MASTER THESIS

What is the effect of corporate governance on the pay-performance relationship in the Netherlands?

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Abstract

The effect between CEO pay and firm performance has been examined by numerous scholars worldwide for decades. Despite this, still ambiguity among the results exists. To illustrate, study results show positive, negative as well as no significant effects of CEO pay on firm performance. To add, the relevancy of this subject has been underlined when a great public debate arose in the Netherlands when the ING Bank proposed a remuneration increase for its CEO in 2018. Therefore, this study examined the effect of CEO pay on subsequent firm performance for 89 Dutch listed firms over a sample period of 2014 to 2017. Furthermore, literature has indicated that corporate governance seems to be an important factor influencing the effect CEO pay has on firm performance. Given this, this study also examines the moderating effect of several corporate governance variables on the effect of CEO pay and firm performance. Specifically, the moderating effect of CEO tenure, presence of a separate audit committee, independent directors on the firm's board and gender diversity of the firm's (supervisory) board have been included. The results of the ordinary least squares (OLS) regression analyses show that the effect of CEO pay on subsequent firm performance highly depends on how firm performance is measured, which control variables are included and which CEO compensation variables are used in the models. Moreover, the corporate governance variables do not seem to significantly influence the effect of CEO pay on subsequent firm performance. However, other interesting findings have emerged from the different analyses. This study contributes to the existing literature in that moderating effects of corporate governance on the effect CEO pay has on firm performance have been often neglected in the Dutch context.

Keywords: *CEO pay*, *CEO compensation*, *firm performance*, *corporate governance*, *CEO tenure*, *audit committee*, *independent directors*, *gender diversity*, *supervisory board*, *the Netherlands*.

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1. Introduction

1.1 Background

To what extent the level of CEO pay and firm performance are correlated has been a subject to research for many years now. According to one of the most prominent theories in the pay-performance studies, the agency theory, the separation of ownership between the principals (shareholders) and control by the agents (managers) can give rise to conflicts (Smirnova & Zavertiaeva, 2017). The agency theory states that conflicts arise due to different interests between principals and agents. One example to align the interests and mitigate agency conflicts between the managers and shareholders is by linking the executive remuneration to the firm results (Walsh & Seward, 1990). Even though the concept has been researched extensively, the subject is still relevant, since incomprehension and lack of clarity remains to exist between height of executive pay and the link with performance. Up till now, scholars have identified different relationships between the level of remuneration a CEO receives and the CEO's performance at the firm. Several studies already conducted research on the pay-performance relationship in the Netherlands (see for example Van der Laan, van Ees, & van Witteloostuijn, 2010; Duffhues & Kabir, 2008). Van der Laan et al. (2010) found that several compensation components are positively associated with some firm performance variables. On the other hand, Duffhues & Kabir (2008) did not find a positive pay-performance relationship between cash or total compensation and firm performance variables. However, the conflicting results could be clarified by the fact that scholars used different methods and variables to evaluate firm performance and executive compensation, which could lead to different outcomes across studies (Smirnova & Zavertiaeva, 2017).

Furthermore, also a recent remuneration proposal by the ING-Bank in the Netherlands for its CEO indicates and emphasizes the subject's relevancy. Recently, the Supervisory Board of the ING-Bank announced a remuneration increase for the CEO in March 2018 in the Netherlands. Nonetheless, this proposal has given rise to a great deal of debate and received national as well as international attention. According to the chairman of the supervisory board, the remuneration increase was justified since the CEO was currently underpaid when compared to the salaries of other CEOs from other same sized European listed firms. After significant pressure from the political field as well as the public opinion, the proposal was eventually recalled by the supervisory board of ING. Consequently, the restoration of the already fragile faith of society in banks has been dealt a sharp blow again.

Misdemeanours have been committed by organisations for decades. Examples are the accounting fraud by Enron in 2001 and the Bangladesh case of clothing companies H&M and Zara, but also the more recent emission scandal by VW and the Facebook-Cambridge Analytica data scandal. All these scandals have damaged the concerning firms by, for example, dropping share prices and profits or even filing for bankruptcy in the Enron case. As a consequence, causing damage for the companies' shareholders. In order to protect the shareholders' interests, improve firm performance and mitigate the risk that firms commit comparable scandals, corporate governance has received improved attention. Corporate governance involves many measures to monitor the executives and align the interests of shareholders and

managers, examples are board composition, type of ownership and ownership density. Throughout the last decades, corporate governance committees worldwide have increased the number of rules and also tightened these rules to improve transparency, business performance and societal performance. The type of measure that is being investigated in this research is aligning the interests of managers with the interests of shareholders by arranging an appropriate compensation package for the executives.

1.2 Research objective

Many researchers have examined the pay-performance relationship in various different contexts. However, ambiguity among the results of the studies still exists. The results vary from positive relationships to negative relationships between CEO pay and firm performance, but also no significant relationships have been found. According to agency theory, the relationship should be positive because the interests of managers and shareholders can be aligned by arranging appropriate compensation packages for executives. The compensation package consists of multiple components, such as a base salary, annual bonuses, long-term performance-based equity pay and other benefits (Murphy, 1999). An appropriately designed compensation package aligns the interests of managers with those of shareholders, since the manager has the incentive to maximize his own personal wealth by increasing the performance-based remuneration as he increases firm performance. Consequently, the firm performance increases and the shareholders are experiencing more wealth benefits as well, so the interests of managers and shareholders are aligned. Smirnova and Zavertiaeva (2017) concluded that adequately paid CEOs are more likely to improve firm performance. Additionally, they mention that performance-based compensations provide good incentives to improve the firm's results. Also, Hanlon, Rajgopal and Shevlin (2003) acknowledge the positive relationship between performance-based stock option grants received by executives and positive future firm performance. Furthermore, Carpenter and Sanders (2002) concluded that executive compensation has a positive relationship with accounting-based and market-based firm performance.

On the contrary, managerial power theory explains a negative relationship or no relationship between CEO pay and firm performance. The managerial power theory implies that the CEO can (mis)use his/her power to extract additional rents at costs of the shareholders (Bebchuk, Fried, & Walker, 2002). CEOs can use their power to obtain more remuneration and consequently leaving less return transferred to the shareholders. Studies claim that performance-based stock options could lead to managers taking more risk, which could lead to losing substantial firm value but also boosting stock prices by reporting fraudulently higher earnings (Hall & Murphy, 2003; Sanders & Hambrick, 2007; Jensen, 2004). On top of that, managerial power theory also implies that the rent extraction is hidden for the shareholders that consequently leads to no connection between remuneration and firm performance. In a recent article, Aguinis et al. (2018) investigated if an overlap exists between the distribution of the highest performing firms and the distribution of the highest paid CEOs. In their research they concluded that there is a clear misfit between the highest performing firms and the CEOs that enjoy the highest remunerations.

Additional evidence of a missing link between CEO pay and firm performance was found in Nicola, Giuseppe, Martina, and Giuseppe (2016).

Furthermore, in line with the managerial power theory, empirical evidence has found negative relationships between CEO pay and firm performance. Carter, Li, Marcus, and Tehranian (2016) analysed US firms and concluded that excessively high CEO pay is a predictor for worse future firm performance, and could indicate unsolved agency problems due to weak corporate governance. Their findings are in line with Core, Holthausen, and Larcker (1999), who also concluded that there is a negative relationship between excessive CEO compensation and firm performance due to weak corporate governance. In addition, another study suggests that the amount of compensation a CEO receives, is negatively related to firm performance (Bebchuk, Cremers, & Peyer, 2011).

Based on the above, there are two main reasons to conduct this study. First, there is still incomprehension and a lack of clarity between height of executive pay and the linkage with performance. Second, corporate governance seems to be an important factor whether CEO pay and firm performance are related or not. Given this, as far as known, there is very limited research on corporate governance and how it affects the effect of CEO pay on firm performance. Since its first introduction in 2003 in the Netherlands, the Dutch Corporate Governance Code has been revised in 2008 and 2016. The studies on Dutch companies by, for example, Van der Laan et al. (2010) and Duffhues and Kabir (2008) examined the relationship between CEO pay and firm performance with a sample from respectively 2002-2006 and 1998-2001. Therefore, the aim of this study is to find out what the impact is of the revised Corporate Governance Code on the effect CEO pay has on firm performance for Dutch listed firms. In this study, more recent data will be used to investigate the effect of CEO pay on firm performance and what the moderating effect of several different corporate governance variables is on that relationship. The moderating effect of corporate governance will be examined since, as mentioned above, corporate governance seems to be an important factor in determining the effect CEO pay has on firm performance, and therefore should not be ignored. Furthermore, the report of Van Manen states that the code aims to improve long-term value creation, by also focusing on improving the link between CEO pay and firm performance (MCCG, 2017). The Monitoring Commission Corporate Governance of Van Manen found that some principals of the code were the least complied by the Dutch listed firms. Therefore, examining the moderating effects of the least complied principals on the effect of CEO pay on firm performance, this study could give insight into the consequences of not complying to these principals and whether the firms should comply in the future or not. The moderating variables are *CEO tenure*, *presence of an audit committee,* and *director independence on the firm's board*. In addition, the impact of *gender diverse supervisory boards* on the effect of CEO pay on firm performance will be examined. In order to achieve the aim of the study, the following research question will be answered:

What is the effect of CEO pay on firm performance in Dutch listed firms? How do CEO tenure, presence of an audit committee, independent directors on the firm's supervisory board, and gender diversity of the supervisory board affect this relationship?

The research question will be answered by first examining the effect of CEO pay on firm performance. Subsequently, the moderating effect of the different corporate governance variables on the effect found between CEO pay and firm performance will be examined individually.

1.3 Contributions

Conducting this study has scientific contributions as well as practical contributions. The first scientific contributions of this study is that most Dutch studies focused on the subsequent effect of firm performance on CEO pay levels, while this study examines the subsequent effect of CEO pay on firm performance. Furthermore, a second contribution is that most studies on the pay-performance relationship in the Netherlands exclusively focused on the relationship between the two variables. Whereas, moderating effects of, for example, corporate governance variables have been often neglected in the Dutch context.

Moreover, a practical contribution of this study is that the Dutch corporate governance code has changed throughout the last years. Using data from the annual reports of Dutch listed firm for 2014-2017, this study could give insight into the effectiveness of the improvements of disclosure requirements. Furthermore, another practical contribution is that the results of the reports from Van Manen Corporate Governance Monitoring Commission reveal that the moderating variables to be examined in this study are complied the least by the Dutch listed firms. Therefore, this study could give insights into the impact of (not) complying to these rules and also whether the rules of the code achieve what they intend to achieve, namely improving the positive effect between CEO pay and firm performance.

1.4 Thesis outline

The outline of the thesis is as follows, the next chapter contains an extensive literature review on the theories and empirical evidence to better understand the effect CEO pay has on firm performance. This second chapter will conclude with the hypotheses to be tested in this study. The third chapter describes the methodology for this study and the measurements of the variables. Next, in chapter four a description of the sample will be given, as well as the data collection method. Following, in chapter five the results of the OLS regression analyses are described. Whereas, finally, in chapter six the conclusions regarding the analyses will be given, as well as limitations of this study and recommendations for future research.

2. Literature review

In this chapter an extensive literature review on executive pay and its relationship with firm performance will be described. First, the different components of an executive's compensation contract will be discussed. Then, CEO pay practises around the world are described. Following, the third section will discuss different theories that explain executive compensation levels. Whereas, the fourth section discusses empirical evidence on the determinants of CEO pay. Following, in section five the effects of CEO pay on different variables will be discussed. In section six, the moderating effect of the different corporate governance variables are described. Finally, in section seven, this chapter will finish with the hypotheses to be tested in this study.

2.1 Components of CEO compensation

According to Larcker and Tayan (2015), a CEO's compensation package needs to be designed properly to attract and retain executives with the personality traits needed to succeed in his position, as well as to motivate executives to act in line with corporate interests and not pursue self-interested goals. The composition of CEO remuneration packages vary substantially across firms and industries, nevertheless most compensation packages consists of four main components: base salary, short-term incentive based pay/annual bonuses, long-term incentive plans and other benefits (Murphy, 1999; Frydman & Jenter, 2010). These four main components will be discussed separately below.

2.1.1 Base salary

The first and most common component of an executive's compensation package is base salary. Base salary is a fixed cash compensation component that is payed evenly over the year (Larcker & Tayan, 2015). As mentioned by Murphy (1999), base salary has become a smaller proportion of the total compensation over the years, albeit executives attach significant importance to the determination of the level of base salary. This could be explained by the fact that base salary is a key element and fixed component in the compensation contract. Given this, risk-averse CEOs will intuitively prefer an increase in this base salary over increase in variable components such as annual bonuses or other incentivized pay plans, since they are sure to receive something and know how much they will receive (Murphy, 1999). Another reason could be that most other compensation contract elements are determined relative to the level of base salary (Murphy, 1999). Therefore, base salary can substantially affect the total compensation level by influencing other components as well.

2.1.2 Short-term incentive pay (STIP)/annual bonus

The short-term incentive based pay (STIPs) is a component of CEO compensation that is paid annually as a bonus to the executive, based on his/her single-year's performance (Murphy, 1999). Usually, this bonus is paid in cash (Larcker & Tayan, 2015). However, they could be paid in stocks as well (Frydman & Jenter, 2010). As mentioned by Larcker & Tayan (2015), the bonus amount is generally expressed as

a percentage of the base salary. Moreover, the bonus will only be awarded to the CEO when one or several pre-determined minimum performance target(s) is/are met (Murphy, 1999; Larcker & Tayan, 2015). Furthermore, this kind of performance-based pay usually contains a maximum bonus amount to be paid (Murphy, 1999; Larcker & Tayan, 2015). Most companies use a combination of financial and non-financial performance benchmarks to determine if the executive is entitled to receive a bonus amount (e.g. net income, customers satisfaction, earnings per share, plant occupancy et cetera). However, given that this bonus is granted annually, the targets are likely to only focus on short-term performance improvements, and therefore incentivizing the CEO to make decisions that are only favourable for the short-term but not in the long-run (Murphy, 1999). On top of that, this pay component could also incentivize the executive to manipulate earnings figures to secure the bonus (Healy, 1985).

2.1.3 Long-term incentive pay (LTIP)

Long-term incentive plans (LTIP) are similar to the short-term annual bonus plans, however, instead they are focused on multi-year performance (Frydman & Jenter, 2010). Therefore, they incentivize executives to make decisions that will pay-off for/over a longer period of time. The LTIPs are offered when specified performance benchmarks are met over a period of three to five years (Frydman & Jenter, 2010; Larcker & Tayan, 2015; Murphy, 1999). Similar to STIPs, the amount of LTIP is commonly expressed as a percentage of base salary and could be paid in either cash or stock (Frydman & Jenter, 2010; Larcker & Tayan, 2015). However, most LTIPs are offered in stocks (e.g. stock options, restricted stock plans, stock appreciation rights). Furthermore, the LTIPs contain a minimum and maximum value and make use of a combination of financial and non-financial performance targets. Hereafter a description is given of the LTIP types stock options, restricted stock plans and stock appreciation rights respectively.

2.1.3.1 Stock options

Stock options give the recipient the right to buy shares in the future at a pre-specified price (Larcker & Tayan, 2015; Murphy, 1999). The purpose of stock options is to directly link share price changes to CEO remuneration, and therefore stimulate the managers to increase shareholders' value (Frydman & Jenter, 2010). Stock options are a form of equity performance-based pay, since the pay-out of the option increases as the stock price increases because of good management performance. Furthermore, stock options are usually awarded evenly over the years and expire generally in ten years (Larcker & Tayan, 2015; Murphy, 1999). According to Frydman and Jenter (2010), stock option were a negligible component of total executive compensation packages in S&P 500 firms until the 1950s. However, they have become the largest element of top executive compensation contracts in the 1990s (Frydman & Jenter, 2010). Notwithstanding, there are limitations to the incentives stock options offers. For example, managers substantially benefit when the stock prices increase in value, but executives will not lose value when the share prices fall. To add, the value of options increase as the stock-price volatility increases (Murphy, 1999), thus incentivizing executive to involve in irresponsible high-risk investments. Further, when stock

prices fall significantly below the exercise price, the stock options will not have any incentivizing value anymore since the chance of exercising has become too small (Murphy, 1999).

2.1.3.2 Restricted stock plans

Restricted stocks are stocks awarded to the executive that are 'restricted' in transferability (Larcker & Tayan, 2015). The restriction in transferability means, for example, that the shares are not allowed to be sold during the period the executive is CEO or employed at the firm, or even a certain period after (s)he left the firm. Furthermore, they are subjected to vesting and once vested they are identical to stock ownership (Larcker & Tayan, 2015). As well as for stock options, restricted stock is a form of equity performance-based pay and aims to directly link share price changes to CEO remuneration. Therefore, stimulating the managers to increase shareholders' value. According to Frydman and Jenter (2010), after the crisis in 2000-2001 stock options appear to have lost their reputation, and restricted stock have replaced stock options as the most popular form of equity-based compensation since 2006.

2.1.3.3 Stock appreciation rights

Another form of LTIPs is stock appreciation rights (SAR). Similar to stock options and restricted stocks, SARs are a form of equity incentivized pay that allows the executive to benefit from increasing stock prices. Given this, they aim to directly link share price changes to executive compensation as well. Specifically, SARs entitle the executive to receive remuneration, either paid in cash or stock, that is equal to the appreciation of a specified number of shares from the company over a specified time-period (Morgan Stanley, 2015). However, other than stock options, the executive who receives SARs does not have to pay an exercise price. The benefit for the executive from SARs solely consists of the increase from stock price at times of granting to the stock price at time of exercising multiplied by the number of shares exercised (Morgan Stanley, 2015).

2.1.4 Other benefits

In addition to the base salary, annual bonuses and long-term incentivized pay, executives also receive other forms of compensation. These forms of compensation enclose other benefits such as stipends and perquisites, which are all types of goods and services accommodated to the executive by the company (Frydman & Jenter, 2010). These benefits include, for example, health and life insurance, contributions to pension/retirement plans and severance arrangements (e.g. golden parachutes and golden handshakes) (Larcker & Tayan, 2015; Frydman & Jenter, 2010). Furthermore, they also include the use of private company jet, company car, company cell phone, payment for club memberships and offering loans at below-market rates (Larcker & Tayan, 2015; Frydman & Jenter, 2010). As well as, expense allowances for business travels, hotel stays and study costs are included within the scope of other benefits. The rationale behind offering other benefits is, to unburden the executive and subsequently improve managerial productivity so (s)he is better able to increase shareholder value (Rajan & Wulf, 2006).

2.2 International CEO pay practices

Most of the studies on executive compensation practises have been focussing on the US context. This could be explained by the fact that regulations and disclosure requirements have been much more severe and emerged earlier in the US then other parts in the world (Conyon, Fernandes, Ferreira, Matos & Murphy, 2011). Specifically, according to Conyon et al. (2011), the very first legislations and disclosure requirements have made their entrance in the US in the mid-1930s. Given this, more data is available over a longer time period for the US context. Following, Canada was the first other country outside the US that started applying US-style disclosure requirements regarding CEO compensation in 1993 (Fernandes, Ferreira, Matos & Murphy, 2013). While, the UK followed in 1995 (Fernandes et al., 2013). Therefore, most international comparative studies have limited to comparisons between the US and Canada and/or the UK (Fernandes et al., 2013). However, several scandals in European countries made compensation practises become more controversial in Europe. Subsequently, in 2003, this lead to an action plan from the European Commission to improve disclosure of compensation practices in Europe as well (Conyon et al., 2011). Also, the member countries were requested to comply by these regulations at the latest by 2006, and so most of them did (Conyon et al., 2011; Fernandes, et al., 2013). Therefore, more detailed data regarding pay practices in European countries has emerged as well.

As a result, scholars started to investigate the CEO pay practises in different countries/continents and compare them with each other. As an example, Conyon and Murphy (2000) examined the difference between pay practices in the US and the UK. They find that, after controlling for industry and company size, US CEOs earn around 45% more cash compensation (sum of base salary and annual bonuses) and up to 190% more total compensation (which includes all the pay components as mentioned in section 2.1) than UK CEOs in 1997 (Conyon & Murphy, 2000). However, most of the difference is explained by the fact that LTIP compensation is more prevalent in the US than in the UK. Also, the relationship between CEO pay and stock return is stronger in the US than in the UK (Conyon & Murphy, 2000).

Meanwhile, a more comprehensive approach is found in Conyon et al. (2011) and Fernandes et al. (2013). Conyon et al. (2011) examined the CEO compensation practices in the US and Europe (including UK) and made a comparison between the two. According to the results of their analysis, the researchers find that US CEOs earned about twice as much as the European CEOs in 2008 (Conyon et al., 2011). Furthermore, there are also significant differences in the structures of CEO pay in the US and Europe. Specifically, the compensation package of a US CEO consists on average of 29% base salary and 46% equity-based compensation, 20% of annual bonuses and 6% of other pay components (Conyon et al., 2011). Whereas, European CEOs have about 50% paid as base salary, only 19% paid as equity compensation, 21% paid as annual bonuses and 10% as other pay (Conyon et al., 2011). Similarly, Fernandes et al. (2013) found that US CEOs earn on average more than non-US CEOs (Australia, Canada, Europe, South Afrika, Switzerland and UK) and that the structures differ. However, after controlling for firm, ownership and board factors, the difference between US CEO compensation and non-US CEO compensation is rather economically modest (Fernandes et al., 2013). According to their study, in 2006

US CEOs earn about 79% more than non-US CEOs when controlled for firm size, industry affiliation and whether the firm is located in the US or not (Fernandes et al., 2013). Adding other firm factors such as leverage, Tobin's q, stock returns and stock-return volatility do not explain the pay premium of 79%, instead including them increases the pay premium to 88% (Fernandes et al., 2013). However, Fernandes et al. (2013) find that controlling for ownership structure by adding inside ownership and institutional ownership to the model, reduces the pay premium to 31%. Whereas, adding the board characteristics board size, board independence, CEO-chairman duality and number of board positions held in other public firms, drops the US pay premium even further to 26% (Fernandes et al., 2013). In addition, they mention that the relative pay premium between US and non-US CEOs has declined significantly from 58% in 2003 to the previously mentioned 26% in 2006. While, in 2007 and 2008 the pay premium became even statistically insignificant. Given this, Fernandes et al. (2013) found evidence that CEO compensation practices between US and non-US countries have converged over the years as well.

Additionally, Conyon et al. (2011) find that the effect between CEO pay and different performance variables is stronger in the US than in Europe. According to their study, a 10% increase in shareholder value (or sales growth) results in a 4.1% (3.6%) increase in cash compensation (base salary + annual bonus) in the US, while in Europe the increase is only 1.2% (0,7%, but insignificant) (Conyon et al., 2011). Above all, UK and Germany are the only two countries in the sample that show similar directions and statistical significance to the US. Whereas, the other European countries show highly diverse results regarding statistical significance, magnitudes and directions when compared to the US, and even among each other (Conyon et al., 2011). In essence, not only between the US and Europe is the pay-performance sensitivity different, but also among European countries themselves are deviations.

Besides studies on western countries, such as US, UK, European countries and Australia, other countries have been examined as well. For instance, Pan and Zhou (2018) have examined the CEO compensation policies in Japan. In 2010, the financial authority in Japan has implemented the country's first disclosure regulations for executive compensation. Their study shows great differences between the Japanese CEO compensation context and the Anglo-American context. As an illustration, Pan and Zhou (2018) find that Japanese CEOs earn on average $1.1 million dollar annually, while US CEOs earn $4.8 million annually. This means that US CEOs earn over four times as much as Japanese CEOs. Given this, these finding by Pan and Zhou (2018) are contrasting those found by Fernandes et al. (2013) to the extent that they claim CEO pay has converged over time internationally. This may be true for Europe and the US, however for Asia, and particularly Japan, this is not the case. Specifically, from 2010 to 2015 US CEOs still earn significantly more than the CEOs in Japan. In addition, Pan and Zhou (2018) find that the compensation package of Japanese CEOs consist of about 71% of base salary, while STIP and LTIP together account for just 23% of the total package. Whereas, for the US CEOs these ratios are 21% for base salary and an aggregated 73% for the STIP and LTIP (Pan & Zhou, 2018). Also, the researchers find that CEO compensation is insensitive to firm size and performance in Japan. Even though, they find a positive pay-size and pay-performance relationship, this effect is rather weak. These findings are similar

to those found for European countries by Fernandes et al. (2013) and Conyon et al. (2011), as that in Europe CEOs also earn higher proportions of base salary and lower proportions of incentive-based pay (STIP + LTIP) relative to US CEOs, and the pay sensitivities are also weaker when compared to the US.

