent variables such as age, gender or tenure was not available. As a result these observations were removed. Another limitation regarding the collected data is the corporate governance data, regarding the influence on board of directors, is available as of 2007. Thus, after merging all the databases together an initial time span from January 1993 to December

2012 was reduced to January 2007 to December 2012, which causes the data of the sample to be smaller than the originally collected data. The recommendation for future research is to research the effect of personal demographics and exercising power of CEOs on CEO overconfidence for a longer time period.

Another limitation is related to the independent variables, especially the variables that measure the personal demographics of CEOs. It was initially intended to use the education and experience of CEOs together with their age and gender to measure the personal demographics. However, the education and experience of CEOs are not included in the regression model, because it is very difficult and time-consuming to hand collect this data. It is recommendable for future researchers to consider taking these variables into account when measuring the personal demographics of CEOs, even though it is time-consuming, because it can have important implications for the results of their study.

One more limitation of this study is the fact that the influence on CEO overconfidence is only measured by the personal demographics and exercising power of CEOs. However, there are many more characteristics that influence CEO overconfidence such as ambitions, future aspirations (Gabaix et al., 2008) and CEO turnover (Huson et al., 2005). Therefore, a recommendation for future research is to investigate which other characteristics of CEOs affect CEO overconfidence.

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Appendix

Table 1: Overview of variables

This table includes an overview of the main variables used in this study.

Variable	Measure	Expected Influence
	Dependent variable	
Share Retainer	Dummy variable, equals 1 if the CEO sells or retains shares obtained on option exercise	
	Independent variables	
Age	Fiscal year -/- birth year of CEO	Ambiguous
Gender	Dummy variable, equals 1 if CEO is male	Positive
Tenure	Amount of years a CEO holds a position in an organization	Positive
Compensation	Log (sum of salary, bonus, other annual restricted stock grants, LTIP payouts, all other compensations and the value of options exercise)	Positive
Share Ownership	Log (1+ percentage of total shares owned by CEOs, excluding the options granted)	Positive
Member Compensation Committee	Dummy variable, equals 1 if the CEO is member of the compensation committee	Positive
Chairman Compensation Committee	Dummy variable, equals 1 if the CEO is chairmen of the compensation committee	Positive
Chairman Board of Directors	Dummy variable, equals 1 if the CEO is chairmen of the board of directors	Positive
	Control Variables	
Board Size	Size of the board	Negative
Size	Log (Total assets)	Ambiguous
Leverage	Log (Total liabilities / Total equity)	Positive
Q	Log ((Long-term debt + Debt in current liabilities + Market capitalization) / Total assets)	Positive
ROA	Log (Net income / Total assets)	Positive

Cash	Log (Total interest and related expense / Long-term debt + (Debt in current liabilities))	Positive
Industry	Dummy variable, equals 1 for every two-digit SIC industry	-
Year	Dummy variable, equals 1 for every year included in the sample	-

Table 2: Current papers on CEO overconfidence

Paper	Sample and Data Source	Main Empirical Hypothesis	Dependent Variable/Results
Adams, Almeida, & Ferreira (2005)	Fortune 500 firm for 1992-1999/ Executive Office	H1: Variability in firm performance increases with the degree of CEO influence, because decisions are more likely to be taken when the CEO is powerful.	The dependent variable is the variability in corporate performance. The results show that stock returns are more variable in firms in which the CEO has greater power to influence decisions.
Ben-David, Graham, & Harvey (2007)	S&P 500 firms of 6,500 top financial executives for 2001-2007/ Corporate library, CRSP, Compustat	H1: Managerial overconfidence manifests itself in corporate policies.	The dependent variable is corporate policies. The results indicate that CFOs are miscalibrated on average, which depends on personal traits (skill) in addition to corporate characteristics. Firms with overconfident CFOs invest more and engage in more acquisitions, and the market reaction to their acquisitions is negative. There is a positive relation between managerial overconfidence and financial structure: firms of overconfident CFOs have higher debt leverage, rely more on long-term debt, and pay fewer dividends. Also, they repurchase more shares after a decline in share prices, but issue fewer shares following price run-ups.
Brown & Sarma (2007)	Unbalanced panel data for 65 firms from S&P/ ASX 50	H1: An overconfident CEO has a positive effect on the	The dependent variables is acquisitions. The results show

	Index for 1994-2002/ Thomson Financial Securities Data Corporation (SDC) database	probability of the firm conducting an acquisition H2: A dominant CEO has a positive effect on the probability of the firm conducting an acquisition	that CEO overconfidence and CEO dominance affects corporate behavior as revealed in acquisition decisions. Overconfident CEOs are more likely to make acquisitions – especially diversifying acquisitions – than other CEOs.
Ferris, Jayaraman & Sabherwal (2013)	Fortune Global 500 list for 2000- 2006/ Mergent Online, Compustat Global and Compustat North America	H1: There exists a country or country group patterns in the distribution of CEO overconfidence H2: US mergers by overconfident managers holds internationally and focuses on how overconfident managers conduct their mergers.	The dependent variables is explanation of international mergers and acquisitions. The results illustrated that overconfidence is related to a number of aspects of merger activity. CEO overconfidence helps to explain the number of offers made by a CEO, the frequency of diversifying acquisitions, and the use of cash to finance a merger deal
Malmendier & Tate (2005)	S&P 500 firms over 5 years / Corporate library and Hand-collected data/ The New York Times, Business Week, Financial Times, The Economist and The Wall Street Journal	H1: Top corporate decision makers persistently overestimate their own skills relative to others and, as a result, are too optimistic about the outcomes of their decisions and overestimate the expected returns to their corporate decisions.	The dependent variable is corporate investment. The results showed that heightened managerial acquisitiveness, particularly in the absence of financial constraints show that overconfidence can explain a significant portion of acquiring shareholder value lost in merger deals.