Even more, Conyon and He (2012) examined the CEO compensation setting in the Chinese context. In China, it became required to disclose information regarding the earnings of individual executives since 2005 (Conyon & He, 2012). According to the study, since 2005, the average annual CEO remuneration has increased from $40.000 to $90.000 in 2010. Based on the evidence of previous studies, this is significantly less than the CEOs of the US, Europe, UK, Australia and even Japan. From a historical point of view, CEOs in China receive only base salaries, cash bonuses and stipends (Conyon & He, 2012). Equity-based compensation has always been rare in China, however, since 2005, compensation such as stock options grants, restricted stock and share appreciation rights (SAR) are allowed and start to grow in size (Conyon & He, 2012). Though, no proportions similar to the US and other western countries have been observed. Specifically, in 2005 only 0.15% of the firms awarded equity-based pay to their CEOs, while the number increased to 3.42% in 2010 (Conyon & He, 2012). As mentioned by the authors, based on the development there seems to be interest for such payments towards CEOs, nonetheless the adoption of such pay instruments goes very slowly (Conyon & He, 2012). Furthermore, Conyon and He (2012) find a positive relationship between CEO pay and accounting-based and market-based firm performance measures. As well as, a positive and significant relationship between CEO pay and firm size.

All things considered, throughout the years, much have improved regarding the disclosure and regulations of executive compensation all around the world. Besides the regulations, over time, also the level and composition of the compensation packages have changed around the globe. For example, in the US, base salary used to be the dominant element in the compensation package. However, nowadays US compensation contracts are dominated with LTIP compensation. Also, in the past, US CEOs were considered to be the highest earning CEOs in the world, but evidence indicates that other western countries have caught up with US-pay levels. Though, given the conflicting evidence found for Japan and China, there are still differences in pay levels and structures around the globe. Long story short, US CEOs are among the highest earning CEOs in the world, and even though other countries have approached US levels, still much deviation regarding absolute pay levels and pay structures is present among the different countries in the world.

2.3 Theories on executive compensation

2.3.1 Agency theory

One of the most prominent theories used in the CEO pay and firm performance studies is the agency theory. The agency theory is concerned with the separation of ownership between the principals (shareholders) and control by the agents (managers). Stroh, Brett, Baumann, and Reilly (1996) mention that the agency theory assumes that managers are motivated by self-interest, are rational actors and risk-averse. Due to the separation, so called agency problems can arise because of different objectives and the

division of labour between the manager and shareholders (Jensen & Meckling, 1976). According to Eisenhardt (1989), the agency theory is concerned with resolving two main agency problems. The first problem is concerned with the conflicting interests between the manager and shareholders. Therefore, shareholders should monitor the manager to find out whether the manager is making the right decisions that are in line with the interests of the shareholders. However, it is very difficult and/or expensive for shareholders to closely monitor the manager's behaviour (Eisenhardt, 1989). Consequently, this leads to information asymmetry and shareholders cannot determine whether the manager is behaving in the interest of the shareholders. The second problem in agency theory is related to a difference in preference regarding risk-taking behaviour between the managers and shareholders (Eisenhardt, 1989). As already mentioned, managers are motivated by self-interest, are rational actors and risk-averse. The problem arises when a manager prefers to make decisions/investments with a risk profile that deviates from what the shareholders would like him/her to do. In order to mitigate/overcome the agency problems, a contract between the manager and shareholders should be designed. The purpose of this contract (i.e., compensation package) is that the managers will receive the right incentives, so that the manager will make those decisions that are in line with the interests of the shareholders.

Many research has been conducted on executive compensation based on agency theory assumptions. For example, Stroh et al. (1996) investigated based on agency theory whether firm characteristics have an influence on the compensation package of managers. They find that in organizations where managers perform less programmable tasks, these managers receive more annual bonus in order to align the objectives of the managers with those of the organization. Furthermore, they find that firms with high level of turbulence (i.e., riskier firms) pay their managers also higher proportion of annual bonuses to assure the managers act in accordance with the interests of the shareholders. At last, Stroh et al. (1996) claim that long-term agency relationships are negatively related to annual bonuses in the compensation contracts. The explanation is that because of the long-term relationship between the manager and the firm, the shareholders will be better able to monitor the manager's behaviour and therefore less variable pay is required to urge the manager to behave in a certain manner.

In addition, there is also research that links the agency theory to firm performance. Hayes and Schaefer (2000), for example, conclude that current top executive compensation has a positive influence on future firm performance. This relationship is also supported by evidence found in Abowd (1990), who found that bonus payment for good performance is associated with an increase in firm performance in the upcoming year. Furthermore, Banker, Potter, and Srinivasan (2000) add, that including nonfinancial performance indicators in the compensation contract improves both future financial and nonfinancial firm performance.

However, according to literature there are also certain limitations to the agency theory. The basic stream of thought in agency theory is that mangers do not automatically seek to maximize shareholder value and therefore agency problems come to existence (Bebchuk & Fried, 2003). Bebchuk and Fried (2003) continue that the board is responsible to work in the shareholders' interest, in order to design a

compensation package that provides the managers with the right incentives to maximize shareholder value. However, they also mention that, as well as for managers, there is no reason to assume that board directors will initially strive to maximize shareholders' value. This because board directors also suffer from agency problems, since they probably would like to be re-appointed to the board to secure attractive income, prestige and valuable business/social connections (Bebchuk & Fried, 2003). Furthermore, Panda and Leepsa (2017) mention that the contract between the managers and shareholders is assumed to be agreed for a limited or unlimited future. Nonetheless, that future is uncertain, since it suffers from information asymmetry, rationality, fraud and transaction costs, making it difficult to determine to what extent agency problems will be mitigated. In addition, Eisenhardt (1989) mentions that agency theory only partly represents the world, since it ignores the complexity of organisations. Her advice is to include complementary theories together with the agency theory to capture the greater complexity. However, since the managerial power theory and human capital theory are incorporated in this study that limitation mentioned by Eisenhardt (1989) is less relevant.

2.3.2 Managerial power theory

A second stream of theory in the field of pay-on-performance research is the managerial power theory. This theory is closely linked to the agency theory, since the base of the managerial power theory is also the optimal contracting assumption from the agency theory; that boards create compensation contracts that incentivizes the managers to act in accordance with the interests of the shareholders (Van Essen, Otten, & Carberry, 2015). However, Bebchuk and Fried (2004) do not assume the optimal contraction assumption as the solution of the agency problems, rather they consider it as a manifestation of agency problems. In the agency theory, the at arm's length negotiations between the directors and CEO, to determine the optimal contract, is needed to reduce agency costs. Nonetheless, Bebchuk and Fried (2004) imply that these same at arm's length negotiations are a main cause of the agency costs, since powerful CEOs can (mis)use their power during these negotiations to get a contract (s)he desires. Consequently, leading to a remuneration package that has no connection between the CEO's performance and firm performance. The managerial power theory approach is sceptical about the firm's board bargaining capabilities, and questions to what extent the board is acting in favour of the shareholders' interests (Bebchuk et al., 2002). The main assumption in the managerial power theory is that CEOs and the other management team members have significant influence over the boards. On top of that, the board directors have (non-)financial incentives that could make them act in the interests of the CEO rather than the shareholders. Given these reasons, CEOs have power and can use that power to arrange a compensation contract that is in their own interest (Bebchuk et al., 2002). Consequently, CEOs obtain a different contract than they would have obtained under the optimal contracting assumption. That optimal contract would have led to maximizing shareholder value. However, due to the managerial power, the CEO is able to obtain additional "rents" from the company at the costs of the shareholders. Furthermore, according to Bebchuk et al. (2002), the CEO camouflages these additional rents to prevent exposure and debates to

arise. Taken this all together, the managerial power allows CEOs to extract additional rents at the costs of the shareholders and to hide these rent extraction, which leads to higher pay for the CEO without a clear link with his performance at the firm.

There is empirical evidence that indicates that CEOs with more power are able to influence the composition of their compensation package. In line with the managerial power theory, Choe, Tian and Yin (2014) found that CEO power affects a CEO's remuneration package. More specifically, they found in their study that more powerful CEOs enjoy higher base salaries, larger proportions of stock-based compensation and show larger increases in total compensation than less powerful CEOs. Given this, the performance-based stock compensation could lead to managers taking more risk, which could lead to losing substantial firm value but also boosting stock prices by reporting fraudulently higher earnings (Hall & Murphy, 2003; Sanders & Hambrick, 2007; Jensen, 2004). In addition, Hill, Lopez and Reitenga (2016) found that the most powerful CEOs in their sample have excess compensation without economic justification. Their results indicate that CEOs with higher remuneration, compared to the median amount, and high tenure enjoy excessive compensation compared to their peers that could replace them with similar qualifications. On top of that, evidence claims that powerful CEOs influence the adoption of performance-based stock options, which is recommended by regulators to improve the pay-performance relationship (Abernethy, Kuang & Qin, 2015). Furthermore, these powerful CEOs also use their power to set easier targets to obtain these performance-based stock options (Abernethy et al., 2015).

Notwithstanding, managerial power theory has some limitations according to the literature. Van Essen et al. (2015) assessed the managerial power theory and concluded that the theory is better equipped to explain levels of total compensation (in their study defined as the sum of base salary, annual bonus, and LTIP), but it is less suited to explain the pay-performance relationship. In their analysis, they found that most of the compensation variables were significant and with the right signs as proposed by the managerial power theory. However, for the variables related to testing the theory's power to explain the pay-performance relationship, they found that just a small proportion of the variables was significant and some of them even showed signs in the opposite direction as one would expect from the theory. Despite this, incorporating the managerial power theory in this study will offer useful insights into the relationships found. This because the theory does explain compensation components well, but also possible negative or no relationships between CEO pay and firm performance could be attributed to managerial power.

2.3.3 Human capital theory

The human capital theory implies that an individual's characteristics determine one's productivity and ability to succeed in his/her role (Malao, 2014). According to Becker (1964), human capital comprises of an individual's acquired skills and knowledge that increases his chances to succeed in his job. A person's human capital is determined by summing up the individual's skills/competencies and knowledge (Greve,

Benassi & Dag Sti, 2010). Furthermore, Greve et al. (2010) mention that the higher a person's human capital, the higher the compensation and personal rewards.

In most human capital literature the acquired skills and knowledge are expressed by the employee's educational level and working experience (Sun, Zhao & Yang, 2010; Greve et al., 2010). Sun et al. (2010) mention that the accumulation of competencies obtained from education and experience are determinants of executive remuneration. Therefore, the abilities of an executive can be determined by his/her collection of educational and working experience. According to Ng and Feldman (2010), high levels of human capital serve as an indicator that these individuals deserve to be hired by the company, since they possess attributes companies desire. Furthermore, hiring these people could allow companies to gain sustainable competitive advantage, since the unique attributes could indicate superior managerial skills and lead to company outputs no other competitor is able to achieve (Combs & Skill, 2003). Therefore, this can explain why companies are willing to pay premiums to executives with high levels of human capital to attract, recruit and retain them. In essence, this means that the higher a CEO's human capital, the higher his/her compensation and personal rewards.

Researchers have also studied the relationship between human capital and its impact on managerial compensation. Custódio, Ferreira and Matos (2013) investigated whether CEOs with a more general managerial experience, meaning more diverse human capital from various different firms and industries, receive higher CEO pay than CEOs with more firm-specific managerial experience, meaning CEOs that accumulated managerial skills only within the same firm or industry. The results of their study show that the more generalist CEOs receive higher remuneration than the specialist CEOs. The positive relationship between more diverse human capital possessed by a CEO and his remuneration are found for both cash (sum of base salary and annual bonus) and LTIP compensation. Equally, Finkelstein and Hambrick (1989) hypothesized as well that CEOs with more work experience in general management will bring more value to a firm, and therefore earn more than CEOs with less experience in general management. They found that a CEOs human capital is indeed strongly positively related to annual bonuses, however no relationship was found for base salaries and the sum of base salaries, annual bonuses and other benefits. In addition, Carpenter and Gregersen (2001) investigated the impact of CEOs from US multinationals with at least one year of working experience abroad on their firm performance and remuneration. The results suggest that CEOs with international experience show a positive relationship with firm performance. Concerning the CEO compensation, they found that CEOs with international experience have higher compensation only at multinational firms with strong global strategic attitudes. Overall, the empirical evidence supports that CEOs with higher levels of human capital show higher firm performance and also receive a premium remuneration relative to CEOs with lower levels of human capital, which is justified by the implications of the human capital theory.

2.4 Determinants of CEO pay

The size and structure of a CEO's compensation package is determined by the firm's supervisory board, more specifically, when present, the supervisory board's remuneration committee (RC) (Murphy, 1999; Larcker & Tayan, 2015). The remuneration committee is responsible for monitoring the effectiveness of the firm's remuneration policy and to propose adjustments when deemed necessary. This to make sure the executive acts in line with the shareholders' interests. The design and amount of the executive's compensation package is usually based on a peer-group assessment, whether or not performed by the RC members themselves or an outside compensation consultant (Murphy, 1999; Larcker & Tayan, 2015). This peer-group consists of other comparable firms regarding business operations, size, complexity and/or industry (Larcker & Tayan, 2015). Based on the peer-group assessment, the RC proposes a remuneration policy for the members of the management board. This proposal will be submitted to the entire supervisory board, who then will either accept or dismiss the proposal (Larcker & Tayan, 2015). Subsequently, when accepted, the annual general meeting (AGM) has to approve the proposal as well, to eventually make the remuneration policy enter into force. This remuneration policy in conjunction with the executive's knowledge, skills and other attainments, are the guideline for the ultimate design and amount of remuneration the CEO receives. This determination process of a CEO's compensation package, and thus also the structure and level of CEO pay, could be influenced, either consciously or unconsciously, by numerous different factors. Below, the CEO, firm, corporate governance and country-specific factors are discussed respectively.

2.4.1 CEO factors

According to literature, CEO factors seem to affect executive compensation. The first CEO characteristic to be discussed is ***age***. According to human capital theory, the higher ones age, the more experience and knowledge a person should have, and thus the higher ones human capital. Given this, older executives should be expected to be paid more. Similarly, Gibbons and Murphy (1992) acknowledge the correlation between age and CEO pay. Whereas, Finkelstein and Hambrick (1989) found a curvilinear relationship between CEO age and CEO cash compensation. Specifically, they mention in their article that at the age of 59 cash compensation (base salary + annual bonus) starts to decline. According to Finkelstein and Hambrick (1989), this result is in line with the need for cash by CEOs. When a CEO gets older, (s)he will have less concerns regarding cash-needs since major cash expenses regarding housing and children will be less relevant (Finkelstein & Hambrick, 1989). Furthermore, the study by McKnight, Tomkins, Weir and Hobson (2000) also show that CEO age, base salary and annual bonus are significantly related. Specifically, they show that the amount of base salary increases with age and show a non-linear relationship between annual bonus and CEO age. Overall, age seems to be related to CEO pay. However, no clear support is found for the human capital theory proposition, it seems rather to be related to changing CEO's needs throughout his/her phase of life.

The second CEO characteristics to be discussed is ***gender***. According to Mohan and Ruggiero (2003), gender seems to be a determinant of executive compensation. Specifically, the researchers found that female CEOs receive less compensation when options are included in the CEO compensation measure. In a later study, Mohan and Ruggiero (2007) studied the difference of compensation between male and female CEOs again. The second study supports their previous finding that compensation in the form of base salary does not differ between the two genders. However, they found a significant difference at the 1% level for total compensation (i.e. all components from section 2.1) and the value of options between male and female CEOs, indicating that female CEOs are undercompensated compared to male CEOs. This could be explained by the fact that for equity-based remuneration components negotiation skills are required, and men negotiate better/more than females (Mohan & Ruggiero, 2007). However, no other clear theoretical clarifications have been identified to explain the difference. Additionally, studies on Chinese CEOs indicate that female CEOs receive less ideal compensation compared to male CEOs (Lam et al., 2013; Xiao et al., 2013) as well. Overall, gender is a potential determinant of CEO pay, though there are also recent studies that found no difference between gender and executive compensation (e.g. Gupta et al., 2018; Bugeja et al., 2012).

The third CEO characteristic affecting CEO pay is ***educational level***. In accordance with the human capital theory, the higher the educational level of a CEO the higher the expected total compensation one should observe (Chung & Pruitt, 1996). Banghøj, Gabrielsen, Petersen and Plenborg (2010) investigated different determinants of executive compensation in the context of privately held firms, including CEO's educational level. The results of their study show a positive and significant relationship between CEO's educational achievements and the level of CEO compensation, which thus confirms the proposition of the human capital theory. Specifically, they measured educational achievements based on a scale from 1 to 7, and each step higher on that scale is related to a 5.7% increase in cash compensation (sum of base salary and annual bonus) (Banghøj et al., 2010). Similarily, more support for the human capital theory is found in Datta and Iskandar-Datta (2014) and Graham, Li and Qiu (2012) who also find a positive relationship between educational level and executive compensation. In contrast, Chung and Pruitt (1996) also examined the effect of educational level on CEO compensation but do not find a significant effect between the two variables.

Furthermore, besides the more observable CEO factors, less observable ***CEO attributes*** are important determinants of CEO compensation as well (Page, 2018). According to Page (2018), the main CEO attributes driving cross-sectional executive compensation are risk-aversion and influence on the firm's board. He mentions that risk-aversion is a crucial determinant in hiring an CEO, because less risk-avers CEOs earn higher remuneration and increase shareholder value as well as firm value (Page, 2018). The results of his study show that removing risk-aversion increases total CEO compensation with more than 35% (Page, 2018). More specifically, LTIP compensation increases by 426.7%, while cash compensation (base salary + annual bonus) decreases by 54.86%. Further, shareholder value increases by 16.12% and firm value increases by 19.37% (Page, 2018). Likewise, these finding support the proposition

of the agency theory that managers are risk-averse and should be incentivized proporly to increase shareholder value. Regarding influence on the firm's board, Page (2018) finds that removing excess board influence by the CEO decreases LTIP compensation by 37.90%, which subsequentely leads to an increase in shareholder value of 1.74%. This because, the decrease in LTIP allows the shareholders to own more of the firm (Page, 2018). Furthermore, firm value increases by 1.28% and cash compensation (base salary + annual bonus) increases with 7.44% (Page, 2018). Given this, Page (2018) support the proposition of the managerial power theory that powerful CEOs are able to extract addition rents (i.e. higher remuneration) at the cost of the shareholders (i.e. lower shareholder value and firm value). Additionally, in line with Page (2018), Yu and Thuan (2014) find that the CEO attributes 'CEO dominance' and 'CEO overconfidence' significantly affect executive compensation. According to Yu and Thuan (2014), CEO dominance has a significant and positive impact on cash compensation (base salary + annual bonus), LTIP and total compensation (sum of all elements from section 2.1). Furthermore, they find that higher LTIP compensation encourages managers to engage in value-enhancing risky projects (Yu & Thuan, 2014). Given this, their study implies that dominant CEOs earn higher remuneration but, on top of that, also possibly enhance firm value, which contradicts the managerial power theory. Concerning CEO overconfidence, Yu and Thuan (2014) find a significant and negative effects of CEO overconfidence on total compensation and cash compensation. At the same time, no significant effect for LTIP compensation was found (Yu & Thuan, 2014). Further, they find that overconfident CEOs positively affect a firm's risk-taking (Yu & Thuan, 2014), indicating that overconfident CEOs are less risk-averse and thus more likely to engage in value-enhancing high risk investment projects. Overall, empirical evidence shows that CEO attributes affect the structure and effects of CEO pay.

2.4.2 Firm factors

Besides, firm factors seem to influence CEO compensation as well. The first firm factor that is a potential determinant of CEO pay according to literature is ***firm size***. From a human capital theory perspective, one could argue that bigger firms attract CEOs with higher levels of human capital and thus these CEOs enjoy higher compensation. Whereas, from an agency theory perspective, one could assert that bigger firms are more complex to monitor and thus higher levels of compensation/LTIP is needed to align the interests between the managers and shareholders. By comparison, Finkelstein and Hambrick (1989) explain the association between size and compensation by mentioning that, for example, CEOs may demand more when they have to control a bigger firm or that bigger firms have more money to pay higher levels of remuneration. However, there is no clear consensus to explain the association between firm size and CEO pay levels. To add, Tosi, Werner, Katz and Gomez-Meijia (2000) investigated by means of a factor analysis to what extent firm size explains changes in CEO pay. According to the results of their study, firm size accounts for over 40% of the variance in CEO pay. Furthermore, Finkelstein and Hambrick (1989) mention that numerous empirical studies indicate that firm size is a major determinant of CEO pay. They found support for the claim by earlier studies and show that CEOs in bigger sized firms enjoy

higher remuneration. In addition, Lambert, Larcker and Weigelt (1991) found proof that the height of CEO compensation is significantly and positively related to the size of the firm.

The second firm factor that seems to be related to CEO pay is *firm performance*. As mentioned earlier, in line with agency theory, an adequately designed compensation package should align the interest between the managers and shareholders. Given this, a CEO's compensation package should reward the CEO for good corporate performance, and therefore increase CEO compensation when firm performance increases as well (Finkelstein & Hambrick, 1989). Besides investigating whether firm size is an important determinant of CEO pay, Tosi et al. (2000) also analysed whether firm performance is important in explaining variance in CEO pay. The results of Tosi et al. (2000) indicate that when firm performance is measured by ROA and ROE, it accounts for 2% to 4.5% of the variance in CEO pay respectively. However, this effect is much smaller than they found for firm size. Additionally, Smirnova and Zavertiaeva (2017) proposed that better firm results will translate into higher CEO pay. The results of their study reveal that accounting- and market-based firm performance measures are significantly positively related to executive compensation. Therefore, supporting the agency theory.

A third firm specific determinant is found in *leverage*. According to literature, leverage can function as a disciplining tool to mitigate agency problems (Jensen, 1986). The fixed contractual obligations of debt could function as a substitute to discipline and incentivize an executive, therefore, as proposed by agency theory, less compensation is needed to incentivize an CEO (Raithatha & Komera, 2016). Given this, a negative effect of leverage on CEO pay should be expected. Empirical evidence is found in Minhat and Dzolkarnaini (2016), since they investigated whether debt financing and leasing are governance substitutes for executive compensation. Their study shows that firms with greater leverage (i.e. higher debts levels and/or lease contracts) pay their managers less equity incentives based compensation, therefore supporting the substitution hypothesis and the agency theory. Additionally, also Zhang (2009) found a negative relationship between debt and stock option remuneration. This result indicates a substitution effect between debt and CEO compensation to mitigate agency problems as well.

Furthermore, empirical evidence indicates that executive compensation is influenced by *firm type.* Banghøj et al. (2010) examined CEO pay determinants in the context of privately held firms in Denmark. According to their study, privately held firms have characteristics that differ from the characteristics present in public firms, consequently influencing pay determinants and structure (Banghøj et al., 2010). For example, ownership concentration and CEO chairman duality are more severe in privately held firms than publicly traded firms (Banghøj et al., 2010). Given this, in line with agency theory, the expectation would be that privately held firms use less performance-based equity/LTIP compensation, since higher ownership concentration is linked with more effective monitoring (see section 2.4.3 for a more detailed explanation). Whereas, CEO chairman duality makes the CEO more powerful over the firm's board and could lead to more rent extraction according to the managerial power theory. Despite the differences between private and public firms, literature has spend less attention to executive compensation determinants within private firms (Banghøj et al., 2010). Therefore, Banghøj and

colleagues examined compensation determinants for privately held firms. The results of their study show, in line with agency theory, that private firms in Denmark pay less LTIP compensation to their executives than public firms. Moreover, the results confirm differences in the determinants of executive compensation between private and public firms. Specifically, in private firms corporate governance is less suitable in explaining executive compensation levels, whereas in publicly traded firms many corporate governance variables are shown to be explaining CEO pay levels (Banghøj et al., 2010). When in fact, they find that CEO characteristics, such as skills, position and educational level, are more important determinants for CEO pay levels in privately held firms (Banghøj et al., 2010). In addition, Ke, Petroni and Safieddine (1999) have found that the sum of base salary, annual bonus and other benefits does have a significant and positive effect on accounting based firm performance for public firms, however such relationship is not found for private firms. Furthermore, CEO compensation is based on more objective performance measures within the public context and less objective measures within the private context (Ke et al., 1999).

Moreover, the ***industry affiliation*** of a firm seems to influence CEO compensation. Ely (1991) examined differences in CEO compensation and its relationship with firm performance across different industries in the US. According to Ely (1991), the effect CEO compensation has on firm performance variables differs significantly across the different industries incorporated in the study. Furthermore, the study finds a significant difference between the usage of different pay components across industries. Specifically, the electric utility industry shows the lowest usage of annual bonuses and LTIP compensation (Ely, 1991). Whereas, the banking industry has the highest usage of annual bonuses and LTIP compensation (Ely, 1991). Further, the oil/gas and retail industry mainly use annual bonuses, while their LTIP compensation consists primarily of stock option plans. According to agency theory, an adequately designed compensation package should incentivize the CEO effectively and align the interests between the CEO and the shareholders. Furthermore, Fernández et al. (2018) acknowledge that industries differ among each other regarding structure and characteristics. Given this, in line with agency theory, a possible explanation for the different pay structures could be that the optimal contract for the CEO, that effectively incentivizes him and aligns the interests between him and the shareholders, differs among the industries due to the difference in industry structure and characteristics. However, it is important to note that these results are from a sample between 1978 and 1982. Thus, the results could be less relevant in that the difference could have changed already throughout the years. In addition to Ely (1991), Duffhues and Kabir (2008) find that the pay-performance relationship differs among different industries in the Netheralnds. More specifically, their study shows that firms in the manufacturing industry show highly significant and negative relationships between firm performance measures and CEO compensation. While, financial institutions show highly significant and positive relationships between firm performance measures and CEO companstion (Duffhues & Kabir, 2008). On top of that, the transport, trade & service and ICT industries show ambigious and non-significant results between performance and CEO pay (Duffhues & Kabir, 2008). Additionally, Aggarwal and Samwick (1999) find that companies operating

in industries with more volatitle stock prices show lower pay-performance sensitivies than companies operating in industries with the least volatile stock prices. Overall, the type of industry a company belongs to, seems to affect the effects and structure of CEO pay.

2.4.3 Corporate governance factors

According to literature, corporate governance helps to mitigate agency problems and therefore impacts executive compensation (Ozkan, 2007). The first corporate governance factor that potentially influences CEO pay is found in ***board size***. In line with human capital theory, larger boards have more members and thus higher levels of human capital. Therefore, larger boards are assumed to have higher levels of expertise (Banghøj et al., 2010) and should be more effective at monitoring the CEO. Given this, in line with human capital and agency theory, lower levels of LTIP pay should be expected. However, evidence shows that firms with larger boards have CEOs that earn higher base salary, annual bonuses and LTIP compensation. Similarly, Banghøj et al. (2010) find that larger supervisory boards are related to higher CEO compensation. More specifically, they mention that with every additional board member, CEO pay increases by almost 5%. These results are contradicting the proposition of the human capital and agency theory. Instead, they support the managerial power theory in that larger boards can become unmanageable, and therefore less effective in monitoring (Jensen, 1993). Given this, CEOs are more likely to gain control and overrule the board, with as a consequence extracting additional rents at the cost of the shareholders (Jensen, 1993). Therefore, also affecting the effect CEO pay has on firm performance.

Another corporate governance factor is found in ***board independence***. According to literature, a firm's board that is more independent will be more effective in monitoring the executives and designing compensation packages for them (Banghøj et al., 2010). Given this, according to agency theory, one would expect that firms with higher board independence pay lower levels of CEO compensation. When the CEO or other executives of a firm also serve on the supervisory board, the independence of this board is reduced. Therefore, Banghøj et al. (2010) predicted that CEOs who also serve on a firm's board will enjoy higher remuneration. Furthermore, they proposed that higher proportions of inside members (executives) on the firm's supervisory board will lead to higher CEO remuneration. However, they did not find support for both propositions. Moreover, Sur, Magnan and Cordeiro (2015) also proposed that board independence could be influencing CEO compensation. However, they did not express board independence by means of CEO duality, instead they measured it as the proportion of independent directors on the board. According to their study, more independent boards are related to higher CEO base salary, annual bonus and LTIP compensation (Sur et al., 2015). Equally, Ozkan (2007) found that higher proportion of non-executive outside directors is related to higher CEO compensation. These results are contradicting the agency theory in that, according to empirical evidence, higher board independence is related to higher CEO pay not lower CEO pay. After all, even though the results are conflicting and contradicting theory, literature does show influence of board independence on CEO compensation.

The third corporate governance factor that seems to influence CEO pay is *ownership concentration*. Concentrated ownership means that a large proportion of the firm's shares is owned by a small number of shareholders. According to literature, more concentrated ownership allows the shareholders to more closely monitor the behaviour of the executives (Fama & Jensen, 1983). Furthermore, concentrated ownership allows for easier coordination of monitoring activities and exercise greater power on the management, which helps to mitigate the risk of rent extraction by executives (Ozkan, 2007). Therefore, it is expected that monitoring of executives is more effective by shareholders under higher concentrated ownership circumstances. Given this, in line with agency theory, the need for performance-based pay will be reduced in order to align the interests of the managers with those of the shareholders. Hüttenbrink, Oehmichen, Rapp and Wolff (2014) examined this proposition and their results show a significant and negative relationship between ownership concentration and the need for pay-for-performance. Their study indicates that when high concentration of ownership is present, less performance-based compensation is needed to mitigate agency problems and align the interests between managers and shareholders. Given this, the proposition of the agency theory regarding ownership concentration is supported. Similarly, the same negative effect between ownership concentration and the level of CEO compensation is also found by Core et al. (1999) and Ozkan (2007). Additionally, Banghøj et al. (2010) examined the same relationship in the context of privately held firm. However, they do not find a significant effect between ownership concentration and CEO compensation.

A fourth corporate governance factor related to CEO compensations seems to be *ownership type*. Different types of shareholders have different types of incentives, interests and goals to monitor the management. For example, institutional investors usually own great proportions of equities in firms (Ozkan, 2007). Given this, institutional investors will have greater incentives to closely monitor the management given the amount of money that could be at stake if something goes wrong (Ozkan, 2007). Therefore, according to agency theory, it is expected that these shareholders are monitoring more effectively and thus will lower the need for performance-based pay. Sur et al. (2015) examined the impact of different types of shareholders on CEO compensation levels. The results of their study show that (financial) institutional ownership is significantly negatively related to annual bonus and total compensation (which includes all elements as mentioned in section 2.1). Further, shares held by individual investors or family-ownership is negatively related to base salary, LTIP compensation and total compensation (Sur et al., 2015). Whereas, corporate ownership is negatively related to only annual bonuses paid to CEOs (Sur et al., 2015). Further, in line with Sur et al. (2015), the negative effect of institutional shareholders on CEO compensation levels is found by Ozkan (2007) as well. To summarize, the empirical evidence supports the agency theory and shows that different types of shareholders have different effects on CEO pay levels.

2.4.4 Country-specific factors

In addition, also country-specific factors seem to affect the level of CEO compensation. However, there is a limited amount of literature examining country specific determinants of CEO pay despite their possible impact (Hüttenbrink et al., 2014). Also, given that in this study only firms in the Dutch context will be examined, country specific characteristics will be less relevant in this study. Though, their impact should not be denied and therefore will be discussed here.

The first country specific factor to be discussed is ***legal environment***. According to literature, strong shareholder protection allows shareholders to influence company decisions to a greater extent and allows them to influence the appointment and/or resignation of executives (Capron & Guillén, 2009; Defond & Hung, 2004). On the other hand, weaker shareholder protection limits the possibilities of shareholders to influence company decisions and winning lawsuits against the company/managers. Given this, when shareholder protection is weak, in line with the agency theory, agency problems between the shareholders and managers increase. Therefore, as proposed by agency theory, more performance-based compensation is needed to make the managers act in line with the interests of the shareholders. Hüttenbrink et al. (2014) examined this, and confirm a significant negative effect of shareholder protection on stock options paid to CEOs. More specifically, countries with higher levels of shareholder protection show CEO compensation contracts with less performance-based stock options (Hüttenbrink et al., 2014), which thus supports the agency theory. In a similar fashion, Bryan, Nash and Patel (2015) examined the impact of legal environment on CEO compensation by examining shareholder rights protection and the quality of law enforcement. Contrary to Hüttenbrink et al. (2014), they proposed a positive relationship between shareholder protection and the use of performance-based equity compensation. According to their study, higher levels of shareholder protection and quality of law enforcement lead to more informationally efficient stock markets(Bryan et al., 2015). Therefore, performance-based equity pay should be more effective and more widely used in countries with higher shareholder protection and law enforcement quality. The results of their study indicate that the level of shareholder protection is significantly and positively related to equity-based compensation, however no significant effect was found for quality of the law enforcement. Additionally, Hüttenbrink et al. (2014) also examined the impact of disclosure requirements on CEO compensation. Specifically, they propose that countries with stricter disclosure requirements restrict the possibility of managers to manipulate earnings figures (Hüttenbrink et al., 2014). Therefore, it will be less risky and costly for shareholders to offer STIP and LTIP to their executives. Given this, shareholders will have more confidence in offering such performance-based compensation to the CEOs. The results of their study also confirm this hypothesis, since they show a significantly positive relationship between disclosure requirements and the level of pay-for-performance compensation (Hüttenbrink et al., 2014). Overall, even though there exists ambiguity among the results, empirical evidence indicates that the legal environment potentially influences the level and structure of CEO compensation.

A second country specific factor is ***culture***. Bryan et al. (2015) examined the impact of national culture on the structure of executive compensation across different countries. They captured a country's culture using the culture dimensions 'individualism' and 'uncertainty avoidance' of Hofstede (1980). They used individualism since it captures to what extent the individual's interests dominate those of the group/collective interests (Bryan et al., 2015), which is closely related to agency theory's assumption that managers act in their own self-interest rather than in the collective interests of the shareholders. Given this, more performance-based pay will be needed in high individualistic societies in order to make executives act in line with the interests of the shareholders. Further, uncertainty avoidance captures to what extent the society feels comfortable in unstructured or high risk situations (Hofstede, 1980). Specifically, societies that score high on uncertainty avoidance are more risk-averse, and therefore are not comfortable with uncertain situations. This is closely related to the risk-averseness assumption of executives in the agency theory. Given this, when a society scores high on uncertainty, the CEO is more likely to prefer the more 'certain' pay (e.g. base salary, annual bonus and other benefits) than the 'riskier' LTIP compensations (Bryan et al, 2015). Therefore, a negative relationship is to be expected between level of uncertainty avoidance of a society and the use of equity-based pay/LTIP. The results of Bryan et al. (2015) confirm both hypotheses. Specifically, Bryan et al. (2015) find a positive relationship between individualism and equity-based pay and a negative relationship between uncertainty avoidance and equity-based pay, both at the 1% level. Given this, their results support the agency theory. These results are robust, even after controlling for institutional and firm specific pay determinants (Bryan et al, 2015). Hence, a country's culture seems to influence CEO compensation.

A third country specific CEO compensation factor seems to be ***political influences***. Liang, Renneboog and Sun (2015) examined the impact of political determinants on CEO compensation in the context of regulated economies as found in, for example, China. Highly regulated countries, markets and industries with significant political intervention affect executive's incentives and thus affect the compensation contract (Joskow, Rose, & Wolfram, 1996). According to Liang et al. (2015), state-owned enterprises (SOEs) suffer from additional agency problems when compared to regular publicly traded firms. Given this, agency problems are more severe at SOEs and thus, as one would expect from agency theory, specific compensation packages may be needed to overcome these problems. Liang et al. (2015) examine the effect of the removal of market frictions on the executive compensation package in China. The results show that before the removal of market frictions (i.e. political intervention in the market), state ownership has a significantly negative effect on CEO compensation (sum of base salary, annual cash bonus and other benefits paid in cash). Specifically, a 10% increase in state ownership leads to a 6.9% decrease in CEO compensation. Whereas, after the removal, state ownership does not have an influence on CEO compensation at all (Liang et al., 2015). Furthermore, they find that before the removal independent directors have no significant effect on CEO compensation. While, after the removal independent directors have a significantly negative effect on total CEO compensation (Liang et al., 2015). In addition, Liang et al. (2015) find that in the pre-reform period CEO duality is not statistically

significant, however becomes significant and positive in the post-reform period. This result of Liang et al. (2015) indicates that, in line with managerial power theory, powerful CEOs have the opportunity to influence their own pay, and this opportunity is higher especially in market-oriented environments. Overall, empirical evidence shows that politics are a country specific factor that could influence CEO compensation. Specifically, they do not directly affect pay levels, but they influence the effect of other determinants via interventions and regulations.

2.5 Effects of CEO pay

According to literature, CEO pay is proclaimed to affact various different variables. In this section, the empirical evidence found on the effects CEO pay has on other variables will be discussed. The effect of CEO pay on firm performance, CSR performance, risk-taking, M&A activities, innovation efforts and cost of capital will be discussed here below.

2.5.1 Firm performance

Many research has been conducted on the effect of CEO compensation levels on firm performance. Despite this, ambiguity among the studies exists since studies show positive, negative and no significant effects. However, an explanation for the conflicting results could be that the different studies used different types of measures of firm performance, different components of CEO pay and different samples over different periods (Smirnova & Zavertiaeva, 2017; Tosi et al., 2000). Hereafter, the positive, negative and no significant effects between CEO pay and firm performance, as well as the reversed relationship between CEO pay and firm performance will be discussed respectively.

2.5.1.1 Positive effect of CEO pay on firm performance

The first relationship identified is a positive relationship between the amount of remuneration a CEO receives and firm performance. For example, Smirnova and Zavertiaeva (2017) used a sample of 330 large European firms to investigate the effect of CEO compensation on firm performance. Their results show that higher compensated CEOs show better firm performance. According to their study, annual bonuses used as performance-based compensations provide good incentives to improve the firm's results. Furthermore, Smirnova and Zavertiaeva (2017) mention that performance-based annual bonuses paid to CEOs increase a firm's market performance as well. Moreover, they found that base salary and other benefits does not incentivize an executive to improve market performance, since these components are negatively related to the market performance measure in their study.

In addition, Hanlon et al. (2003) investigated whether stock options offered to executives are an effective mechanism to incentivize them to improve future firm performance. They acknowledge the positive relationship between performance-based compensation (i.e. stock option grants) and future firms performance as well. According to the results of their study, a $1 increase in the stock option grants

offered to executives leads to an increase of future earnings from $7.18 to $7.69. However, they note that this relationship is more likely due to economic factors rather than corporate governance factors.

Furthermore, Conyon and Freeman (2004) investigated the impact of share ownership on firms in the UK. The rationale behind the share ownership is that employees/executives share in the financial gains of the firm, and therefore are encouraged to take decisions that increase the firm value and performance. The results of their study show that since 1990 the use of equity compensation has increased significantly. Furthermore, Conyon and Freeman (2004) show that the shared ownership compensation are positively related to productivity and therefore increase firm performance.

On top of that, Buck, Liu and Skovoroda (2008) investigated the relationship between CEO pay and firm performance in the Chinese context. They used a sample of 601 firms listed on the Shanghai and Shenzhen stock exchange markets. The researchers examined whether pay influences performance, referred to as the motivational hypothesis. The results of their study confirm that pay has an effect on firm performance, and thus confirming their motivational hypothesis. The results show that the sum of base salary and annual bonus has a positive and significant effect on all four different firm performance measures (i.e. shareholder value, total shareholder return, pre-tax profit, and return on assets).

Besides, Jaiswall and Bhattacharyya (2016) examined the impact of board, ownership and CEO characteristics in relation with CEO compensation on firm performance, and whether there is evidence for rent extraction or efficient contracting in Indian firms. For the full sample, they did not find a significant effect of CEO compensation in combination with one of the three characteristics on firm performance. However, they split their sample into public firms and private firms. For the public firms, they found a significantly positive relationship between CEO compensation that is related to CEO characteristics and future firm performance. More specifically, this result suggests that after the CEO compensation is earned, the average firm performance, measured by ROA, increases for the following two years with the proportion of compensation that is related to CEO characteristics. Furthermore, for the private firms, they observed a positive and significant relationship between future firm performance and CEO compensation that is related to ownership characteristics. According to Jaiswall and Bhattacharyya (2016), this indicates that ownership structure has an important role in determining an efficient CEO compensation contract in order to improve firm performance. Moreover, since both significant relationships between compensation and firm performance are positive, this indicates that there is no evidence for the rent extraction hypothesis. Rather, the findings suggest that the efficient contracting hypothesis is confirmed. This indicates that the CEO's compensation reflects the demand for talent and to use their abilities to work harder, therefore improving firm performance (Jaiswall & Bhattacharyya, 2016).

In essence, empirical evidence shows that CEO compensation leads to improved firm performance. According to literature, the most important components that seems to be responsible for this relationship are annual bonus/STIP and equity-based pay/LTIP. However, there is also evidence

showing a positive effect of total compensation on firm performance. Base salary and other benefits, on the other side, do not seem to effectively incentivize executives to improve firm performance.

2.5.1.2 Negative effect of CEO pay on firm performance

On the contrary, there is also evidence that postulates a negative relationship between CEO pay and firm performance. Carter et al. (2016) analysed US firms whether there was a link between abnormal CEO compensation and firm performance. They mention that if the efficient contracting model holds, abnormal CEO compensation would indicate superior executive skills and therefore increase firm performance. However, if they find a negative relationship then the agency-problem framework would perceive this as a symptom of failing corporate governance. The results of their study show that higher levels of abnormal CEO total compensation (including all components mentioned in section 2.1) predicts lower future firm performance (ROA). This means a negative relationship between abnormal CEO pay and future firm performance, therefore confirming that abnormal CEO total compensation indicates unsolved agency problems (Carter et al., 2016). The results of their study support earlier evidence found by Core et al. (1999), who also concluded that there is a negative relationship between excessive CEO compensation and firm performance due to weak corporate governance.

Similarly, Bebchuk et al. (2011) examined the relationship between CEO pay and firm performance, and if this relationship indicates agency problems. In their study, they investigated the impact of CEO Pay Slice (CPS), which is defined as "the percentage of the total compensation of the top five executives that is paid to the CEO", on firm value, performance and behaviour. The results show that higher CPS values are strongly related to lower firm value. More specifically, a one standard deviation change in CPS (11.73%), is associated with a decrease in next year's Tobin's q (firm value) by 5.5% (Bebchuk et al., 2011). Furthermore, they find a significantly negative relationship between CPS and ROA (firm performance). They mention that a one standard deviation increase in CPS leads to a 10% decrease in the mean value of ROA (Bebchuk et al., 2011). Overall, their findings are consistent with the hypothesis that higher CEO pay is associated with agency problems, also mentioned by Core et al. (1999) and Carter et al. (2016), and thus negatively related to firm performance.

Moreover, another study examined whether executive compensation leads to superior subsequent future stock returns and firm performance (Balafas & Florackis, 2014). Balafas and Florackis (2014) investigated separately the impact of cash- and equity based compensation on firm performance, using a large sample with listed UK firms over the period 1998-2010. The findings show a strong significantly negative relationship between CEO LTIP compensation and future shareholder returns. This means that firms who pay their CEO high amounts of equity-based compensation achieve lower subsequent risk-adjusted returns (Balafas & Florackis, 2014). Furthermore, they find that LTIP is significantly negatively related to one-year future firm performance. However, they find a positive and significant relationship between cash compensation (sum of base salary, annual cash bonus and other benefits) and future performance. This association could be explained with the argument that cash compensation components

could contain rewards offered to top executives by a firm's board for value-maximizing actions that still have to pay off in future firm performance (Balafas & Florackis, 2014). Notwithstanding, the overall effect of CEO compensation on firm performance is negative, since the equity-based/LTIP compensation negatively influences future stock return and firm performance.

Even more, another study finds that excess CEO pay is negatively related to subsequent accounting firm performance (Basu, Hwang, Mitsudome & Weintrop, 2007). The researchers used a sample of 174 Japanese firms to investigate the relationship between CEO cash compensation (base salary + annual cash bonus) and firm performance in Japan. The results of their study show that excess CEO cash compensation associated with governance and ownership mechanisms is significantly negatively related to one-year future accounting firm performance. More specifically, a one-standard deviation increase in excesses CEO pay decreases the annual ROA by 0.002% per year. At first sight, this does not seem material. However, given that the mean sample ROA is 1.4%, this means a 2.8% annual loss of the sample average ROA (Basu et al. 2007). Given that the excess compensation is related to the effectiveness of governance and ownership mechanisms, the results indicate that firms with weaker governance mechanisms have greater agency problems. This subsequently leads to CEOs extracting pay at the costs of the shareholders and worsens firm performance (Basu et al., 2007).

Overall, evidence postulates a negative association between CEO compensation and firm performance. However, this negative relationship is mostly explained by weak corporate governance structures in firms.

2.5.1.3 No significant effect of CEO pay on firm performance

Besides the positive and negative relationships, there are studies that find no relationship between CEO pay and firm performance. In a recent article, Aguinis et al. (2018) investigated by means of a power law distribution whether there is an overlap between the distribution of the highest performing firms and the distribution of the highest paid CEOs. They tried to answer the question whether CEOs receive the pay they deserve. To answer their question, Aguinis et al. (2018) hypothesized that there should be an overlap between the distributions of the highest performing CEOs and the highest paid CEOs. This would then confirm the efficient contracting proposition from the agency theory. The results of their study show, however, a clear misfit between firms with the highest performance and the CEOs that enjoy the highest remuneration. They find that only 5% of the top 1% performing CEOs (measured by Tobin's Q) of their sample are also in the 1% highest paid CEOs group. When the performance is measured by ROA this percentage is 4%. For the top 20% performing CEOs only 29% (Tobin's Q) and 27% (ROA) belong to top 20% paid CEOs. These results indicate that CEOs who enjoy the highest remuneration are not the same CEOs who show the highest performance at their firms. According to Aguinis et al. (2018), "the degree of mismatch increases as we move toward the tail of the distribution". Overall, their findings show no evidence for the efficient contracting hypothesis, since no overlap between CEO pay and firm performance was found.

Additional evidence of a missing link between CEO pay and firm performance was found in Nicola et al. (2016). Nicola et al. (2016) conducted a study to analyse the relationship between CEO compensation and total shareholder return (TSR) for Italian listed firms. They used a sample of 40 firms listed in the Milan Stock Exchange over the period of 2008-2014. They investigated whether the different components of CEO pay and total CEO pay are related to firm performance. The evidence of their study shows that CEO pay is not related to firm performance, as measured by TSR. The results of the study show no significant signs with either fixed, variable or total compensation variables and TSR.

Furthermore, Jeppson, Smith and Stone (2009) did not find a clear significant relationship between total CEO compensation and firm performance. In their study, they investigated the relationship of CEO remuneration on several firm performance measures across different industries in the USA. Even though, they find some correlations between different components of compensation and some firm performance measures, these results are not robust. On the contrary, their regression results only show that firm's total revenue is significantly related to some individual components of CEO compensation and total CEO compensation. However, this does not indicate firm performance, rather it indicates that larger firms in terms of total revenue pay their CEOs more remuneration (Jeppson et al., 2009).

On top of that, Nulla and Phil (2013) investigated the relationship between CEO pay and firm performance of TSX/S&P and NYSE listed firms. They used a sample of 240 firms over the period of 2005-2010. The results of their study did not find robust significant relationship between CEO base salary, annual bonus and total compensation (sum of base salary and annual bonus) and firm performance. Nonetheless, the significant relationships that were found, were rather weak. Overall, they concluded that there is no direct link between firm performance (ROA) and CEO compensation (Nulla & Phil, 2013).

Overall, empirical evidence has also found no significant relationship between CEO pay and firm performance. This missing links was found for base salary, annual bonuses, LTIP, other benefits as well as for total compensation.

2.5.1.4 The reversed causality between CEO pay and firm performance

The relationship to be investigated in this study is what the effect is of CEO compensation on the firm performance, in literature referred to as the motivation hypothesis (Buck et al., 2008). However, numerous studies have investigated the effect of firm performance on CEO compensation as well, which is referred to as the reward hypothesis (Buck et al., 2008). For example, Smirnova and Zavertiaeva (2017) have examined both directions of the relationship between CEO pay and firm performance. As previously mentioned, they find that higher paid CEOs also show higher firm performance. In addition, they find that accounting- and market-based firm performance measure are significantly and positively related to CEO pay as well (Smirnova & Zavertiaeva, 2017). More specifically, higher values of accounting-based performance measures show also higher levels of total pay (sum of base salary, annual bonus and other benefits) and annual bonuses. Whereas, market-based performance measures positively affect base salaries, total pay, and annual bonuses (Smirnova & Zavertiaeva, 2017). Further, the results of Smirnova

and Zavertiaeva (2017) show that the magnitudes of the effects of firm performance on CEO pay are much bigger than the magnitudes of the effects of CEO pay on firm performance. Similarly, Buck et al. (2008) investigated both direction as well. Besides their motivational hypothesis they also examined the reward hypothesis. In line with Smirnova and Zavertiaeva (2017), Buck et al. (2008) find a positive effect of accounting- and market-based firm performance on CEO compensation in China. In other words, they find that an increase in firm performance will result in an increase in CEO remuneration (Buck et al., 2008). Furthermore, Buck and colleagues acknowledge the bigger effect size of performance on pay, when compared to pay on performance as well.

On the contrary, there is also empirical evidence that found negative effects of firm performance on CEO compensation. As an illustration, Duffhues and Kabir (2008) examined the effect of firm performance on executive cash compensation (sum of base salary, annual bonus and other benefits). According to their study, firm performance is negatively related to CEO cash compensation in the Netherlands. Specifically, when firm performance is measured by accounting- or market-based performance measures, a highly significant and negative relationship between firm performance and cash compensation is found. These results indicate that the higher the firm performance is, the lower the CEO cash compensation. Further, in a robustness check, they find that firm performance, measured by Tobin's Q, is negatively and significantly related to total CEO compensation (sum of base salary, annual bonus, other benefits and the value of stock options) as well (Duffhues & Kabir, 2008).

Additionally, there are also studies that find rather weak or no significant relationships of firm performance on CEO compensation. Brick, Palmon and Wald (2006), for instance, found some significant and positive effects of firm performance on CEO compensation, however rather weak ones or highly ambiguous. While, Banghøj et al. (2010) examined the pay-performance sensitivity of privately-held firms in Denmark. According to their results, positive coefficients of firm performance on CEO compensation are found, however not significant (Banghøj et al., 2010). In a similar fashion, Fernandes (2008) examined the pay-performance relationship in the Portuguese context, and find no significant effect of firm performance on CEO compensation as well. Whereas, Cieślak (2018) find that the relationship between CEO pay and firm performance disappears in the last years (2010-2013) of the sample of 2001-2013 for Swedish listed firms.

Overall, the impact of firm performance on CEO compensation has been examined by numerous scholars as well. Despite this, in line with studies on the impact of CEO compensation on firm performance, highly ambiguous results have emerged. The results differ from positive and significant to negative or even no significant effects. However, most studies indicate that the magnitude of the effect of firm performance on CEO compensation is bigger than those found in studies examining CEO compensation on firm performance.

2.5.2 CSR performance

In addition to financial performance, other variables also show relationships with CEO pay. For example, several studies show that CEO pay is related to CSR (corporate social responsibility performance). According to Deckop, Merriman and Shurti (2006), the structure of an executive's compensation package is related to a firm's CSR performance. Specifically, compensation packages that are mainly short-term focused are related to firms that show lower CSR performance (Deckop et al., 2006). Whereas, compensation packages that are mainly long-term focused are related to higher CSR performance (Deckop et al., 2006). According to the researchers, CSR is likely to pay off in the long run rather than in the short run. Therefore, mainly short-term focused compensation packages do not incentivize CEOs effectively to improve long-term CSR performance. Noteworthy, even though the researchers did find an effect between CEO pay and CSR, the magnitude of these effects is rather small (Deckop et al., 2006). Similarly, McGuire, Oehmichen, Wolff and Hilgers (2017) examined the impact between CEO compensation and corporate social performance as well. Contrary to Deckop et al. (2006), they disentangled the effect of pay-performance sensitivity (PPS) and compensation horizon. The results show that PPS, which is the dollar change in CEO wealth with every dollar change in stock price, is negatively related to weak CSR performance as well as strong CSR performance (McGuire et al., 2017). This indicates that highly performance-sensitive compensation packages incentivize executives to engage in CSR enhancing practices, as well as that such compensation packages also encourage executives to only engage in these practices that will most likely enhance firm performance and thus CEO wealth (McGuire et al., 2017). Furthermore, they found that more long-term focused compensation packages are associated with higher CSR performance.

2.5.3 Firm's risk-taking

Another variable related to CEO pay is firm's risk-taking. Devers, McNamara, Wiseman and Arrfelt (2008) examined the impact of equity-based compensation on risk-taking behaviour in firms. According to their study, exercisable stock options have a non-linear relationship with risk-taking behaviour. More specifically, risk-taking is lower when CEOs hold lower values of exercisable stock options, and risk-taking increases as the CEO holds more of these stock options (Devers et al., 2008). However, this effect becomes insignificant at high values which indicates that after a certain level stock options do not increase risk-taking (Devers et al., 2008). Furthermore, Devers and colleagues also found that different types of equity compensation, such as non-exercisable stock options and restricted stock, have different impacts on risk-taking behaviours by executives. In addition, other studies such as Wu and Mazur (2018) and Miller, Wiseman and Gomez-Mejia (2002) found effects between CEO compensation and risk-taking behaviour/preferences in firms as well.

2.5.4 Merger and acquisition activities

In addition to CSR and risk-taking, also merger and acquisition (M&A) activities seem to be related to CEO pay. According to Sanders (2001), CEO stock ownership is negatively related to firm's engagement in M&A activities. This because when executives own stock in a firm, there is a chance to loose substantial value over their stock holdings when they engage in mergers or acquisitions (Sanders, 2001). On the other hand, the study shows a significant and positive relationship between stock options and acquisition activity. This could be explained by the fact that executives can benefit substantially with their stock options when an acquisition is announced, while stock options on the other side do not penalize executives when acquisitions fail (Sanders, 2001). Furthermore, Datta, Iskandar-Datta and Raman (2001) find that high equity-based compensated managers engage in acquisitions with lower acquisitions premium and acquire targets with higher growth opportunities (Datta et al., 2001). Contrary to this, Bliss and Rosen (2001) find that CEOs with more stock-based compensation were less likely to engage in M&A activities. Whereas, Lewellyn (2018) find a positive effect of in-the-money stock options compensation and retirement pay on cross-border acquisition activities.

2.5.5 Innovation effort

A fifth relationship is found for CEO pay on innovation efforts (R&D-spending). Balkin, Markman and Gomez-Meija (2000) examined the relationship between innovation and CEO compensation in high-technology firms. The results indicate a significant and positive relationship between short-term CEO compensation and R&D-spending and number of patents (innovation) in high-technology firms. Furthermore, these results were robust for both sample years (Balkin et al., 2000). However, less straightforward results are found for long-term CEO pay. This because only one of the two years showed a positive and significant effect of long-term CEO pay on innovation in high-technology firms. Moreover, no significant effects were found for the low-technology firms (Balkin et al., 2000). On the contrary, Fong (2010) did not find a direct effect between CEO total, cash and option compensation and R&D spending. However, Fong (2010) find that in low-intense R&D industries CEO total and cash underpayment is associated with a decrease in R&D spending. Whereas, in high-intense R&D industries CEO total and cash underpayment are more likely to have higher R&D spending (Fong, 2010). In addition, Lim (2015) find that when the total value of a CEO's restricted stock options is below previous year's value, the amount of money invested in R&D will increase. While, in situations where the CEO's total restricted stock options value is above previous year's value, R&D spending will decrease (Lim, 2015). Overall, much ambiguity exists among the results. However, evidence does show that CEO pay affects a firm's innovation efforts.

2.5.6 Cost of capital

Furthermore, another relationship is found for cost of capital and CEO pay. According to Kabir, Li and Veld-Merkoulova (2013), different components of CEO pay have different effects on a firm's cost of

debt. Their study shows that higher proportions of pensions payed to the CEO leads to a significant decrease in the cost of debt. Specifically, a 1% increase in pension pay is related to a decline of 0.7 to 1.7 basis points in the costs of debt of a firm (Kabir et al., 2013). Furthermore, the study by Kabir and colleagues shows that stock option grants and holdings have no significant impact on the cost of debt. Also, performance-vested stock options and cash bonus are not related to a firm's cost of debt. Whereas, the total value of restricted stock ownership by a CEO significantly increases the cost of debt (Kabir et al., 2013). Even more, Chen, Huang and Wei (2013) examined the impact of CEO compensation on the cost of equity. They find that a higher executive pay disparity, meaning the more a CEO earns relative to the other top-executives in the firm, is related to higher cost of equity capital (Chen et al, 2013). However, contrary to Kabir et al. (2013), they did not examine the impact of different pay components on the cost of equity capital. In short, CEO compensation influences the cost of a firm's capital. More specifically, affecting the cost of debt as well as the cost of equity.

2.5.7 Summary

To summarize, the literature shows that CEO pay affects numerous different variables. Namely, CEO pay affects financial firm performance, corporate social responsible performance, a firm's risk-taking, merger and acquisition activities, a firm's innovation effort and the firm's cost of capital. Besides, other studies also show that CEO pay can affect firm value (Barak, Cohen & Lauterbrach, 2011; Basuroy, Gleason & Kannan, 2014), customer satisfaction (Basuroy et al., 2014), firm size and profitability (Fong, Misangyi & Tosi, 2010) and IPO stock pricing (Amoruso & Beams, 2014). On the whole, CEO pay seems to influence a wide array of different kind of variables.

2.6 Corporate governance as a moderator between CEO pay and firm performance

As mentioned in the introduction of this chapter, the moderating effect of several different corporate governance variables on the relationship between CEO pay and firm performance will be investigated in this study. Based on the results of the reports from the Dutch Corporate Governance Monitoring Commission of Van Manen, *CEO tenure, presence of an audit committee, director independence on the firm's supervisory board* and *gender diverse supervisory boards* are added to the analysis as moderating variables. In this section, the impact of the four potential corporate governance moderators will be discussed based on evidence found in literature.

2.6.1 CEO tenure

CEO tenure is the amount of years/terms an executive serves as a CEO at a firm. CEOs who have been in charge for a longer period of time, could have managed to shape the company to their hands and that their efforts start to yield results. On the other side, new CEOs have to adapt to the company, and vice versa, therefore it could possibly take some time before the firm's performance improves. Scholars have examined the impact of CEO tenure on various different variables. Hou, Priem, and Goranova (2017)

examined whether different types of CEO remuneration show different effects on shareholder return when CEO tenure is added as a moderator to the model. According to their results, CEO tenure negatively affects the impact of stock options and annual bonuses on shareholder returns. More specifically, Hou et al. (2017) mention that in the first three years of CEO tenure the effect of stock options on shareholder return is positive, however this effect becomes negative when CEO tenure is six years or longer. Whereas, the effect of annual bonus on shareholder return becomes statistically insignificant after 12 years of tenure, but not negative. On the other side, Hou et al. (2017) mention that CEO tenure positively affects the impact of base salary on shareholder returns when CEO tenure is twelve years or longer. When CEO tenure is eight years or shorter, the relationship between base salary and shareholder return is negative.

Additionally, Nourayi and Mintz (2008) examined the impact of CEO tenure on the pay-performance relationship, since CEO tenure could be linked to earnings management. They hypothesized that newly hired CEOs are more likely to deflate accounting numbers, while longer tenured CEOs are more likely to inflate the firm's numbers to influence their remuneration. Therefore, the length of CEO tenure influences the choices a CEO makes for the firm and his own wealth, which could also affect shareholders' wealth and thus affecting the pay-performance relationship (Nourayi & Mintz, 2008). The results show that the correlation between firm performance and cash compensation (base salary + annual bonus) is positive and significant for the first-year CEOs, but negative and insignificant for the long-tenured CEOs. Furthermore, they find that total compensation (base salary + annual bonus + LTIP) is negatively and significantly related to firm performance for both newly and longer hired CEOs. On top of that, Nourayi and Mintz find firm performance is an important determinant of CEO cash compensation for short-tenured CEOs (first three years) but not for long-tenured CEOs (more than fifteen years). Overall, the results of their study show that CEO tenure has an impact on the relationship between CEO compensation and firm performance.

Moreover, evidence was found in Bulmash (2010), who postulates an impact of CEO tenure on the effect of CEO pay on firm performance as well. The results of Bulmash (2010) suggest an overall moderate positive effect of CEO compensation on firm performance, but this relationship was stronger for firms led by CEOs with longer tenures than for firms with shorter-tenured CEOs. These empirical findings support the claim that CEOs who are offered time to learn the business, time to develop experience to lead the business and develop a relationship with the board, have a stronger positive effect of CEO pay on firm performance (Bulmash, 2010).

In essence, the literature indicates that CEO tenure does have an impact on the relationship between CEO pay and firm performance. More specifically, evidence shows that CEO tenure can affect the effect different compensation types have on firm performance.

2.6.2 Audit committee

The audit committee is responsible for advising the executive board in order to warrant the quality of the business operations and financial reporting, as well as to take care of the firm's audit policies and risk

management. Taking everything into account, an audit committee can be of great importance in order to protect and increase firm performance. According to Agyemang-Mintah and Schadewitz (2018), financial institution in the UK that have established an audit committee show higher firm value. Additional evidence for a positive association between audit committees and firm performance is found in Al-Matari, Al-Swidi and Bt Fadzil (2014). They examined the impact of different corporate governance mechanisms on firm performance in the emerging market context of Oman. According to Al-Matari et al. (2014), there exists a significant and positive relationship between the independence of audit committees and firms performance when measured by Tobin's Q.

On the contrary, Barka & Legendre (2017) find that audit committees consisting of only independent directors is associated with lower firm performance. In their study, they examined the role of independent audit committees on the firm performance in large French Paris Stock Exchange listed firms. The results of their analysis show that a major independent audit committee is related to firms with lower return on capital. Moreover, they find that a high number of audit committee meetings is associated with low firm performance as well.

In addition, Laux and Laux (2009) mention that audit committees are an important corporate governance mechanism to mitigate earnings management by executives. According to them, an audit committee is responsible to "guard" the true and fair view the firm's financial statements give, and also maintain integrity in the firm's internal auditing process. They mention that when CEOs receive higher levels of stock-based compensations, a CEOs remuneration becomes more sensitive to the firm's performance. Consequently, CEOs are offered a greater incentive to manipulate financial numbers to increase their remuneration. Given this, Laux and Laux (2009) claim that the audit committee will change its monitoring policy to mitigate unfavourable effects of the incentive. Therefore, it is expected that an audit committee that monitors effectively could enhance the relationship between CEO pay and firm performance (Laux & Laux, 2009). Chang, Sun and Luo (2012) tested the model developed by Laux and Laux (2009), and find that there is indeed an association between audit committees and earnings management. More specifically, they find that due to the audit committees CEOs receive less equity-based compensation and therefore have less incentive to apply earnings management. Even though Chang et al. (2012) find support for the mitigating effect audit committees have on earnings management, they did not find support for enhancement of the pay-performance relationship.

Overall, the literature agrees on the proposition that audit committees can be of great importance for firm performance. However, there is no clear consensus on to what extent and under what circumstances audit committees contributes to improving firm performance and how it affects CEO pay.

2.6.3 Independent directors

In the literature, it is commonly postulated that independent non-executive directors are seen as an effective mechanism to protect shareholder value since they offer strategic advice, useful business contacts and they closely monitor the management team (Andrés, Arranz-Aperte & Rodriquez-Sanz,

2017). Ozerturk (2005) found out that independent boards have higher monitoring intensity and also increase the pay-performance sensitivity. The explanation is that more independent boards will put more effort in monitoring the CEO and therefore know more about the CEO. Consequently, there is less uncertainty about the CEO's ability and CEOs will be more adequately rewarded and thus the pay-performance sensitivity increases. Equally, Barka and Legendre (2017) find that mostly independent boards are associated with significantly higher economic (ROA) and equity (ROE) firm performance. Moreover, evidence shows that for large bank companies with poor financial performance, independent boards can be of great use to align the interests of the managers with those of the shareholders by arranging an effective compensation contract (Mishra & Nielsen, 1999).

On the contrary, Andrés et al. (2017) found that non-independent outside directors are more effective monitors than independent directors. They investigated the relationship between board structure and CEO compensation in Western-European firms. The results of their study show that CEOs receive lower cash compensation (sum of base salary, annual cash bonus and other benefits) and total compensation (all components as mentioned in section 2.1) when the firm's board consists of a large proportion of non-independent directors. Specifically, board with non-independent directors is associated with a reduction in direct compensation of 4.2% and of 21% in total compensation (Andrés et al., 2017). Whereas, a one standard deviation increase in the proportion of independent directors is associated with a 0.6% increase in direct compensation and a 51% increase in equity-based/LTIP compensation (Andrés et al., 2017). More evidence that questions the effectiveness of independent boards is found in Fernandes (2008). Fernandes (2008) examined Portuguese firms on the link between firm performance, board structure and CEO compensation. The results of the study suggest that firms with lower board independence have less agency problems and better alignment between the interests of managers and shareholders. Also, Capezio, Shields and O'Donnell (2011) find that independent non-executive boards are not better equipped than less independent executive-dominated boards in enhancing the relationship between CEO pay and firm performance.

In short, support for the proposition that independent director are an effective mechanism to protect the shareholder's value is not always found in literature. Some say, independent directors are more effective and will strengthen the pay-performance relationship. Others say, non-independent directors are more effective or no difference between independent and non-independent directors is found.

2.6.4 Gender diverse supervisory boards

Throughout the last couple of years, the impact of gender diversity has become an increasingly explored subject in business research. As mentioned by Lucas-Pérez et al. (2015), gender diversity in this context is concerned with the proportion of women and men on the firm's supervisory board. According to literature, supervisory boards consisting of both proportion of women and men are assumed to be more effective in monitoring the management (Gul, Srinidhi & Ng, 2011; Lucas-Pérez et al., 2015). The rationale behind this is that women on the supervisory board bring different perspectives to the board that

men do not have (Ahmadi, Nakaa & Bouri, 2018). Moreover, women bring more creativity, enhance relationships with stakeholders, and improve cooperation and counselling of the management (Ahmadi et al., 2018). Furthermore, women are assumed to be more critical than men and are less likely to be part of the "old boys" network, thus assumed to be more independent (Eagly, Johannesen-Schmidt & van Engen, 2003; Ahmadi et al., 2018). According to Lucas-Pérez et al. (2015), more women on the firm's supervisory board is significantly and positively related to higher levels of variable pay. Further, they also find evidence that a higher percentage of female members on the supervisory board leads to more adequately designed compensation packages that are more closely related to firm performance (Lucas-Pérez et al., 2015). Similarly, Sarhan, Ntim and Al-Najjar (2018) find that a higher percentage of women on the firm's supervisory board show stronger positive effects of CEO pay on firm performance in Middle Eastern countries. However, contrary to Lucas-Pérez et al. (2015), they did not find a direct effect between gender diversity and executive compensation (Sarhan et al., 2018). Furthermore, a significant and positive effect between gender diversity of the supervisory board, firm performance and firm value is also found by Ahmadi et al. (2018) and Sarhan et al. (2018).

On the contrary, there is also evidence indicating negative or no significant effects of gender diversity. For example, Rose (2007) examined for Danish firms the effect of gender diversity on firm performance. However, the result of their study shows no significant effects between the two variables. Whereas, Adams and Ferreira (2009) even find a negative effect between gender diverse supervisory boards and firm performance. According to them, gender diverse boards could lead to over-monitoring in some situation, with as a consequence decreasing firm value and performance (Adams & Ferreira, 2009).

Overall, even though there is some evidence indicating otherwise, most studies show a positive and significant effect of gender diverse supervisory boards and the effect CEO pay has on firm performance. This confirms the assumption that gender diverse boards are more effective at monitoring the management and aligning the interest of the management with those of the shareholders.

2.7 Hypotheses development

In the previous sections, different theories and empirical evidence that explain CEO pay and its effect on firm performance are discussed. In this section, the different theories and empirical evidence will be merged together to develop the hypotheses that will be examined and answered in this study.

2.7.1 Hypothesis 1: The effect of CEO pay on firm performance

According to the agency theory, due to the separation of ownership and control, shareholders and managers have conflicting interests. In order to align the interests of the two parties, an effective contract should be designed. This contract should give the managers the right incentives to maximize his own wealth and that of the shareholders. This alignment can be achieved by offering, for example, performance-based stock compensation to the manager so that he makes those decisions that will increase

his stock value, and simultaneously the stock value of the shareholders. Also, offering an adequate level of base salary, other benefits, other short-term and long-term variable compensation and total CEO compensation should effectively motivate the CEO to improve a firm's accounting-based as well as market-based firm performance. Given this, according to agency theory, a positive relationship between CEO pay and firm performance should be expected

Empirical evidence is found that supports the proposition of the agency theory. For example, Schaefer (1998) find that current top executive compensation has a positive influence on future firm performance. Abowd (1990) concluded that bonus payment for good performance is associated with an increase in firm performance in the upcoming year. In comparison, Smirnova and Zavertiaeva (2017) mention that bonuses used as performance-based compensation provide good incentives for executives to improve firm performance. Whereas, Hanlon et al. (2003) acknowledge the positive relationship between performance-based stock option grants and future firms performance. While, Conyon and Freeman (2004) support Hanlon et al. (2003) by showing that shared ownership compensation is positively related to productivity and therefore increases firm performance.

Furthermore, a second theory predicts a positive relationship between CEO compensation and firm performance. Namely, human capital theory claims that the accumulation of skills and knowledge obtained from, for example, education and working experience determines an executive's ability to succeed in his/her job. The prediction is that the more accumulated education and experience, the higher ones human capital, the more the firm is willing to pay to recruit/retrain the executive. Simultaneously, because of the skills and knowledge, the higher his/her performance at the firm. Evidence for the human capital theory is found in Custódio et al. (2013) who show that CEOs with higher human capital receive higher remuneration. Furthermore, Finkelstein and Hambrick (1989) find that a CEOs human capital is strongly positively related to bonuses. Whereas, Carpenter and Gregersen (2001) suggest that CEOs with international experience show a positive relationship with firm performance and higher compensation.

On the contrary, also negative and no significant relationships between CEO compensation and firm performance are found. These relationships are in line with the managerial power theory. This theory postulates that CEOs can (mis)use their power during the negotiations when determining the optimal compensation package. Due to this (mis)use of power, the CEO is able to extract additional rents from the firm at the cost of the shareholders and also camouflages this rent extraction. Consequently, there is no or a negative effect of CEO compensation on firm performance. However, evidence is found in Van Essen et al. (2015) who conclude that the theory is better equipped to explain levels of total compensation, but it is less suited to explain the pay-performance relationship. Furthermore, most theories predict a positive relationship between CEO compensation and firm performance, and these relationships are supported with empirical evidence.

Therefore, in accordance with the agency theory and human capital theory, the following ***hypothesis 1*** is formulated: ***CEOs that receive higher levels of CEO pay also show higher future firm performance***.

2.7.2 Hypothesis 2: Moderating role of CEO tenure

As already mentioned, CEO tenure is the amount of years/terms an executive serves as the CEO at a firm. There is a possibility that CEO tenure enhances the relationship between CEO compensation and firm performance as a moderator. According to human capital theory, the higher one's human capital the higher one's productivity and ability to succeed in his/her role (Malao, 2014). Since human capital is related to the accumulation of skills and knowledge obtained through education and working experience, an CEO that has served as an executive for a long period of time increased his/her skills and knowledge throughout the years as CEO. Therefore, the executive has higher human capital, is more productive and/or successful. Given this, the firm is willing to pay more to retain the CEO because of his/her unique skills and knowledge that is of great value for the firm (Combs & Skill, 2003).

In addition, closely related to human capital theory, evidence was found that indicates that CEOs and firms may need some time to adapt and get used to each other. As mentioned by Bulmash (2010), CEOs who are offered time to learn the business, develop experience to lead it and develop a relationship with the board have stronger positive effect of CEO pay on firm performance. This relationship was stronger for firms with long-tenured CEOs than for firms with shorter-tenured CEOs.

Furthermore, agency theory can also explain a moderating effect of CEO tenure on the relationship between pay and firm performance. In order to mitigate the agency problems between the managers and shareholders, the board should closely monitor the executive and also reward the CEO for what (s)he is worth. Given the fact that an CEO is longer employed by the firm, over the years, the board could become more effective and efficient in monitoring the CEO. Specifically, because of the long-term relationship between the manager and the firm, the board could be better able to monitor the manager's behaviour and therefore less incentives are required to urge the manager to behave in a certain manner (Stroh et al., 1996).

Altogether, based on implications of the human capital theory, agency theory and evidence found on CEO tenure, the following ***hypothesis 2*** is formulated: ***CEOs who longer hold the CEO position in a firm show a stronger positive effect of CEO pay on future firm performance.***

2.7.3 Hypothesis 3: Moderating role of audit committees

Audit committees can be an effective corporate governance mechanism to mitigate agency problems. They are responsible for advising the executive board, ensure quality of the firm's operations, financial reporting, audit policies and risk management. Given this, they monitor whether the financial statements of the firm give a true and fair view of the reality.

As postulated by the managerial power theory, CEOs could misuse their power to get a compensation contract of their own interest. This contract deviates from the optimal contract, which effectively incentivizes an executive to foster his own wealth goals as well as those of the shareholders. Evidence finds that CEOs use their power to enjoy higher base salaries, larger proportions of stock-based compensation and larger increases in total compensation than less powerful CEOs (Choe et al., 2014).

Moreover, Abernethy et al. (2015) find that CEOs misuse power to influence the adoption of performance-vested stock options, and also use their power to set easier targets to obtain these PVSOs. This could incentivize CEOs to take more risk, which could lead to losing substantial firm value. Furthermore, they can also report fraudulently higher earnings to boost stock prices and increase their remuneration (Hall & Murphy, 2003; Sanders & Hambrick, 2007; Jensen, 2004). Given that audit committees "guard" the quality of the firm's operations, financial reporting, audit policies and risk management, the presence of an audit committee could prevent, or at least limit, CEOs from misbehaving. Subsequently, enhancing the relationship between CEO pay and firm performance.

In addition, agency theory suggests that close monitoring of the executive mitigates agency problems. Supporting this, Agyemang-Mintah and Schadewitz (2018) find that UK firms with an audit committee show higher firm value. Furthermore, Al-Matari et al. (2014) find a significant and positive relationship between the independence of audit committees and a firm's performance. Whereas, Laux and Laux (2009) expect that an audit committee that monitors effectively could enhance the relationship between CEO pay and firm performance.

In essence, these implications lead to the following ***hypothesis 3***: ***Firms with a separate audit committee show stronger positive effects of higher levels of CEO pay on future firm performance.***

2.7.4 Hypothesis 4: Moderating role of independent directors

Agency theory assumes that the interests of managers and shareholder are not aligned. In order to align these interests, the supervisory board needs to create an optimal contract for the executive and closely monitor his/her performance (Ozerturk, 2005). However, there is no reason to assume ex ante that the directors on the supervisory board will act in line with the interest of the shareholders as well, which is opposed by the managerial power theory (Bebchuk & Fried, 2003). The directors may behave in such a way to safeguard their re-appointment to the board, securing attractive income, prestige and valuable business/social connections. This will be most prominent with supervisory boards consisting of non-independent members, since they are more prone to conflicts of interests with the CEO. This because conflicts with the CEO could lead to losing their supervisory board position, and thus losing an attractive salary, prestige and business relations. Therefore, the CEO could misuse his power to influence such non-independent members and gain control over the firm's board, and make it behave in his/her interest.

Independent (outside) directors, on the other side, are seen as less sensitive to this powerplay by CEOs. Independent directors have no connection with the firm or a person at the firm, or had no such connection in the past. On top of that, they do not receive compensation that dependents on the firm's results as well as have no direct or indirect substantial (more than 10%) share ownership in the firm. Therefore, they should be more effective in aligning the interests between managers and shareholders. This assumption is supported by Mishra and Nielsen (1999), who found that independent boards can be of great use to align the interests of the managers with those of the shareholders by arranging an effective compensation contract. Furthermore, Ozerturk (2005) suggests that independent boards have higher

monitoring intensity and also increase the pay-performance sensitivity. In addition, independent boards are associated with significantly higher firm performance (Barka & Legendre, 2017).

However, there is also evidence that claim negative effects of board independence or no difference between independent boards and non-independent boards (Andrés et al., 2017; Fernandes, 2008; Capezio et al., 2011). Notwithstanding, these claims are based on the managerial power theory. As mentioned before, this theory is useful in explaining levels of total compensation, but less suited to explain the pay-on-performance relationship (Van Essen et al., 2015). Therefore, in line with agency theory, the following ***hypothesis 4*** is formulated: ***Higher proportions of independent directors on the firm's board show stronger positive effects of higher CEO pay levels on future firm performance.***

2.7.5 Hypothesis 5: Moderating role of gender diverse supervisory boards

According to agency theory, the management should be closely monitored by the supervisory board to mitigate agency problems and align the interests between the management and shareholders. Furthermore, the literature postulates that gender diverse supervisory boards are more effective at monitoring the management (Gul et al., 2011; Lucas-Pérez et al., 2015). According to literature, supervisory boards with women on the board approach issues from different perspectives than men-only supervisory boards (Ahmadi et al., 2018). Additionally, women are more critical than men, bring more creativity, enhance relationships with stakeholders, improve cooperation and counselling of the management and are assumed to be more independent (Eagly et al., 2003; Ahmadi et al., 2018;). Likewise, support for the benefits of females on the supervisory board is found in Lucas-Pérez et al. (2015) and Sarhan et al. (2018). Whereas, both studies find that a higher percentage of female members on the board leads to more adequately designed compensation packages that are more closely related to firm performance.

Moreover, also from a human capital theory perspective female directors on the supervisory boards could be of great value. According to human capital theory, more diverse and higher levels of human capital implies that individuals are more likely to succeed in their jobs (Malao, 2014; Combs & Skill, 2003). As mentioned above, female members on the supervisory board bring new and more diverse knowledge and skills to the boards than men-only supervisory boards. Consequently, increasing the diversity and total level of human capital on the board. Subsequently, this should improve the supervisory board's effectiveness. Given this, based on human capital theory, a positive relationship between gender diverse supervisory boards and the effect CEO pay has on firm performance should be expected as well.

Overall, in line with agency theory and human capital theory, the following ***hypothesis 5*** is formulated: ***Firms with higher proportions of women on the supervisory board show stronger positive effects of higher CEO pay levels on future firm performance.***

3. Research method

In this chapter the research method will be discussed. First, a literature review will be given concerning the most common research methods in CEO compensation research. Second, the different research models applied in this study will be explained. Third and last, a section will describe the measurement of the variables of interest.

3.1 Methodology

3.1.1 Previous research

The relationship between CEO pay and firm performance has been studied extensively. However, the most common research method that has been applied to study the relationship is regression analysis. For example, the two previously mentioned studies on Dutch listed firms by Van der Laan et al. (2010) and Duffhues and Kabir (2008) also applied regression analysis to study the relationship between pay and performance. Furthermore, other scholars have used regression analysis as well (see for example, Carter et al., 2016; Basu et al., 2007; Bebchuk et al., 2011; Hanlon et al., 2003).

In addition, this study also aims to examine the impact of several moderators on that relationship. As well as for pay-on-performance, regression analysis is also the dominant stream of techniques to examine moderating effects. Fernandes (2008) used multiple regression analysis to examine the effect of board structure on CEO compensation and firm performance. Furthermore, other studies used regression analysis to examine the impact of CEO tenure on executive pay and firm performance (Hou et al., 2017; Nourayi & Mintz, 2008). Whereas, Jaiswall and Bhattacharyya (2016) utilized regression analysis to investigate the impact of board, ownership and CEO characteristics on the relationship between CEO pay and future firm performance. On top of that, Ntim et al. (in press) applied regression analysis for studying the impact of CEO power and governance structure on the pay-performance relationship. Finally, another study used regression analysis to examine the impact of compensation committee governance quality on the association between CEO compensation and firm performance (Sun, Cahan, & Emanuel, 2009).

On the contrary, noteworthy, there are studies using different methods to examine the relationship between CEO pay and firm performance. For example, Aguinis et al. (2018) used a power law distribution. Whereas, Buck et al. (2008) used Granger causality tests and GMM (generalized method of moments). While, Wu and Mazur (2018) used SEM (structural equation modelling). Regarding research of moderating variables, Capezio et al. (2011) used GMM to examine board independence as a moderator on the effect CEO pay has on firm performance. Nonetheless, these are rather exceptions than the rule for examining the pay-on-performance relationship.

Overall, regression analysis seems to be the major analysis technique for examining the relationship between CEO pay and firm performance and moderating variables. Therefore, to maintain consistency with previous research, regression analysis will be used in this study to answer the research question.

3.1.2 OLS

Regression analysis is one of the statistical research techniques to examine dependence among variables. In regression analysis the relationship between one dependent variable and one or several independent variable(s) is analysed. When there is one independent variable in the model it is called simple regression, when two or more independent variables are present it is called multiple regression (Hair, Black, Babin, & Anderson, 2010). It is by far the most universally applied and multifaceted method of the dependence technique family, since it could be used for a wide variety of business research questions (Hair et al., 2010). For example, regression analysis can be used to predict the national economy, firm's performance, explain how consumers make decisions, determine effectiveness of a programme and many more (Hair et al., 2010).

Within regression analysis there are different types of methods. There is, for example, logistic regression and linear regression. Logistic regression can be used in situations where the dependent variable is binary in nature, meaning that it can take only two categoric values (Hair et al., 2010). This type of regression does not fit this study, since the dependent variable is metric and can take any value. The type of regression that will be applied in this study is ordinary least squares multiple linear regression. This because there are multiple independent variables that will be examined on their linear effect on the dependent variable firm performance. Further, performing ordinary least squares is in line with previous research, since it also found in other studies examining the pay-on-performance relationship (e.g. Van der Laan et al., 2010; Duffhues & Kabir, 2008; Fernandes, 2008; Jaiswall & Bhattacharyya, 2016).

In order to apply the multiple regression analysis, certain assumptions have to be met. First of all multiple regression can only be applied when the dependent variable and independent variables are metric. This does not seem to be problematic, since in this study all variables are metric in nature. Second, the sample size should be large enough the maintain enough power. For simple regression 20 observation can be enough, however for multiple regression at least 50 or preferably 100 observations are needed to maintain enough power (Henseler, 2018a). Given this, there are 89 Dutch firms listed on the Euronext Amsterdam in the sample for which three years of data will be used to perform the OLS regression analysis. Given this, this results in a total sample size of 253 firm-year observations. Therefore, sample size does not seem to be a problem. Third, other assumptions such as linearity, homoscedasticity and normality also need to be assessed and met. At first, a univariate analysis will be performed to deliver descriptive statistics for checking the assumptions. In addition, normal probability plots will indicate normal distribution of the dataset. When needed, adjustments will be made to meet the assumptions, such as transforming data with logarithms or deleting outliers. Fourth, an important disadvantage of multiple regression analysis is the influence of potential multicollinearity. Multicollinearity can substantially limit the interpretation of the results (Hair et al., 2010). In order to check for multicollinearity, VIF values will be given. VIF values should at least be smaller than 10, but preferably smaller than 5, then there is no substantial multicollinearity among the variables to be problematic (Henseler, 2018a).

Overall, when all these assumptions are met and there are no anomalies, it is appropriate to perform a regression analysis. Given that the variables are metric in this study, the sample size seems to be large enough, assumptions such as linearity, homoscedasticity, normality and multicollinearity will be assessed, and relevant measures will be taken to meet these assumptions, a regression analysis can be performed.

3.1.3 Fixed and random effects

Along with regression analysis, many scholars have also applied fixed and random effects to their regression model (see for example Liang et al., 2015; Fernandes, 2008; Hou et al., 2017; Jaiswall & Bhattacharyya, 2016). Fixed and random effects models are applicable to control for individual and time differences for studies examining data of two or more units in two or more periods, also referred to as panel data (Mátyás & Sevestre, 2008). These models control for the presence of unobserved/omitted firm-specific and time-specific heterogeneity that could lead to bias in the OLS regression estimates (Fernandes, 2008; Hou et al., 2017). According to Mátyás and Sevestre (2008), a fixed effects model allows for 'arbitrary correlation' between the unobserved/omitted variable and the independent variables, whereas random effects models do not allow for such correlations. One important disadvantage of the fixed effects regression is that it does not allow the involvement of time-invariant independent variables in the model (Bell et al., 2018; Mátyás & Sevestre, 2008). This because the effect of such independent variables will be removed from the analysis when a fixed effect model will be employed (Bell et al., 2018). Furthermore, Mátyás and Sevestre (2008) note that the use of fixed effects models could be problematic with unbalanced panels. Whereas, Sanders and Hambrick (2007) add that fixed effects models have the tendency to deliver imprecise results when the sample has large number of units but a few periods of observations per unit. Additionally, they mention that fixed effects regression is preferred when the sample consists of a fixed and relatively small set of units of interest. While, random effects regression should be preferred when samples consist of a large number of randomly selected units of interest and a great chance of correlation between the independent variables and unit effects (Sanders & Hambrick, 2007). However, one could also perform the Hausman test to decide which regression model is to be preferred. The 'Hausman test' tests whether the two models deliver the same estimation results. When the Hausman test is not significant, the null hypothesis will not be rejected and a random effects model can be employed. However, when the Hausman test is significant, the null hypothesis will be rejected, indicating that both models do not deliver the same estimates, and one should apply the fixed effects model (Hou et al., 2017).

3.1.4 GMM

As previously mentioned, Capezio et al. (2011) and Buck et al. (2008) employed a generalized method of moments, abbreviated as GMM, to examine the relationship between CEO pay and firm performance. This method was also used by Hou et al. (2017). GMM is a method used in econometrics and statistics

developed by Lars Peter Hansen in 1982. This method offers the possibility to examine the relations of interest and draw meaningful conclusions, without having a fully specified or complete model (Becker Friedman Institute, 2013). GMM estimates parameters of a probability distribution (e.g. mean and standard deviation for normal distributions) (Janiec, 2012). In order to estimate these parameters, GMM determines the possible values of those distribution parameters that deliver the best possible fitting 'moments' (i.e. mean, variance, skewness and kurtosis) of the sample drawn from the distribution (Janiec, 2012). The Generalized Method of Moments has been used in numerous areas of economics, and especially finance (Hall, 2009). Furthermore, Buck et al. (2008) also used GMM to eliminate unobserved, time-invariant, individual-specific effects from the model to obtain consistent estimation results in causality tests. Whereas, Capezio et al. (2011) mention that GMM is preferred over OLS with fixed effects, since GMM accounts for potential endogeneity problems in dynamic panel models. GMM delivers more reliable estimates for dynamic panel models, because it corrects for panel-specific autocorrelation and heteroscedasticity (Capezio et al., 2011). However, in order to apply GMM, Roodman (2006) mentions that two tests should be performed to ensure instrument validity and adequate moment conditions. Specifically, the Hanson J-test should be performed to test the validity of instruments and the Arellano-Bond second-order autocorrelation test should be performed to exclude any autocorrelation (Roodman, 2006). When both tests show no statistical significance, it is appropriate to use GMM (Capezio et al., 2011).

3.1.5 Granger causality test

The Granger causality test is a statistical test to determine causality via predictions (Seth, 2007), which was used by Buck et al. (2008). This method was developed in the 1960s and has been broadly employed in economics since then (Seth, 2007). With Granger causality test, one can determine whether one variable "Granger causes" another variable. As an illustration, if one attempts to predict Z_{t+1} with past terms of W_t and X_t, and then tries to predict Z_{t+1} by adding past term Y_t to W_t and X_t. When the model with W_t, X_t and Y_t is found to be more successful in predicting Z_{t+1}, then Y_t contains information helpful in predicting Z_{t+1} (Seth, 2007). In other words, Y_t Granger causes Z_{t+1}. However, it is important to know that Granger causality only works when one comes before the other. For example, when Y happens before Z and thus causes Z. When, for example, Y_t possibly causes Z_{t+1} and Z_t possibly causes Y_{t+1}, then it is not useful to use a Granger causality test. In Granger causality test, the Granger causality only goes in one direction (Seth, 2007). To put it differently, Granger causality only measures and predicts whether one thing happens before the other. Besides this single direction criterion, Seth (2007) mentions that Granger causality tests also only work with linear relationships. Thus, Granger causality test is not useful for nonlinear relationships. However, extensions of the method do exist, but these can be difficult in practical use and are less well understood (Seth, 2007). Furthermore, as mentioned by Eichler (2012), Granger causality has been criticized for not measuring true causality. This because it does not take into account confounding effects and nonlinear relationships (Eichler, 2012). Overall, Granger causality test does not

seem to fit this study. This because empirical evidence has shown that the pay-performance relationship goes in both direction and also nonlinear effects of, for example, CEO tenure have been identified.

3.1.6 Structural equation modeling

Another method that has been used for executive compensation research is structural equation modeling, abbreviated as SEM (see e.g. Wu & Mazur, 2018). Where measurement error can be problematic for multiple regression analysis, SEM directly addresses this issue (Henseler, 2018a). Furthermore, most multivariate analysis techniques, such as multiple regression analysis, can only examine one relationship at a time (Hair et al., 2010). SEM, on the other hand, can examine a series of dependence relationships simultaneously (Hair et al., 2010). This method contains two models, namely the measurement model and the structural model (Henseler, 2017). The measurement model represents the relations between the latent variables and their indicators, whereas the structural model shows the relationships between the endogenous and exogenous variables (Hair et al., 2010). The aim of SEM is to deliver a model that gives a true representation of the reality. This is achieved by minimizing the discrepancy between the empirical covariance matrix and the theoretical implied covariance matrix. The smaller the discrepancies, the better the model fit, and thus the closer the model is to predicting the 'real world' (Hair et al., 2010; Henseler, 2017; Henseler, 2018b). Further, SEM does not have strict data requirements since different measurement levels for variables can be used, for example metric, quasi-metric and dichotomous variables (Henseler, 2018b). Also, SEM does not require distributional assumptions, such as normality and skewness (Henseler, 2018b). However, a big disadvantage of not having these strict data requirements is that no statistical tests can be employed (Henseler, 2018b).

3.1.7 Endogeneity problem

In sub-section 3.1.2 OLS, several challenges are discussed that can limit the interpretation of the outcomes of the OLS regression analysis applied in this study. However, another important problem that could limit this study's outcomes' interpretation is the endogeneity problem, more specifically reversed causality. Many researchers already examined the relationship between CEO pay and firm performance, and in both directions. This means that CEO pay can determine firm performance, referred to as the incentive/motivation hypothesis, as well as that firm performance can determine CEO pay, referred to as the reward hypothesis (Buck et al., 2008). Given this, it is important to be aware of this bi-directional relationship, otherwise it could significantly limit the interpretation of the analysis' outcomes.

This reversed causality problem is acknowledged by numerous scholars. For example, Carter et al. (2016) mention the possibility of endogeneity between CEO pay and firm performance. They acknowledge the possible reversed causation that performance may determine pay, and, if so, possible correlation with the error term in that high levels of performance may also result in high levels of pay. In order to limit the impact of endogeneity, they apply a one year lead into their model. More specifically, the dependent variable firm performance is determined for t+1, with CEO pay at year t as the independent

variable (Carter et al., 2016). In addition, to address the same problems, using lead variables in the regression model is also applied by Sun et al. (2009) and Balafas and Florackis (2014). Furthermore, there are studies that did acknowledge the problem, but did not take measures because of negative side-effects of those measures (Van der Laan et al., 2010; Jaiswell & Bhattacharyya, 2016).

Moreover, another method to tackle endogeneity problems is to apply a two-stage least squares approach. Several studies have applied this method to control for correlation with the error term and reversed causality problems (Sun et al., 2009; Abernethy et al., 2015; Smirnova & Zavertiaeva, 2017). A two-stage least squares procedure predicts variable estimates in the first stage to control for possible endogeneity. Those predicted estimates will be subsequently applied in the second stage to estimate the regression results for, for example, the effect of CEO pay on firm performance. Also, a three-stage least squares approach could be applied to control for endogeneity (see Ozdemir, Kizildag and Upneja, 2013). This method is assumed to be asymptotically more efficient and incorporates cross-equation covariation in the process when compared to the two-stage least squares approach (Ozdemir et al., 2013). However, the biggest problem will be reversed causality in this study and will be tackled by using a one-year lead for the dependent variables. Therefore, a two-stage or three-stage approach will not be applied.

Overall, reversed causality is an important problem that needs to be addressed in this study. Therefore, in line with other studies, a one-year lead will be applied to the models in order to mitigate endogeneity problems. This means that in this study, the effect of independent variable CEO pay at times t will be examined on dependent variable firm performance of year t+1 (subsequent firm performance).

3.2 Research model

In order to answer the research question and the hypotheses, OLS regression analyses will be conducted. This is in line with other empirical literature on the effect of CEO pay on firm performance. The study will be conducted using an ordinary least square regression approach with one-year-lead variables. The study consists of two equations, a model for testing hypothesis 1 and a second model to test the impact of the different moderators on the pay-performance relationship (i.e. hypothesis 2 to 5).

3.2.1 Testing the effect of CEO pay on firm performance (model 1)

In order to test the effect of CEO pay on firm performance, the variable CEO pay is added to the OLS regression model as an independent variable along with several control variables. The dependent variable in the model is the one-year lead (t+1) firm performance. This model is based on Carter et al. (2016) and Smirnova and Zavertiaeva (2017). To test hypothesis 1, the following model will be applied:

Hypothesis 1: $PERF_{i,t+1} = \beta_0 + \beta_1 PAY_{i,t} + \beta_x \, CONTROLS_{i,t} + \varepsilon_{i,t+1}$

Where:

$PERF_{i,t+1}$ = firm performance of firm i in year t + 1 (one year ahead)

$PAY_{i,t}$ = CEO pay of firm i in year t

$CONTROLS_{i,t}$ = firm size and leverage of firm i in year t, plus industry dummies and time dummies

$\varepsilon_{i,t+1}$ = idiosyncratic error term of firm i in year t

3.2.2 Testing the moderating effect of corporate governance (model 2)

In this study also the moderating effect of *CEO tenure, presence of audit committees, board independence* and *gender diverse (supervisory) boards* on CEO pay-firm performance will be examined. In order to test these hypotheses, a second model will be applied. In this second OLS regression model, one moderating variable at a time and the interaction term with CEO pay will be added. The model is based on Carter et al. (2016) and Sun et al. (2009). To test the hypotheses 2 to 5, the following model will be applied:

Hypothesis 2-5: $PERF_{i,t+1} = \beta_0 + \beta_1 PAY_{i,t} + \beta_2 CG_{i,t} + \beta_3\ PAY_{i,t} * CG_{i,t} + \ \beta_x\ CONTROLS_{i,t} + \ \varepsilon_{i,t+1}$

Where:

$PERF_{i,t+1}$ = firm performance of firm i in year t + 1 (one year ahead)

$PAY_{i,t}$ = CEO pay of firm i in year t

$CG_{i,t}$ = moderating corporate governance variable of firm i in year t

$PAY_{i,t} * CG_{i,t}$ = interaction effect between CEO pay * corporate governance variable of firm i in year t

$CONTROLS_{i,t}$ = firm size and leverage of firm i in year t, plus industry dummies and time dummies

$\varepsilon_{i,t+1}$ = idiosyncratic error term of firm i in year t

3.3 Measurement of variables

In this section, the measurement of the variables that are included in the research models, mentioned in the previous section, will be discussed. First, the dependent variable firm performance is described. Then, the independent variables CEO pay, CEO tenure, audit committees, board independence and gender diverse supervisory boards are described. After that, the measurement of the control variables firm size, firm leverage, industry dummies and time dummies are described. This section will end with a tabulated overview of all the variables and their measurements.

3.3.1 Dependent variable

The dependent variable in this study is firm performance ($PERF_{i,t+1}$). As previously mentioned, in the research model this variable will have a one-year lead. In the literature on pay-on-performance research, the measurement of firm performance can be classified into two categories, namely accounting-based measurements and market-based measurements (also acknowledged by Smirnova & Zavertiaeva, 2017). Given this, in this study both types of performance measures will be incorporated. For accounting-based firm performance, this study uses ROA (EBIT / total assets). This measure of accounting-based firm performance is by far the most used in pay-on-performance research (e.g. Duffhues & Kabir, 2008; Smirnova & Zavertiaeva, 2017; Carter et al., 2016; Jaiswall & Bhattacheryya, 2016; Nourayi & Mintz, 2008). Therefore, using this measure is in line with previous studies and increases comparability of results. For market-based firm performance, this study uses RET ([stock price$_t$ + dividend$_t$ – stock price$_{t-1}$]/stock price$_{t-1}$). This measure indicates the firm's performance by calculating the firm's annual stock return. RET is a very common market-based measure to capture a firm's market performance (e.g. Basu

et al., 2007; Fernandes, 2008; Hou et al., 2017; Duffhues & Kabir, 2008; Nourayi & Mintz, 2008). Given this, using RET to measure a firm's market performance is in line with previous studies and increases comparability of results.

Overall, it is possible to measure firm performance with accounting-based measures as well as market-based measures. Therefore, in this study both type of measurements will be included. To measure accounting-based performance ROA will be used, to measure market-based performance this study will use RET.

3.3.2 Independent variables

3.3.2.1 CEO Pay

As previously discussed, an CEO's compensation package consists of numerous different components. However, most remuneration packages consist of basic salary, annual bonus, stock options and other benefits such as perks (Smirnova & Zavertiaeva, 2017; Murphy, 1999; Frydman & Jenter, 2010). Different studies have used different measures to determine CEO pay, depending on their research objective. Some studies used only cash compensation (base salary and annual cash bonuses) (e.g. Basu et al, 2007), others used only stock-options (e.g. Sun et al, 2009; Hanlon et al., 2003), but also several studies used total CEO compensation (e.g. Carter et al., 2016; Jaiswall & Bhattacharyya, 2016; Bebchuk et al., 2011). While, other studies have used both cash and total compensation (e.g. Duffhues & Kabir, 2008; Nourayi & Mintz, 2008;).

However, throughout the last years, regulations and disclosure requirements have improved significantly around the globe, and also in the Netherlands. Up till now, basically, every annual report of a public listed firm in the Netherlands reports executive's annual base salaries, other benefits (including pensions, social securities, expense allowances et cetera), short-term incentive pay and long-term incentive pay. Therefore, in line with Smirnova and Zavertiaeva (2017), this study analyses the effect of CEO pay ($PAY_{i,t}$) by disentangling the effect of the different components of executive compensation as presented in the Dutch annual reports. More specifically, the impact of base salary, other benefits (including pensions), variable incentivized pay (the sum of short-term and long-term incentivized pay) and total compensation on firm performance will be examined individually. Furthermore, in line with other studies, CEO pay will be expressed by a natural logarithm to adjust for the non-normal distribution of compensation and endogeneity problems (Nourayi & Mintz, 2008; Duffhues & Kabir, 2008).

In short, the effect of CEO pay will be examined by using base salary, other benefits (including pensions), variable incentivized pay and total compensation separately in the OLS regression analysis. Furthermore, the measures will be expressed by a natural logarithm to meet the normality assumption of regression analysis, and mitigate endogeneity problems. The beta-coefficients of the $PAY_{i,t}$ variables should be positive and significant to support hypothesis 1.

3.3.2.2 CEO tenure

The first moderator that will be examined is CEO tenure. As previously mentioned, it is expected that the longer a CEO holds his CEO position in a firm, the stronger the positive effect of CEO pay on firm performance. In order to include this variable into the model, CEO tenure will be measured as the number of years that have passed since the person was appointed as CEO. This measure of CEO is in line with many other studies. For example, Basu et al. (2007) measured CEO tenure as the number of years in that position as per 31 July of each year. Whereas, Bebchuck et al. (2011), Hou et al. (2017) and Sun et al. (2009) measured it as the number of year that have passed since the executive's appointment as CEO. Furthermore, Jaiswall and Bhattacharyya (2016) expressed CEO tenure as a natural logarithm of the number of years since the appointment. Additionally, Nourayi and Mintz (2008) expressed CEO tenure as the number of months since the appointment.

Overall, CEO tenure can be measured several different ways. However, the most common definition of CEO tenure is the number of years that have passed since the executive was appointed as CEO. Therefore, that definition will be used in this study to measure CEO tenure. The beta-coefficient of the interaction term $PAY_{i,t}$ * $CEO\_Ten_{i,t}$ should be positive and significant to support hypothesis 2.

3.3.2.3 Audit committees

The second moderator that will be examined is the presence of an audit committee. According to hypothesis 3, the presence of a separate audit committee positively affects the relationship between CEO pay and firm performance. This means that in this study the presence of a separate audit committee should be measured by the variable. Given this, the variable can take only two values, namely a separate audit committee is present or there is no separate audit committee present. Therefore, the moderating effect of the audit committee will be measured with a dummy variable. The value 0 indicates 'no audit committee present', and the value 1 indicates 'audit committee present'. This type of measurement is in line with the study of Agyemang-Mintah and Schadewitz (2018). They examined the impact of audit committee presence on the firm value. Since this hypothesis aims to examine the impact of audit committee presence on the relationship between CEO pay and firm performance, using this dummy variable allows to examine this effect. The beta-coefficient of the interaction term $PAY_{i,t}$ * $AC\_dummy_{i,t}$ should be positive and significant to support hypothesis 3.

3.3.2.4 Independent directors

The third moderator of the study is independent directors. It is expected that more independent firm boards (both total board of directors and supervisory boards) will increase the strength of a positive effect of CEO pay on firm performance. To test this proposition, the variable has to measure the proportion of independent members on the firm's board. In the Netherlands, firms have a two-tier structure which means that the executive directors (management board) and non-executives directors (supervisory board) are sitting on two separate boards. Whereas, firms in other countries mostly have a one-tier structure, which means that both the executive and non-executive directors are sitting on the same one 'board of

directors'. Therefore, in order to improve comparability, the firm's board is defined as the sum of members sitting on the firm's management board and supervisory board. Given this, Indep_dir is defined as the number of non-executive directors serving on the firm's supervisory board who are independent, divided by the sum of members on the firm's management board and supervisory board. This measure is in line with other studies, such as Mishra and Nielsen (1999), Fernandes (2008) and Carter et al. (2016). These studies measured board independence as the percentage of directors who are non-executive and independent relative to the total number of board members. Members are deemed as independent as they meet the requirements regarding independence as stated in the corporate governance code, which is also mentioned in the firm's annual report. Furthermore, as a robustness check, Indep_dir[2] will also be measured as the percentage of independent members on the firm's supervisory board, according to the requirements of the corporate governance code, relative to the total number of members sitting on the firm's supervisory board only. In order to support hypothesis 4, the beta-coefficient of the interaction term $PAY_{i,t}$ * Indep_dir should be positive and significant.

3.3.2.5 Gender diverse supervisory boards

The last moderator to be included in the analysis is gender diversity of the supervisory board. This moderator tests the fifth hypothesis, proposing that higher proportions of women on the firm's supervisory board enhance a positive effect of CEO pay on firm performance. In order to test this, the variable has to measure the proportion of females serving on the supervisory board. Therefore, SB_diverse is defined as the percentage of female directors of the total numbers of directors serving on the supervisory board. Using this measure for gender diverse supervisory boards is in line with other studies. For example, studies by Ahmadi et al. (2018), Adams and Ferreira (2009), Lucas-Pérez et al. (2015) and Sarhan et al. (2018). All these studies used the percentage of female directors on the supervisory board, calculated as the number of female directors divided by the total number of directors on the supervisory board. Furthermore, as a robustness test, SB_diverse[2] will also be measured as the percentage of total female members on the firm's management board and the firm's supervisory board, divided by the total members sitting on the firm's management board and supervisory board. The beta-coefficient of $PAY_{i,t}$ * $SB\_diverse_{i,t}$ should be positive and significant to support hypothesis 5.

3.3.3 Control variables

Besides testing the relationship between the dependent - independent variable and several moderators, also several control variables will be included in the model. This because, there is a possibility that other variables could influence the relationship between CEO pay and firm performance when they are omitted from the analysis. Since these variables could affect the interpretation of the results, the model should control for these variables. The control variables added to the analysis are firm size, leverage and industry effects and year effects. These variables will be discussed here below.

The first control variable is firm size. The model will control for firm size, since larger firms are assumed to show higher firm performance. As mentioned by Fernández et al. (2018), the higher firm performance can be explained by higher degree of diversification, more opportunities and positive effects of economies of scale and being better equipped to survive dynamic environments. Therefore, the model will control for firm size. Firms size will be expressed as the natural logarithm of the firm's total number of employees, which is in line with other studies such as Van der Laan et al. (2010). This study will use the total number of employees, since using total assets to control for firm size is highly correlated with the CEO pay variables. This could introduce unwanted multicollinearity to the model, which could limit the reliability and validity of the regression results.

The second control variable is leverage. As previously mentioned, leverage can function as a substitute to discipline and incentivize an executive. This could influence the results of the analysis, since a weak or negative effects of CEO pay on firm performance could be caused by omitting the firms leverage variable. Furthermore, high leverage also limits the possibility for managers to invest in high growth business investments, since they have less money left due to higher expenditures regarding interest and loan (re)payments. Given this, this could limit a firms growth potential and firm performance. Therefore, to prevent leverage to influence the regression results, the model will control for firm leverage. Leverage will be measured as the amount of total book value of debt / total book value of assets. This measure is in line with Duffhues and Kabir (2008) and Sun et al. (2009).

The third control variable is industry effects. According to literature, the industry in which a firm is operating could affect its firm performance (Fernández et al., 2018). The rationale behind this proposition is that industries differ among each other regarding structure and characteristics, which subsequently influences firm profitability and performance (Fernández et al., 2018). Further, Schmalensee (1985) find that industry effects explain around 20% of the variance in a firm's ROA. Whereas, other studies have shown that the pay-performance relationship can also differ among industries (Duffhues & Kabir, 2008; Ely, 1991; Aggarwal and Samwick, 1999). Therefore, industry dummies will be included in the model to account for industry-specific conditions that could affect firm performance. Controlling for industry effects is in line with previous studies (e.g. Smirnova & Zavertiaeva, 2017; Ozdemir et al., 2013; Carter et al., 2016). The industry dummies are based on the NACE Rev. 2 classification, which is based on the study of Smirnova and Zavertiaeve (2017).

Finally, the model will also control for year effects. The data used in this study is collected over three years. Specifically, the CEO pay data and corporate governance data will be collected for the years 2014 to 2016. Whereas, the firm performance data will be collected for the years 2015 to 2017. In order to exclude that specific effects in (a) specific year(s) could have affected the regression results, the models will also include year dummies to control for such year effects. Controlling for year effects this way is also in line with other studies by, for example, Smirnova and Zavertiaeva (2017), Duffhues and Kabir (2008) and Carter et al. (2016).

3.4 Robustness tests

In order to find out if the OLS regression results found with the models from section 3.2 also hold under different circumstances, additional robustness tests will be conducted. The first additional test involves replacing the firm performance measures with other identical measures, by replacing ROA for ROS (EBIT/total sales) as the accounting-based firm performance measure and replacing RET for Tobin's Q as the market-based firm performance measure. This is done to exclude that measurement error in the variables could have affected the results. Furthermore, a second test will replace the *firm size* variable, as measured by total number of employees, for a firm size variable that is measured using total sales. In addition, a third test will replace the control variable *BV_Leverage* for *MV_leverage*. More specifically, instead of using the accounting-based leverage measure a market-based measure of leverage will be used. Finally, a fourth robustness test will regress the 3 year averaged CEO pay variables on the 3 year averaged firm performance variables, which is in line with studies by, for example, Duffhues and Kabir (2008) and Carter et al. (2016). This is done to obtain a more stable indicator of the variables that is less affected by single-year results. Also, it will also address for the mean-reverting tendency of the firm performance measure (Carter et al., 2016).

See Table 3.1 on the next page for an overview of all variable measurements.

Table 3.1 – Overview of variable measurements

Variable	Expected beta-sign	Definition	Source(s)
Firm performance ($PERF_{i,t+1}$)			
ROA_{t+1}		$\frac{\text{EBIT}}{\text{Total assets}}$	(Carter et al., 2016; Duffhues & Kabir, 2008; Nourayi & Mintz, 2008)
ROS_{t+1}		$\frac{\text{EBIT}}{\text{Total sales}}$	(Duffhues & Kabir, 2008)
RET_{t+1}		$\frac{\text{Stock price}_t + \text{dividend}_t - \text{stock price}_{t-1}}{\text{Stock price}_{t-1}}$	(Duffhues & Kabir, 2008; Nourayi & Mintz, 2008)
Tobin's Q_{t+1}		$\frac{\text{Market value equity + book value total debt}}{\text{Book value total assets}}$	(Bebchuck et al., 2011; Duffhues & Kabir, 2008)
CEO pay ($PAY_{i,t}$)			
Ln_CEO_BS	+	Natural logarithm of the base salary paid to the CEO	(Nourayi & Mintz, 2008; Smirnova & Zavertaeva, 2017)
Ln_CEO_OB	+	Natural logarithm of the sum of other benefits paid to the CEO *(see section 2.1.4 for what is all included)*	(Nourayi & Mintz, 2008; Smirnova & Zavertaeva, 2017)
Ln_CEO_VP	+	Natural logarithm of the sum of variable pay paid to the CEO [short-term (annual bonus); and long-term (stock options, restricted stock etc.)]	(Nourayi & Mintz, 2008; Smirnova & Zavertaeva, 2017)
Ln_CEO_TC	+	Natural logarithm of the sum of base salary, other benefits and variable pay	(Nourayi & Mintz, 2008; Smirnova & Zavertaeva, 2017)
Moderating corporate governance variables ($CG_{i,t}$)			
CEO_Ten	+	number of years that have passed since the executive was appointed as CEO	(Bebchuck et al., 2011; Hou et al., 2017; Sun et al., 2009)
AC_dummy	+	0 = the firm has no audit committee 1 = the firm has an audit committee	(Agyemang-Mintah & Schadewitz, 2018)
Indep_dir	+	$\frac{\text{Number independent SB (non-executive) members}}{\text{All MB (executive) members + all SB (non-executive) members}}$	(Carter et al., 2016; Fernandes, 2008; Mishra & Nielsen, 1999)
Indep_dir[2]	+	$\frac{\text{Number independent SB (non-executive) members}}{\text{Total number of SB (non-executive) members}}$	
SB_diverse	+	$\frac{\text{Number female SB (non-executive) members}}{\text{Total number of SB (non-executive) members}}$	(Adams & Ferreira, 2009; Ahmadi et al., 2018; Lucas-Pérez et al., 2015; Sarhan et al., 2018).
SB_diverse[2]	+	$\frac{\text{Sum of female members on MB and SB}}{\text{Sum of total MB (executive) members and SB (non-executive) members}}$	
Control variables ($CONTROLS_{i,t}$)			
Ln_Employees (size 1)	+	Natural logarithm of the number of employees	(Van der Laan et al., 2010)
Ln_Sales (size 2)	+	Natural logarithm of firm's total sales	(Basu et al., 2007; Nourayi & Mintz, 2008)
BV_leverage	-	$\frac{\text{Book value total debt}}{\text{Total assets}}$	(Duffhues & Kabir, 2008; Sun et al., 2009)
MV_leverage	-	$\frac{\text{Book value total debt}}{\text{Book value total debt + market value of equity}}$	(Carter et al., 2016; Smirnova & Zavertiaeva, 2017)
Industry dummies		Dummy variables based on the NACE Rev. 2 classification	(Smirnova & Zavertiaeva, 2017)
Time dummies		Dummy variables to determine year effect from 2014-2017	(Duffhues & Kabir, 2008; Smirnova & Zavertiaeva, 2017)

4. Sample and data

In this chapter, the data used in this study is described. This chapter discusses the data collection, sample size and other characteristics regarding the data used to perform the OLS regression.

4.1 Sample

4.1.1 Sample size

This study examines the effect of CEO pay on subsequent firm performance for Dutch listed firms. Therefore, the firms listed on the Amsterdam Euronext have been used to create the sample. As per 26 January 2019, a list of all listed firms/equities on the Amsterdam Euronext is retrieved from the official website of Euronext[1]. Setting the parameters at Amsterdam Euronext, this resulted in a list of 144 listings on the stock exchange. First of all, there were numerous firms that have more than one stock registered on the exchange (e.g. Heineken Holding, Philips Buy Back, Value8 Cum Pref). In these situations, the one that represents the firm is maintained in the sample, and the double registration was removed from the sample. This resulted in removing 12 double registrations from the sample. Furthermore, this study focusses on Dutch firms only. Given this, there are numerous firms that are cross-listed on the Amsterdam Euronext but have no operations in the Netherlands or have no Dutch origin at all. To illustrate, Yatra and Brookfield Asset Management are both firms that are headquartered in India (Gurugram) and Canada (Toronto) respectively, and have no further operations in the Netherlands or Dutch origin. Therefore, such non-Dutch firms are excluded from the list as well. Subsequently, this leads to excluding 26 firms from the list. Additionally, there are also firms excluded from the sample because of insufficient/missing information. For example, Alfen N.V. and VolkerWessels went public in respectively 2018 and 2017 and have no annual reports for the sample years of this study, therefore no CEO pay and corporate governance data for 2014 to 2016. Whereas, other firms such as Hunter Douglas and Oranjewoud did not report individual CEO pay data in their annual reports. Also, Ease2pay N.V. and Dutch Star Companies One N.V. had no operations during the sample period. Therefore, these firms are excluded from the sample as well. Overall, another 16 firms are excluded from the sample because of insufficient, missing and unusable information. To add, 1 firm has been identified as an outlier and excluded from the sample as well. In this case, IEX Group has been excluded since it is an online platform, which is not a typical firm and thus substantially differs in comparison to the other firms in the sample. Taking everything into account, this results in a total sample of 89 Dutch firms listed on the Amsterdam Euronext. See, Table 4.1 on the next page for a summarization.

[1] https://www.euronext.com/en/equities-directory

Table 4.1 – Determining the sample firms

(Remaining) sample size	Reason for exclusion	Number of excluded firms
Initial sample	All firms listed on the Amsterdam Euronext	
144	Exclusion of firms with more than one listing	**-/- 12**
132	Exclusion of firms that are not headquartered in NL, no operation in NL and/or no Dutch origin	**-/- 26**
106	Exclusion of firms that have insufficient, unusable or no data for the sample period of 2014 – 2017	**-/- 16**
90	Firms identified as outlier	**-/- 1**
89	Final sample size	

For these 89 Dutch firms listed on the Amsterdam Euronext, not all firms have data for every sample year. For example, FlowTraders and Altice Europe N.V. had their IPOs in 2014 and therefore no annual report (i.e. CEO pay and corporate governance data) for 2014 was available. However, for 2015 and 2016 these data were available. While, Signify N.V. and Takeaway.com had annual reports as of 2016 and thus no annual report prior to that year was available. For these firms, they are incorporated in the sample for the years where annual reports are available. As a result, the number of firms included in every year ranges from 79 in 2014 to 89 in 2016. In essence, this produces a total of 253 firm-year observations. See Table 4.2 below for the number of firms for every year, total firm-year observations and its distribution among the four Amsterdam Euronext indices in the final sample. Also, see Appendix A1 for a list of names of the firms in the final sample.

Table 4.2 – Number of the final sample firms per year and their distribution among indices

		YEAR			
		2014	**2015**	**2016**	**Total**
INDEX	**AEX**	21	22	23	66
	AMX	19	21	22	62
	AScX	18	19	21	58
	Lokaal	21	23	23	67
	Total	**79**	**85**	**89**	**253**

4.1.2 Industry classification

As mentioned earlier, in this study the models will control for industry effects by including industry dummies. These industry dummies are based on the NACE Rev. 2 classifications. On the other hand, some studies also used the US SIC codes. However, using the NACE Rev. 2 or the US SIC codes does not lead to different firm classifications and industry groups for this sample. Furthermore, the NACE Rev. 2 classifications are composed by the European Commission and the Netherlands is an EU-member, therefore using the NACE Rev. 2 codes will be preferred in this study. The NACE Rev. 2 has 21 different

classifications, that range from "Agriculture, Forestry and Fishing" to "Activities of Extraterritorial Organisations and Bodies". Furthermore, when controlling for industry effects, it is important to have enough observations per industry group. Obviously, given the number of firms in the sample, not all these categories will be present in the sample. Specifically, the 89 firms in the sample are classified in 13 out of the total 21 categories of the NACE Rev. 2 classifications. Given this, some categories only contain 1, 2 or 3 observations, which could be problematic to obtain valid results. Therefore, in line with Smirnova and Zavertiaeva (2017), new groups will be formed based on the NACE Rev. 2 classification to obtain a greater number of observation per group. The 13 different industry classifications have been regrouped into 5 categories. Namely, 1 – "Commodities, retail and transport", 2 – "Manufacturing", 3 – "Real estate and construction", 4 – "Financial, insurance and administrative services", 5 – "Other service companies". See Table 4.3 below for an overview of the firms per category prior to the reclassification and after the reclassification. For more detailed overview of firm per NACE Rev 2 classification see Appendix A2.

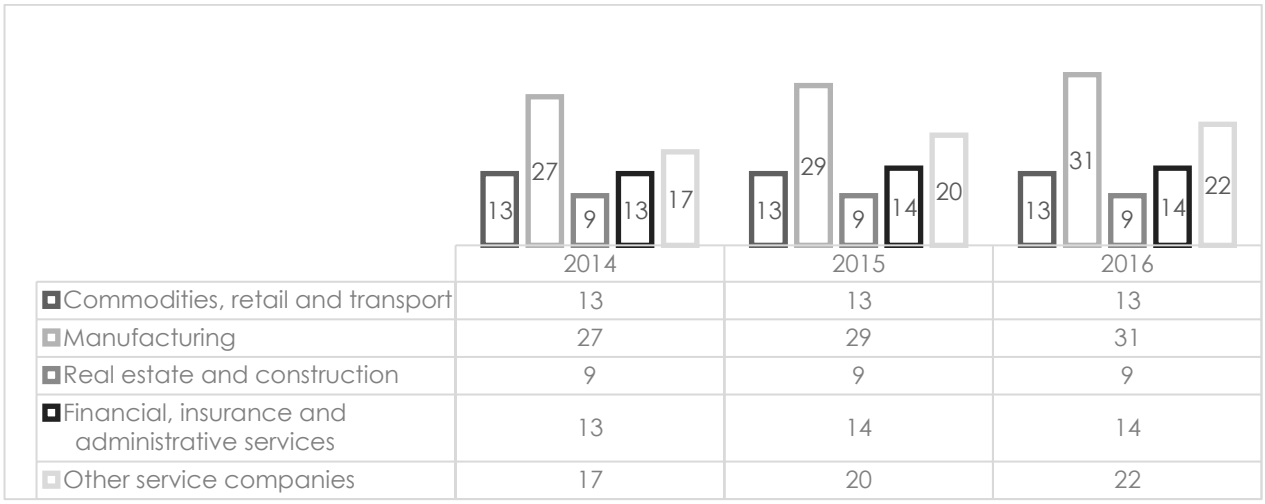
Table 4.3 – Industry classification sample firms prior to and after reclassification

NACE Rev 2. classification	# of firms prior to reclassification	Reclassification	# of firms after reclassification
A - Agriculture, forestry and fishing B - Mining and quarrying G - Wholesale and retail trade; repair of motor vehicles and motorcycles H - Transportation and storage	1 3 6 3	Commodities, retail and transport	13
C - Manufacturing	31	Manufacturing	31
F - Construction L - Real estate activities	4 5	Real estate and construction	9
K - Financial and insurance activities N - Administrative and support service activities	12 2	Financial, insurance and administrative services	14
J - Information and communication M - Professional, scientific and technical activities Q - Human health and social work activities R - Arts, entertainment and recreation	12 5 2 3	Other service companies	22
Total	**89**		**89**

Table 4.3 – For 2014 (2015) the numbers are 13 (13) for "Commodities, retail and transport"; 27 (29) for "Manufacturing"; 9 (9) for "Real estate and construction"; 13 (14) for "Financial, insurance and administrative services"; and 17 (20) for "Other service companies". Also: See Appendix A2 for a detailed overview of each firm in each NACE Rev 2 category.

Figure 4.1 presents a graphical representation of the distribution of the sample firms over the different industry categories for the three sample years. As one can see, "Manufacturing" is the biggest represented category in the sample, with "Other service companies" being the second biggest and "Real estate and construction" being the smallest.

Figure 4.1 – Distribution of sample firm over the categories in each sample year



	2014	2015	2016
Commodities, retail and transport	13	13	13
Manufacturing	27	29	31
Real estate and construction	9	9	9
Financial, insurance and administrative services	13	14	14
Other service companies	17	20	22

4.2 Data collection

In this study the effect of CEO pay of 2014 to 2016 on firm performance of 2015 to 2017 will be examined for the firms in the sample. Therefore, for the sample firms, the CEO pay data, corporate governance data and control variables are collected for the years 2014, 2015 and 2016. Whereas, the firm performance data are collected for the years 2015, 2016 and 2017. The data regarding CEO pay (base salary, other benefits, variable pay and total compensation) and corporate governance (CEO tenure, audit committees, board independence and (supervisory) board gender diversity) are collected from the firms' annual reports. These annual reports are retrieved from either the firms' websites, or in case not available on their website, retrieved from fd.nl. Regarding firm performance and the control variables, the data needed to calculate these variables are obtained from ORBIS. ORBIS is a database from Bureau van Dijk that contains non-financial as well as financial data for a great number of firms worldwide. The firms from the sample have been selected in the database, and then the data for ROA, ROS, RET, Tobin's Q, firm size, leverage and industry classification are collected. Not all the data needed to calculate the firm performance variables and control variables were available in ORBIS. For example, some firms had no available dividend data or other firms had no total debt data. For the missing values, the annual reports have been used to collect these missing values. Furthermore, almost all firms had their closing date of the fiscal year at 31 December, however some firms also had other closing dates. For these firms, the latest four annual reports available have been used. Specifically, for CEO pay, corporate governance and the control variables the fiscal years 2014/2015, 2015/2016 and 2016/2017 have been used. Whereas, for firm performance the fiscal years 2015/2016, 2016/2017 and 2017/2018 have been used.

5. Results

In this chapter the results of the analyses are described. First, a section will discuss the descriptive statistics of the variables included in this study. Second, the following section will present a bivariate correlation analysis using the Pearson correlation matrix. This to give insights into the correlation coefficients among the different variables in this study. Finally, the third section presents the results of the OLS regression analyses and simultaneously discusses the results of the robustness tests in order to answer the hypotheses, which are described in section 2.7.

5.1 Descriptive statistics

Table 5.1 presents the descriptive statistics of the variables that are used in the OLS regression analyses. As shown in table 5.1, the dependent variables $ROA_{(t+1)}$, $ROS_{(t+1)}$, $RET_{(t+1)}$, Tobin's $Q_{(t+1)}$ have 245, 233, 234 and 237 observations respectively. The mean ROA for the firms in the sample is 5.22%, while the median is 5.69%. These results indicate that the ROA variable is slightly skewed to the left since the median is bigger than the mean. Further, the minimum observed ROA is -21% and the maximum value is 28%. The values for ROA are in line with other studies that investigated firm performance measured by ROA using a sample of Dutch firms. For example, van Beusichem, de Jong, DeJong and Mertens (2016) report a ROA mean of 5.6% and a median of 6.9%. Similarly, these values of ROA are also in line with the average ROA of European firms (including Dutch listed firms) that are used in the study of Smirnova and Zavertiaeva (2017). Furthermore, the other accounting-based measure of firm performance, ROS, has a mean of 10.09% and a median of 7.74%. Given this, the ROS is skewed to the right since the mean is greater than the median. These results indicate that the ROS for Dutch listed firms has increased in 2015 – 2017 when compared to Duffhues and Kabir (2008), who used a sample with Dutch firms from 1998 – 2001. Their mean value of ROS over their period of 1998 -2001 was 6.2% and the median was 6.8%. However, the values of Table 5.1 are clearly lower than Lückerath-Rovers (2013), who reports a mean ROS of 24.9% and a median of 20.6% for Dutch listed firms over 2005-2007. This could be explained by the fact that the firms were at their peak given that the financial crisis started around 2008. Therefore, the Dutch firms may be still recovering towards pre-crisis return levels. Moreover, the market-based measures of firm performance RET and Tobin's Q report mean values of 11.21% and 1.53 respectively. Whereas, the median values for RET and Tobin's Q are 9.07% and 1.40. Therefore, both market-based performance variables are skewed to the right. The findings for RET are conflicting with the findings of the study of Lückerath-Rovers (2013), who finds mean annual stock returns of 26.4% and a median of 20.9% . However, again, this could be explained by the impact of the financial crisis of 2008. Further, the Tobin's Q is in line with the mean and median values found in van Beusichem (2016). These values for Tobin's Q indicate that the Dutch firms in the sample, on average, are higher valued by the market than their book value.

Regarding the CEO compensation variables, the descriptive statistics show that, over 2014-2016, a CEO of a Dutch listed firm earns on average nearly €600k as base salary, enjoys €200k other benefits

Table 5.1 – Descriptive statistics

Variable	N	Mean	Median	Std.dev.	Minimum	Maximum
Dependent variables ***(t + 1)***						
ROA	245	0.0522	0.0569	0.0705	-0.2096	0.2800
ROS	233	0.1009	0.0774	0.1400	-0.3671	0.6033
RET	234	0.1121	0.0907	0.2750	-0.7967	0.9992
Tobin's Q	237	1.5343	1.3987	0.6043	0.8054	3.7094
Independent variables						
CEO_BS (x €1mln)	253	0.571	0.470	0.318	0.089	1.663
CEO_OB (x €1mln)	253	0.205	0.120	0.285	0.000	2.225
CEO_VP (x €1mln)	253	1.086	0.437	1.532	0.000	7.315
CEO_TC (x €1mln)	253	1.860	1.058	1.919	0.109	9.481
CEO_Ten	253	6.83	5.25	5.66	0.08	25.92
AC_dummy	253	0.72	1.00	0.45	0.00	1.00
Indep_dir%	253	0.57	0.58	0.15	0.00	0.91
Indep_dir% [2]	253	0.87	1.00	0.18	0.00	1.00
SB_diverse%	253	0.21	0.22	0.15	0.00	0.67
SB_diverse% [2]	253	0.16	0.17	0.11	0.00	0.46
Control variables						
# employees	253	14 904	2 252	36 869	14	370 000
Total sales (x €1mln)	253	6 955	670	30 412	0	346 855
BV_Leverage	253	0.605	0.576	0.224	0.045	1.238
MV_Leverage	242	0.465	0.419	0.257	0.017	0.988
Additional statistics						
SB size	253	5.54	5.00	2.17	1.00	14.00
AC size	253	2.22	3.00	1.60	0.00	6.00

Notes: This table reports the descriptive statistics for each variable included in this study after outliers have been removed from the dependent variables, and before the logarithmic transformation of the independent variables. The definitions of the variables can be found in Table 3.1

(such as expense allowances, pension contributions, social security expenses et cetera), receives more than €1 million as incentivized variable compensation (short-term and long-term compensation summed up) and receives on average nearly €2 million total compensation. Furthermore, one can see that for all the CEO pay variables the data is highly skewed to the right. Given this, all four measures of CEO compensation will be transformed using a natural logarithm to correct for the skewness and non-normal distribution (see Appendix B for the distributions before and after the transformation). The lowest (highest) observed values for respectively base salary, other benefits, variable pay and total compensation are €89k (€1663k), €0 (€2225k), €0 (€7315k) and €109k (€9480.5k). Regarding the minimum value of

variable pay (CEO_VP), it is important to note that these 0 values are mostly from financial institutions. Because of the financial crisis during 2008/2010, many financial institutions were saved by the Dutch government. A 'prohibition act' from the Dutch government does not allow financial institutions to offer variable compensation to their (senior-)/executives when the state aid has not been fully paid back yet. Therefore, firms like ABN-AMRO and ASR Nederland did not pay their CEO any variable compensation throughout the entire sample period. These values will be excluded from the analysis when CEO_VP is used. This because these values do not indicate firm performance, instead it is simply because the Dutch law does not allow them to pay variable compensation. The descriptive statistics show that for 2014 – 2016 the mean values of variable pay and total compensation increased when compared to other studies that examined CEO compensation of Dutch listed firms, whereas the mean value of base salary decreased. To illustrate, Janssen, Tijhaar and Volmer (2013) report a mean value of €620k for base salary, €735 for variable compensation and €1.4 million for total compensation for their sample period of 2008 – 2010. However, the maximum observed values for 2014 – 2016 decreased when compared to the 2008 – 2010 values of Janssen et al. (2013). Furthermore, the CEOs of Dutch listed firms in this sample earn also higher base salary, variable pay and total compensation when compared to the EU-sample of Smirnova and Zavertiaeva (2017) over the period of 2008 -2013.

The variables concerning corporate governance in this study are CEO tenure (CEO_ten), presence of an audit committee (AC_dummy), board independence (Indep_dir) and supervisory board gender diversity (SB_diverse). For CEO tenure, the mean value is 6.83 years and the median value is 5.25. Given this, the data regarding CEO tenure is slightly skewed to the right. Further, this result indicates that, on average, a person serves nearly 7 years as CEO for a Dutch listed firm. The lowest observed value is 0.08, which equals to almost one month. Whereas, the longest sitting CEO has served for almost 26 years as CEO of the firm. These results for CEO tenure are in line with other studies on Dutch firms, such as Janssen et al. (2013) who report a mean tenure of 5 years for their Dutch sample of 2008 – 2010. However, the EU-sample of Smirnova and Zavertiaeva (2017) shows a mean value for CEO tenure of 11.73 and a median of 10.00. Further, their shortest tenured CEO serves 0 years and longest tenured CEO serves for 47 years as CEO. Therefore, CEOs of Dutch listed firms serve on average shorter as CEO than other European CEOs. Moreover, regarding the audit committee, 72% of the Dutch listed firms in the sample have an audit committee during the period of 2014 – 2016, which confirms the results of the report of the Dutch Corporate Governance Monitoring Commission Van Manen (MCCG, 2017). Furthermore, the average size of the audit committee is 2.22 members. The minimum observed value is 0, indicating no audit committee present, and the maximum number of members observed is 6 members serving on the audit committee. When present, on average the audit committee contains 3 members, with a minimum of 1 and maximum 6 members (unreported results). Regarding the supervisory board of Dutch listed firms, the results show that the mean size is 5.54 members and the median is 5. The minimum amount of members observed on the Dutch supervisory boards is 1 (RoodMicrotech), whereas the maximum amount of members is 14 (Ahold-Delhaize). Furthermore, the supervisory board of Dutch listed firms consists,

on average, for 87% out of independent members and consists for 21% out of female members. Whereas, relative to the total firm board members (MB members + SB members), the mean values for independence and gender diversity are respectively 57% and 16%. Given these results, on average, the Dutch listed firms in the sample comply with the Dutch corporate governance code regarding supervisory board independence, which postulates that all members should be independent except for one. Given the average supervisory board size of 5.54, and subtracting 1 from this average, this results in a percentage of 81.9%, which is lower than the observed 87%. Therefore, complying with the Dutch corporate governance code regarding independence. However, a fully independent supervisory board is preferred and prescribed by the corporate governance code. Furthermore, the firms in the sample do not comply with the code regarding gender diversity. The Dutch code suggests, in order to comply with best-practices, the supervisory board should contain at least 33% female members. To add, the minimum (maximum) percentage of gender diversity observed is o% (67%). The minimum value of 0% gender diversity is observed for 19 firms in the sample, whereas the maximum of 67% is observed for LucasBols. The descriptive statistics regarding Dutch supervisory boards are in line with other studies, such as Janssen et al. (2013) who also used a sample with Dutch listed firms. They find similar average, minimum and maximum supervisory board sizes, as well as similar average, minimum and maximum values for supervisory board gender diversity.

Finally, the control variables are firm size, leverage, industry dummies and year dummies. The industry variables and year variables have been discussed in chapter 4, therefore for more information see sections 4.1.1 and 4.1.2. Regarding firm size, this study measures firm size using the number of total employees per fiscal year-end and the total sales as reported in the firms' profit and loss statement. Whereas, leverage will be measured using an accounting-based leverage measure and market-based leverage measure. Table 5.1 shows that the Dutch firms in the sample have on average 14 904 employees and a median of 2 252. Further, the mean value of total sales is €6.9 billion and the median is €670 million. Therefore, both measures of firm size are highly skewed to the right, since for both the mean is clearly greater than the median. Given this, both measure will be transformed using a natural logarithm to correct for their non-normality and skewness (see Appendix B for the distributions before and after the transformation). Furthermore, one firm reported 0 sales during the sample period, which is KiadisPharma. KiadisPharma is a pharmaceutical company that is still in the development-phase of their medicine, therefore this firm has no sales. Given this, the firm is shown to be an outlier regarding total sales, and is therefore excluded from the sample when ROS or total sales is used in the model. Besides, the mean and median value for number of employees has substantially decreased for the years 2014 – 2016 of this sample when compared to the sample years of 2002 – 2006 of the study on Dutch listed firms from Van der Laan (2010). Whereas, obviously, the total sales for Dutch listed firms has increased substantially in 2014 – 2016 when compared to the other Dutch study of Duffhues and Kabir (2008) over 1998 – 2001. Moreover, regarding the leverage, over the period of 2014 – 2018 the sampled Dutch listed firms show a mean book leverage of 0.605 and a median of 0.576. These values for book leverage are in line with other

studies on Dutch listed firms, such as Duffhues and Kabir (2008). Given this, evidence shows that leverage does not change dramatically over a longer period of time but is rather stable. While, the mean value for the market-based leverage measure is 0.465 and the median is 0.419. The minimum (maximum) observed values for the accounting-based and market-based leverage measure are 0.045 (1.238) and 0.017 (0.988) respectively.

5.2 Bivariate analysis

The bivariate analysis is done by using the Pearson's correlation matrix as presented in Table 5.2. As can be seen in the table, ROA correlates significantly at the 0.01 level with all other dependent variables that measure firm performance (ROS, r=.431**; RET, r=.225**; Tobin's Q, r=.435**). This is in line with the expectations since all these variables measure the same concept, namely firm performance. However, ROS only correlates with the other accounting-based firm performance measure ROA but not with the market-based firm performance measures RET and Tobin's Q. This indicates that ROS does measure account-based firm performance, however in a different way than ROA. At the same time, both market-based performance measures RET and Tobin's Q do correlate with each other at the 0.05 level (r=.144*), which is also in line with the expectation since both variables measure market-based firm performance.

Regarding the correlation between the firm performance variables and the CEO pay variables, the correlation matrix shows that only CEO incentive-based variable compensation and total CEO compensation are positively and significantly correlated with ROA and Tobin's Q at the 0.01 level (LN_CEO_VP, r=.266** and r=.303**; LN_CEO_TC, r=.180** and r=.219**), whereas base salary and total other benefits show no significant correlation with ROA and Tobin's Q. These results are in line with Smirnova and Zavertiaeva (2017) who find that variable CEO compensation and total CEO compensation are significantly positively related to ROA. Similarly, Jaiswall and Bhattacharyya (2016) also find a significantly positive effect of total CEO compensation on ROA. While, Al-Matari et al. (2014) find that total CEO compensation is significantly and positively related to Tobin's Q. However, contrary to the results of Table 5.2, Smirnova and Zavertiaeva (2017) also find positive and significant effects of base salary and other benefits on ROA. The results of Table 5.2 thus indicate that high levels of base salary and other benefits do not increase account-based and market-based firm performance, however higher levels of incentivized variable compensation and total compensation do improve a firm's accounting- and market-based firm performance. Contrary to ROA and Tobin's Q, when firm performance is measured using ROS, evidence shows that all the CEO pay variables are positively and significantly correlated with accounting-based firm performance at the 0.01 level, except for base salary which is correlated at the 0.05 level (LN_CEO_BS, r=.168*; LN_CEO_OB, r=.205**; LN_CEO_VP, r=.242**; LN_CEO_TC, r=.220**). Whereas, when firm performance is measured using annual stock return (RET), none of the CEO pay variables is significantly related to firm performance. Above all, CEO total compensation shows even a negative sign with RET, though not significant. Overall, the Pearson correlation coefficients show ambiguous results for the effect between CEO pay and firm performance.

Table 5.2 – Pearson's correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1) ROA	1																	
(2) ROS	,431**	1																
(3) RET	,225**	,082	1															
(4) Tobins_Q	,435**	,027	,144*	1														
(5) LN_CEO_BS	,056	,168*	,103	,055	1													
(6) LN_CEO_OB	,072	,205**	,106	,053	,741**	1												
(7) LN_CEO_VP	,266**	,242**	,014	,303**	,658**	,649**	1											
(8) LN_CEO_TC	,180**	,220**	-,002	,219**	,783**	,764**	,953**	1										
(9) CEO_ten	,036	-,033	,067	,120	,036	-,047	,060	,050	1									
(10) AC_dummy	-,012	,190**	-,026	,044	,578**	,545**	,487**	,523**	-,151*	1								
(11) Indep_dir	,134*	-,067	,039	,149*	,276**	,254**	,248**	,268**	,032	,204**	1							
(12) Indep_dir[2]	,020	-,130*	,062	-,038	,187**	,244**	,036	,103	,030	,111	,760**	1						
(13) SB_diverse	-,006	,150*	,156*	,015	,336**	,197**	,078	,169**	,017	,156*	,206**	,162**	1					
(14) SB_diverse[2]	,083	,139*	,176**	,011	,358**	,254**	,141*	,224**	-,028	,182**	,291**	,162**	,894**	1				
(15) Ln_employees	,126*	-,025	,094	-,040	,552**	,483**	,475**	,525**	-,123	,428**	,156*	,192**	,165**	,228**	1			
(16) Ln_TS	,098	,067	,101	-,018	,743**	,694**	,645**	,720**	-,150*	,521**	,184**	,180**	,265**	,317**	,852**	1		
(17) BV_Leverage	-,157*	,085	-,065	-,325**	,215**	,282**	,095	,149*	-,173**	,200**	-,011	-,010	,211**	,223**	,265**	,330**	1	
(18) MV_Leverage	-,361**	,013	,005	-,659**	,105	,182**	-,140*	-,053	-,250**	,113	-,055	,065	,173**	,147*	,207**	,247**	,796**	1

Notes: This table reports the Pearson correlation coefficients with their statistical significance. For variable definitions see Table 3.1. The sample is described in section 4.1.1 and Table 5.1.

***. – Correlation is significant at the 0.01 level. *. – Correlation is significant at the 0.05 level.*

And the effect CEO pay has on firm performance highly dependents on how CEO pay and firm performance are measured.

Regarding the corporate governance variables in this study, the correlation matrix shows that CEO tenure has no significant correlation with any of the firm performance variables, nor with any of the CEO pay variables. Give this, the results of Table 5.2 are contradicting findings of prior studies. To illustrate, Jaiswall and Bhattacharyya (2016) find positive and significant correlation of CEO tenure on total CEO compensation and a significant and negative correlation of CEO tenure on ROA. While, Smirnova and Zavertiaeva (2017) find significantly negative correlation of CEO tenure on total CEO compensation and other benefits, but positive and significant correlation of CEO tenure on ROA. However, Table 5.2 shows that CEO tenure is negatively and significantly correlated with the AC_dummy (r= -.151*), firm size when measured by the logarithm of total sales (r= -.150*) and both firm leverage measures (BV_Leverage, r= -.173**; MV_Leverage, r= -.250**), which is in line with Sun et al. (2009) and Smirnova and Zavertiaeva (2017). The results of Table 5.2 indicate that longer-tenured CEOs do not show higher firm performance when compared to short-tenured CEOs and that longer-tenured CEOs do not necessarily earn higher CEO compensation than short-tenured CEOs. Further, firms with CEOs that hold longer the CEO position have a smaller possibility to have an audit committee present. While, firms with CEOs who serve longer as CEO also are CEOs at firms with smaller firm size and lower values of firm leverage. Given this, longer-tenured CEOs could more likely be the founder of the firm and these CEOs may not foster high firm growth. Therefore, due to the smaller size, these firms are not required to set up an audit committee and they do not need as much debt (i.e. leverage) as the other firms because of their growth strategy.

Besides, the Pearson correlation matrix shows that the AC_dummy is only significantly related to firm performance when measured by ROS (r=.190**). Whereas, other firm performance variables are not significant. These results are in line with those of Al-Matari et al. (2014), who also find insignificant correlations between the audit committee variables and firm performance. Moreover, firms with an audit committee are also more likely to pay their CEOs higher levels of base salary, other benefits, variable compensation and total compensation. These correlations are all positively and highly significant at the 0.01 level. In a similar fashion, Al-Matari et al. (2014) find that audit committees have a positive correlation with total CEO compensation levels as well. However, noteworthy, this effect could be explained by the fact that firms with audit committees also have bigger firm sizes, since both firm size measures are significantly and positively related to AC_dummy (r=.428** and r=.521**). And because of the bigger size, firms may be paying their CEO higher levels of compensation. Therefore, these results should be interpreted with caution since there is not controlled for the effect of such (omitted) variables. Furthermore, the AC_dummy is positively and significantly correlated with board independence (r=.204**), gender diverse (supervisory) boards (r=.156* and r=.182**) and firm accounting-based firm leverage (r=.200**). In comparison, Agyemang-Mintah and Schadewitz (2018) also found positive and significant correlations between the presence of an audit committee, firm size and accounting-based firm

leverage. Whereas, Al-Matari et al. (2014) find significant positive correlations between audit committees and firm size, but no significant results for firm leverage.

Additionally, the board independence variable Indep_dir is significantly and positively correlated with ROA (r= .134*) and Tobin's Q (r=.149*). While, the second measure of board independence Indep_dir[2] is negatively and significantly related to ROS (r= -.130*). The results of Table 5.2 are contrasting a prior study of Al-Matari et al. (2014) who found a significant and negative correlation between board independence and Tobin's Q. Further, independent directors on the board pay their CEOs higher levels of base salary (r=.187**), other benefits (r=.244**), variable compensation (r=.248**) and total compensation (r=.268**). While, for Indep_dir[2] only base salary and other benefits are significantly correlated. These results are in line with prior studies by, for example, Capezio (2011) who also found high statistically significant correlation between board independence and CEO compensation variables. Given this, the results are not in line with the agency theory, which postulates that independent directors are assumed to be more effectively monitoring the executives and therefore lower levels of pay should be expected. Instead, these results are somewhat confirming the managerial power theory. Besides, both board independence variables are positively and significantly related to gender diverse supervisory boards and firm size, which are also found in Capezio (2011) and Barka and Legendre (2017). This correlation could be explained by the fact that bigger firms generally have bigger supervisory board sizes, and therefore more likely to have at least one independent director on the board. To add, no significant effects are found between independent directors and firm leverage.

Furthermore, Table 5.2 shows that gender diverse supervisory boards are positively and significantly related to higher ROS (r=.150*) and RET (r=.156*). This indicates that more female members on the supervisory boards may enhance accounting-based as well as market-based firm performance. However, the results of Table 5.2 are contrasting the study of Lückerath-Rovers (2013), who finds no significant correlations with gender diverse boards and ROS and RET for Dutch firms. In addition, firms with higher proportions of female members on the firm's management and supervisory board pay their CEOs higher levels compensation. Namely, both gender diversity variables show significant correlations with base salary, other benefits and total compensation. Whereas, SB_diverse[2] also shows positive and significant correlation with CEO variable compensation (r=.141*). Similar to board independence, these results are conflicting with empirical evidence, agency and human capital theory, since it is expected that higher proportions of female members should suppress CEO pay levels. In comparison, Sarhan et al. (2018), on the other hand, find no significant correlation between gender diverse firm boards and CEO pay levels. Moreover, higher proportions of female members on the firm's board is positively and significantly correlated with firm size and firm leverage for both gender diversity variables. Again, this could be explained by the fact that bigger firms usually have bigger board sizes, and thus more likely to have females on the board.

Regarding the control variables, firm size measured by logarithm of total number of employees is only significant and positive at the 0.05 level with firm performance when measured by ROA (r=.126*).

The other firm performance variables, on the other hand, are not significantly related to firm size. Furthermore, both firm size variables are highly significant and positive correlated at the 0.01 level with all the independent CEO pay variables. This indicates that bigger firms pay their CEOs also higher levels of base salary, other benefits, variables compensation and total compensation. Given this, the multicollinearity between these variables when they are together in the OLS regression models is examined. This because multicollinearity can seriously impact the regression validity and reliability. Appendix C reports the OLS regression models and the VIF values. As presented in Appendix C, all VIF values clearly remain under the 5 and therefore no serious multicollinearity is assumed to be present in the regression models. Furthermore, both size variables also highly correlate with each other (r=.852**). This is in line with the expectation since both variables should be measuring firm size. Besides, both firm leverage variables are significantly and negatively related to both ROA and Tobin's Q. This indicates that firms with higher leverage show lower firm performance, when measured using ROA and/or Tobin's Q. This result is in line with the expectation, since higher leverage levels could limit the possibility to invest in high growth investments. This is caused by the fact that higher leverage leads to higher expenditures regarding interest and loan (re)payments, and therefore less money is left to invest. Moreover, the accounting-based leverage measure is significantly and positively related to CEO base salary (r=.215**), other benefits (r=.282**) and total compensation (r=.149*). This is contradicting the evidence found in Raithatha and Komera (2016), who claimed that leverage could function as a substitute to discipline and incentivize an executive and therefore less compensation is needed. At the same time, the market-based leverage measure is significant and positively correlated with other benefits (r=1.82**) and significant and negatively correlated with incentive-based variable compensation (r= -.140*). Furthermore, both leverage measures are significantly and positively correlated with the two size variables. This could be explained by the fact that bigger firms have higher leverage-needs to foster their growth and business strategies, as well as they have higher financial slack and more collateral to obtain higher levels of debt. Similar to CEO compensation, since both control variables are used together in the models this could introduce multicollinearity to the model. However, given the VIF values of Appendix C and that the correlations are smaller than 0.4, no serious multicollinearity is assumed to be present in the regression models.

5.3 OLS regression results and robustness tests

In this section, the results of the OLS regression analyses are described. The results of hypothesis 1 to 5, as mentioned in section 2.7, are described separately in the upcoming subsections 5.3.1 to 5.3.5 respectively. Furthermore, besides the regular analyses, also several robustness tests have been conducted to increase validity and reliability of the OLS regression results. The results of these robustness tests are incorporated in each subsection that describes the results of each hypothesis. For the tabulated results of these robustness tests see Appendix D.

5.3.1 Hypothesis 1: Effect of CEO pay on firm performance

The first hypothesis predicts that higher levels of CEO pay (i.e. base salary, other benefits, CEO variable compensation and total CEO compensation) would also lead to higher firm performance in the subsequent year (ROA_{t+1}, RET_{t+1}). The results in Table 5.3 show that none of the CEO pay variables has a significant effect on ROA_{t+1}, except for variable compensation. The CEO variable compensation is significantly and positively related to ROA_{t+1} at the 0.01 level (b= .010***, t= 2.716). While, none of the CEO pay variables are significantly related to RET_{t+1}. All things considered, these results are in line with the study of Smirnova and Zavertiaeva (2017) who examined European listed firms (including Dutch listed firms), who also found insignificant results for base salary and other benefits, while CEO variable compensation is positively and significantly related to ROA at the 0.01 level. Therefore, these results support the agency theory in that variable compensation effectively incentivizes the CEO to increase future accounting-based firm performance, and thus effectively aligns the interests of the CEO with those of the shareholders. Also, other studies found similar support for the agency theory and acknowledge the positive influence of CEO variable compensation on future accounting-based firm performance (e.g. Schaefer, 1998; Abowd, 1990; Hanlon et al., 2003). However, noteworthy, hypothesis 1 and the agency theory can only be supported when subsequent firm performance is measured by ROA and CEO pay is measured by CEO variable compensation (sum of short-term bonuses and long-term bonuses). On the contrary, limited evidence is found for the human capital theory. Since, the human capital theory claims that higher levels of human capital should lead to paying CEOs higher levels of pay in order to recruit, motivate and retain them, which is justified by their superior skills and knowledge. Subsequently, this should lead to higher firm performance. Given that only one out of the four CEO pay variables is significant in the ROA models and none is significant in the RET models, there is limited to no evidence to assume that higher levels of CEO pay may indicate superior skills and knowledge that subsequently increase future firm performance. Furthermore, regarding the control variables, firm size shows significance at the 0.05 level, 0.10 level but also no significance. Whereas, firm leverage shows only significance when firm performance is measured using ROA, but only at the 0.10 level. This may be caused by the statically significant correlation between the two variables, as reported in Table 5.2. However, removing either firm size or leverage from the models does not alter the results of the control variables (see Table D1 and Table D2 in Appendix D). Though, as Table D1 shows, removing firm size from the models does make the CEO total compensation statistically significant and positive in the ROA model (b= .012**). Given this, the collinearity between the firm size variables and CEO pay variables may have undesirably influenced the results. However, after conducting another test that splits the sample into big-sized firms and small/medium-sized firms, the statistical significance of total compensation of Table D1 disappears (see Table D3 in Appendix D). Therefore, firm size does not seem to be seriously influencing the regression results. Furthermore, the adjusted R^2 in the OLS regression models are relatively low. For example, Smirnova and Zavertiaeva (2017) show R^2 values of around 62% (0.62) for the ROA models and about 27% (0.27) for the market-based firm performance model. Likewise, also the Dutch studies by Duffhues and Kabir (2008) and Van

der Laan (2010) show higher R^2 values. In comparison, the OLS regression results of this study show R^2 values between 6.5% and 11.7% for the ROA models and between 2.6% and the 4.7% for the RET models.

Besides the analysis as tabulated in Table 5.3, additional robustness tests have been performed to increase validity and reliability of the results. The first additional robustness test replaced the firm performance variables ROA and RET for ROS and Tobin's Q respectively. Table D4 in Appendix D shows that when accounting-based firm performance is measured using ROS, all the CEO pay variables are significant and positive at the 0.01 level. To illustrate, CEOs who earn higher levels of base salary (b=.057***, t=3.157), other benefits (b=.034***, t=3.558), variable compensation (b=.041***, t=5.956) and higher levels of total compensation (b= .057***, t=5.248) also show higher return on sales (ROS) in the subsequent year. While, higher levels of base salary (b=.143***, t=2.043), other benefits (b=.071*, t=1.957), variable compensation (b=.134***, t=4.791) and total compensation (b=.166***, t=3.930) also show higher market-based firm performance as measured by Tobin's Q in the subsequent year. Given this, using ROS and Tobin's Q as the firm performance measures would support hypothesis 1, the agency theory and human capital theory. Further, the control variables in the ROS and Tobin's Q models changed as well. Firm size shows negative signs, while positive signs are observed in the ROA and RET models. On the other hand, firm leverage remains negatively related to firm performance. When in fact, it is very negatively and significantly related to Tobin's Q. Also the R^2 is higher in the Tobin's Q models when compared to the ROA, RET and ROS models. The second robustness test replaces the firm size variable using number of employees for a firm size variable that uses total sales. The results of this test are shown in Table D5 of Appendix D and show no different results from the models as presented in Table 5.3. The only difference is that in this model total CEO compensation becomes statistically significant and positive in the ROA model (b=.012*, t=1.696) and statically significant and negative in the RET model (b= -.057**, t= -2.062). The latter is especially conflicting with hypothesis 1. Further, a third test replaced the accounting-based leverage variable for a market-based leverage variable, see Table D6 in Appendix D. Again, there are no clear different results compared to Table 5.3. However, the CEO variable compensation variable becomes statistically insignificant in the ROA model, which makes the results in Table 5.3 and earlier conclusions regarding hypothesis 1 and the agency theory less reliable. Also, the MV_leverage variable shows higher statistical significance in the ROA model than the BV_leverage variable and the R^2 increased substantially when compared to the R^2 in Table 5.3. Further, in Table D7 of Appendix D, the results of the robustness test that used averaged data is shown. The results of this robustness test show no significant changes from the models in Table 5.3, however CEO variable compensation becomes insignificant in this test as well. Again, this robustness test decreases the validity and reliability of the earlier conclusions made based on Table 5.3 regarding hypothesis 1 and the agency theory. Furthermore, the other pay variables show similar signs and magnitudes. Also, the control variables become predominantly insignificant. However, the insignificant results of the CEO variable pay variable and control variables could be explained by the significant drop in observations (234 to 85).

Moreover, financial firms are subjected to special regulations that could have influenced the regressions results of especially variable compensation. This because the Dutch law restricts financial firms to pay a maximum of 20% of CEO pay as incentivized variable compensation, which does not indicate firm performance but simply does not allow financial firms to pay their CEOs more compensation. Table D8 shows the regression results for the sample when all financial firms are excluded. As can be seen from Table D8, excluding financial firms does not alter the earlier findings very much. The only differences found, are that total compensation becomes statistically significant at the 10% level in the ROA and RET model, while CEO base salary becomes statistically insignificant in the Tobin's Q model. Finally, another robustness tests have been conducted on a subsample comprising *manufacturing firms*, *wholesale and retail firms* and *information and communication firms*. The results for this subsample are shown in Table D9 of Appendix D, and show that other benefits and total compensation become statistical significant and positive in the ROA models. Whereas, variable compensation becomes statistically negatively significant in the RET models. Also, CEO base salary becomes statistically insignificant in the Tobin's Q models.

Overall, there is limited to no evidence that higher levels of CEO pay also lead to higher subsequent accounting-based and market-based firm performance for Dutch listed firms. Given the results of the models in Table 5.3 and the results of the robustness tests, the significance of the different pay components highly depends on how they are measured and which firm performance measure is used. Also, the control variables incorporated in the model apparently influence the OLS regression results in such a way that no robust results are found. As well as, using different samples may also affect the results. Given this, the findings are conflicting with the agency theory and human capital theory. Namely, there is no robust evidence to assume that CEO pay effectively motivates the CEOs to increase accounting-based and market-based firm performance in the next year. And thus, may not be as effective at aligning the interests of the managers with those of the shareholders as postulated by the agency theory. Also, as earlier mentioned and suggested by human capital theory, higher levels of CEO pay do not indicate superior skills and knowledge possessed by the CEO who are therefore better equipped at improving subsequent firm performance. Instead, these results may support the managerial power theory. This because there is no clear and robust link between higher levels of CEO pay and higher levels of subsequent firm performance. Therefore, these results may indicate rent extraction by the CEOs at the costs of the shareholders. All things considered, hypothesis 1 cannot be confirmed.

Table 5.3 – Regression results for the effect of CEO pay on future firm performance

Variable	ROA $_{(t+1)}$					RET $_{(t+1)}$				
Intercept	.061***	.093	0.038	-.037	-.039	.118	-.141	-.029	.310*	.474*
	(3.037)	(.848)	(.763)	(-.885)	(-.557)	(1.460)	(-.317)	(-.139)	(1.822)	(1.675)
LN_CEO_BS		-.003					.022			
		(-.291)					(.592)			
LN_CEO_OB			.002					.017		
			(.407)					(.869)		
LN_CEO_VP				.010***					-.013	
				(2.716)					(-.949)	
LN_CEO_TC					.008					-.029
					(1.506)					(-1.313)
LN_employees	.005**	.005**	.004*	.002	.003	.016**	.013	.011	.018**	.023**
	(2.462)	(2.232)	(1.813)	(.920)	(1.311)	(2.023)	(1.367)	(1.237)	(2.025)	(2.413)
BV_leverage	-.043*	-.042*	-.031	-.048*	-.046*	-.092	-.094	-.128	-.151	-.082
	(-1.696)	(-1.681)	(-1.198)	(-1.862)	(-1.837)	(-.925)	(-.947)	(-1.217)	(-1.498)	(-.826)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	245	245	231	226	245	234	234	218	219	234
Adjusted R^2	.082	.078	.065	.117	.087	.029	.026	.031	.047	.032

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

5.3.2 Hypothesis 2: Moderating effect of CEO tenure

Hypothesis 2 states that CEOs who longer hold the CEO position in a firm show stronger positive effects of CEO pay on future firm performance. The results in Table 5.4 show that adding tenure to the OLS regression models does not dramatically change the magnitude, directions and significance of the CEO pay variables and control variables. Also, the CEO tenure variable is not statistically significant in any of the ROA and RET models. Given this, the results of Table 5.4 are in contrast of Leong, Chen and Yao (2018) who find positive and significant effects of CEO tenure on both ROA and RET. Though, noteworthy, this is for a US sample. For Dutch listed firms, on the other hand, no similar studies have been identified for comparison. Further, the interaction terms of the CEO pay variables * CEO tenure show significance for all pay variables in the ROA models. Also, adding these interaction terms to the ROA models doubles the adjusted R^2 and when compared to the ROA models of Table 5.3. This suggests that adding the interaction terms increases the explained variation in the ROA firm performance variable. The results for the ROA models do suggest that CEOs who longer hold the CEO position in the firm and also earn higher levels of base salary (b=.007***, t=4.191), other benefits (b=.004***, t=5.136), variable compensation (b=.002***, t=3.248) and total compensation (b=.004***, t=4.217), do show statistically significant higher firm performance as measured by ROA than shorter-tenured CEOs. On the contrary, such an effect is not found for the RET models. Given this, the results of Table 5.4 are contrasting those found by Hou et al. (2017). The study of Hou et al. (2017) shows that the individual CEO compensation variables do not show a significant effect on annual stock returns. However, when the interaction terms with the CEO tenure variable are included, the study does find significant effects of the interactions terms of CEO compensation * CEO tenure on annual stock returns (Hou et al., 2017). Whereas, no significant effects of the interaction terms are shown in Table 5.4 in the annual stock return (i.e. RET) models.

Additionally, some robustness tests have been performed. The first robustness test replaces ROA for ROS and RET for Tobin's Q. The results are shown in Table D10 of Appendix D. Table D10 shows that the CEO tenure variable is not statistically significant in any of the ROS and Tobin's Q models. Furthermore, the CEO pay variables are statistically significant for all the CEO pay variables in both the ROS and Tobin's Q models. However, contrary to the earlier findings of the ROA models in Table 5.4, for ROS, only the interaction terms of CEO tenure * base salary (b=.007**, t=2.066) and other benefits (b=.003*, t=1.703) are statistically significant. Whereas, for variable CEO compensation and total CEO compensation no significant interaction terms are found. Also, the interaction terms show lower significance levels when compared to the regular CEO pay variables and the interaction terms of the ROA models. Given this, this robustness test decreases the reliability of that longer-tenured CEOs who earn higher levels of compensation also show higher accounting-based firm performance. To add, the robustness test of Table D10 delivers similar conclusions for market-based firm performance. This because RET shows no significant interaction terms, while for Tobin's Q all the interaction terms are significant. However, similar to ROS, the statistical significance when compared to the regular pay variables decreases. Therefore, no evidence is found for hypothesis 2. This because there is no clear

evidence that CEOs who longer hold the CEO position at a firm also show stronger/more positive effects of CEO pay on either subsequent accounting-based or market-based firm performance. In addition, other robustness tests as presented in Table D11, Table D12 and Table D13 in Appendix D confirm the earlier findings. Also, using the average firm performance of two subsequent years does not deliver additional consistent evidence that could support hypothesis 2 (see Table D14 of Appendix D). When in fact, the interaction term of CEO other benefits * CEO tenure becomes even statistically insignificant with ROS in Table D14. Therefore, no robust evidence is found that supports hypothesis 2.

Given these points, no evidence is found to support the proposition that longer-tenured CEOs show stronger positive effects of higher CEO pay levels on future firm performance. These findings are contrary to the propositions of the agency theory, that proposed that the (supervisory) board of the firm could become more efficient in monitoring the CEO's behaviour and performance when (s)he is longer CEO at the firm (Stroh et al., 1996). Because of the more efficient monitoring, stronger effects of CEO pay on firm performance should be expected when CEO tenure is higher. However, this cannot be confirmed given the evidence of this study. Therefore, the findings of this study are contrasting those found by Stroh et al. (1996). Furthermore, the results also do not support the human capital theory. Whereas, the human capital theory suggests that a longer-tenured CEO should have higher levels of human capital, which should make them more productive and successful, and therefore the firm is willing to pay more to recruit, retain and motivate the CEO. In addition, longer-tenured CEOs could have had time to learn the business, develop experience to lead it and develop a relationship with the board, that subsequently leads to stronger positive effects of CEO pay on firm performance (Bulmash, 2010). Given that none of the CEO tenure variables is directly positively related to any of the firm performance variables in either the ROA, ROS, RET and Tobin's Q models, and that the magnitude of the interaction terms and statistical significance decrease when compared to the regular CEO pay variables, the evidence found in this study does not support the human capital theory and is contrasting empirical studies by, for example, Bulmash (2010).

Table 5.4 – Regression results for moderating effect of CEO tenure on the effect of CEO pay on future firm performance

Variable	ROA (t +1)					RET (t +1)				
Intercept	.063***	.070***	.051**	.090***	.072***	.110	.134	.141	.120	.049
	(3.047)	(3.125)	(2.322)	(3.993)	(3.224)	(1.357)	(1.455)	(1.514)	(1.369)	(.543)
CEO_ten	.000	-.001	.000	-.001	-.001	.002	.002	.003	.004	.002
	(-.350)	(-.765)	(.359)	(-1.193)	(-.904)	(.743)	(.618)	(.936)	(1.114)	(.727)
CEO_BS		.009					.022			
		(.983)					(.578)			
CEO_BS*CEO_ten		.007***					.002			
		(4.191)					(.346)			
CEO_OB			-.001					.014		
			(-.195)					(.728)		
CEO_OB*CEO_ten			.004***					.006		
			(5.136)					(1.597)		
CEO_VP				.009***					-.015	
				(2.678)					(-1.045)	
CEO_VP*CEO_ten				.002***					.001	
				(3.248)					(.621)	
CEO_TC					.007					-.032
					(1.251)					(-1.454)
CEO_TC*CEO_ten					.004***					.005
					(4.217)					(1.374)
LN_employees	.005**	.005**	.005**	.002	.003	.017**	.014	.013	.019**	.024**
	(2.408)	(2.232)	(2.294)	(.809)	(1.444)	(2.078)	(1.431)	(1.445)	(2.125)	(2.544)
BV_leverage	-.043*	-.042*	-.014	-.044*	-.034	-.090	-.092	-.098	-.138	-.060
	(-1.711)	(-1.681)	(-.556)	(-1.717)	(-1.378)	(-.906)	(-.925)	(-.923)	(-1.361)	(-.600)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	245	245	231	226	245	234	234	218	219	234
Adjusted R^2	.075	.136	.158	.153	.145	.027	.020	.036	.045	.035

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

5.3.3 Hypothesis 3: Moderating effect of audit committees

As previously mentioned, an audit committee is responsible for advising the executive board in order to warrant the quality of the firm's business operations, financial reporting, audit policies and risk management. Also, audit committees are an important corporate governance mechanism to mitigate earnings management by executives, since earnings management, in line with the managerial power theory, could lead to no or a negative effect of CEO pay on firm performance. Given these points, this study hypothesizes that firms with a separate audit committee show stronger positive effects of CEO pay on future firm performance. The results for testing this hypothesis are reported in Table 5.5. Looking at this table, the AC_dummy variable is negatively related to ROA and RET. To illustrate, when base salary (b= -.029**, t= -2.012), variable compensation (b= -.029**, t= -2.272) and total compensation (b= -.024*, t= -1.810) are included in the model, the presence of an audit committee is negatively and significantly related to ROA. Whereas, for RET, the presence of an audit committee is negatively related to firm performance when base salary (b= -.105*, t= -1.794) and other benefits (b= -.096*, t= -1.665) are included in the model. These results indicate that firms with a separate audit committee are not more likely to have better firm performance, measured by ROA and RET, than firms without a separate audit committee. The results as reported in Table 5.5 are in contrast with those found by Basilico and Grove (2013), who found positive effects of audit committees on future stock returns for Dutch listed firms. Moreover, none of the interaction terms of the different pay variables with the AC_dummy variable are significantly related to firm performance when measured by ROA and RET. The only interaction term that is statistically significant, is the CEO base salary * AC_dummy interaction term. And this interaction term is significantly and negatively related to ROA (b= -.065***, t= -3.044). This result suggests that firms with CEOs that earn higher levels of base salary and also have a separate audit committee, are more likely to show lower future firm performance measured by ROA, than firms who have not set up a separate audit committee. Again, this is contrary to the study of Basilico and Grove (2013) since they find audit committees can mitigate earnings management by the executives, and if this would have been the case for this sample, then CEO pay and firm performance should have been more closely aligned and the interaction term should have been positive and significant. However, no such effects is shown in Table 5.5. Therefore, the results in Table 5.5 do not support hypothesis 3. These findings of no significance could be caused by the fact that 72% of the firms in the sample showed an audit committee versus 28% who have no separate audit committee. Given that most firms who have no separate audit committee are mostly firms who are listed on the Amsterdam Euronext AScX (small-cap) and local market, and that only two firms of the AEX (large-cap) and three of the AMX (mid-cap) had no separate audit committee, there could be too little variety in the sample to find significant results. However, given that having set up an audit committee does not necessarily improve firm performance, this could be the reason why firms on the AScX and local market have not set up such an audit committee. This because installing an audit committee needs specific members and costs money, while at the same time no clear benefits from having such an audit committee are reported in Table 5.5.

Furthermore, additional robustness tests have been conducted to increase validity and reliability. Table D15 of appendix D shows the results of the analysis where ROA and RET are replaced for respectively ROS and Tobin's Q. The results in Table D15 show that none of the interaction terms is significant in the ROS models, while for the Tobin's Q models the only significant and negative interaction term is the one between CEO base salary * AC_dummy (b= -.348**, t= -2.158). These results are contrary to those found in Table 5.5. Since, Table D15 shows that base salary * AC_dummy is negatively and significantly related to market-based firm performance (RET versus Tobin's Q), while Table 5.5 shows that it is negatively and significantly related to accounting-based performance (ROA versus ROS). Furthermore, contrary to Table 5.5, Table D15 shows that the AC_dummy variable is insignificant in any of the ROS and Tobin's Q models when the pay variables are included. In addition, Table D16 shows the results of the robustness tests that replaced the firm size variable, Table D17 the results of the robustness test that replaced the firm leverage variable, and Table D18 the results of the robustness test that used averaged data. According to the results presented in the Tables D16 to D18, the results are in line with the earlier findings of Table 5.5. Specifically, none of the interaction terms is significant, expect for the negative significance of base salary * AC_dummy in the ROA models. Further, Tables D16 to D18 show that the AC_dummy variable has some negative significant signs with firm performance when measured by ROA and RET. In essence, the results as presented in Table 5.5 are confirmed by the robustness tests as shown in Table D15 to Table D18.

To summarize, none of the interaction terms are positively and statistically significant related to either ROA, ROS, RET and Tobin's Q. Therefore, the results of the OLS regression analyses as presented in Table 5.5, as well as the results of robustness tests as presented in Table D15 to D18 of Appendix D, are not supporting hypothesis 3. The findings are contrasting the agency theory, since, according to agency theory, audit committees should allow for better and more efficient monitoring of the executive. Therefore, leading to more optimal designed compensation packages that enhance the effect of CEO pay on firm performance. However, no evidence for this claim is found in this study. Instead, the results of this study are in line with those of Chang et al. (2012), since they also did not find support for the proposition by Laux and Laux (2009) that audit committees enhance the positive effect of CEO pay on firm performance. Hence, there is no evidence to support hypothesis 3 .

Table 5.5 – Regression results for moderating effect of audit committee on the effect of CEO pay on future firm performance

Variable	ROA (t +1)					RET (t +1)				
Intercept	.056**	.056**	.053**	.075***	.076***	.084	.114	.142	.121	.065
	(2.534)	(2.441)	(2.270)	(3.225)	(3.226)	(.958)	(1.243)	(1.509)	(1.338)	(.705)
AC_dummy	-.006	-.029**	-.015	-.029**	-.024*	-.045	-.105*	-.096*	-.033	-.036
	(-.540)	(-2.012)	(-1.067)	(-2.272)	(-1.810)	(-1.029)	(-1.794)	(-1.665)	(-.658)	(-.682)
CEO_BS		-.002					.046			
		(-.179)					(1.120)			
CEO_BS*AC_dummy		-.065***					-.092			
		(-3.044)					(.288)			
CEO_OB			.004					.030		
			(.875)					(1.428)		
CEO_OB*AC_dummy			.000					-.034		
			(.027)					(-.750)		
CEO_VP				.013***					-.009	
				(3.357)					(-.554)	
CEO_VP*AC_dummy				-.002					.002	
				(-.209)					(.060)	
CEO_TC					.011*					-.025
					(1.815)					(-1.012)
CEO_TC*AC_dummy					-.018					-.025
					(-1.462)					(-.506)
LN_employees	.006**	.006**	.005**	.003	.003	.020**	.016*	.015	.020**	.024**
	(2.452)	(2.458)	(2.062)	(1.342)	(1.424)	(2.267)	(1.657)	(1.547)	(2.116)	(2.448)
BV_leverage	-.042*	-.028	-.031	-.043*	-.042*	-.090	-.077	-.126	-.148	-.079
	(-1.657)	(-1.090)	(-1.189)	(-1.672)	(-1.682)	(-.901)	(-.764)	(-1.194)	(-1.457)	(-.788)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	245	245	231	226	245	234	234	218	219	234
Adjusted R^2	.079	.107	.063	.131	.094	.029	.032	.034	.040	.026

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

5.3.4 Hypothesis 4: Moderating effect of firm's board independence

The fourth hypothesis in this study states that higher proportions of independent non-executive members (i.e. independent supervisory board members) on the firm's board should lead to stronger/more positive effects of higher CEO pay levels on subsequent firm performance. According to literature, independent directors are more effective than non-independent directors in monitoring the executives and thus protecting the shareholders' interests (Andrés et al., 2017 and Ozerturk, 2005). Given this, more independent boards will put more effort in monitoring the CEO and therefore know more about the CEO. Consequently, there is less uncertainty about the CEO's ability and CEOs will be more adequately compensated and thus CEO pay and firm performance are more closely aligned. Table 5.6 presents the tabulated results of the OLS regression analyses that test hypothesis 4. As can be seen in the table, the proportion of independent supervisory board directors on the firm's total board of directors is not significantly related to firm performance when measured by either ROA or RET. Given this, the results are in contrast with Postma, van Ees and Sterken (2001) who found a negative effect of independent directors on the board and firm performance for Dutch listed firms. Whereas, it is also conflicting with the study of Barka and Legendre (2017). This because Barka and Legendre (2017) find that mostly independent boards are associated with significantly higher firm performance as measured by ROA, while no statistical significance between board independence and ROA is found in this study. In addition, none of the interaction terms between the CEO pay variables and the Indep_dir variable are statistically significant in the ROA models. Therefore, there is no evidence to suggest that higher proportions of independent directors on the firm's board lead to a stronger/more positive effect of higher CEO pay on future accounting-based firm performance (ROA). Also, in the RET models, most interaction terms are statistically insignificant, except for one. The only statistically significant interaction term in the RET models is the one between CEO base salary * board independence (b= -.413**, t= -2.182), however it has a negative beta sign. This result suggests that firms with higher proportions of independent directors on the firm's board of directors that pay their CEOs higher levels of base salary, show lower market-based firm performance as measured by annual stock return. Given this, this result does not support hypothesis 4 since a positive effect was be expected.

In addition, robustness tests have been performed. For example, in Table D19 of Appendix D, when using ROS and Tobin's Q as the measures for accounting-based and market-based firm performance respectively, none of the interaction terms between the CEO pay variables * the proportion of independent directors on the firm's board are statistically significant. Therefore, based on the results in Table 5.6 and Table D19, there is no evidence to claim that higher firm board independence leads to a stronger positive effect of higher CEO pay levels on subsequent firm performance. Given this, hypothesis 4 cannot be supported. In addition, as tabulated in Table D20, replacing the employee firm size variable for the firm size variable of total sales does not change the earlier findings as reported in Table 5.6 and Table D19. Also, replacing BV_leverage for MV_leverage (see Table D21 Appendix D) or using averaged data (see Table D22 Appendix D) does not change the earlier findings from Table 5.6, Table D19 and Table D20.

Furthermore, as reported in Table D23 of Appendix D, another robustness test that uses a different measure for board independence (total number of independent non-executive directors (i.e. independent supervisory board directors) / total number of non-executive directors (i.e. total number of directors on the firm's supervisory board), does not alter earlier findings for ROA as reported in Table 5.6 and the Tables D19 to D22. However, for the RET models, Table D23 shows that the interaction term between CEO base salary * board independence becomes statistically insignificant, while the interaction term between CEO variable compensation * board independence becomes statistically significant at the 10% level (b= .130*, t=1.769).

Overall, taking everything into account, the results of the regular analysis as reported in Table 5.6, and the results of the robustness test as reported in the tables Table D19 to D23 of Appendix D, do not deliver consistent evidence to support hypothesis 4. Therefore, there is no evidence to suggest that more independent (supervisory) boards strengthen or improve the positive effect of higher levels of CEO pay on future firm performance. These results are in contrast with the agency theory in that, according to the agency theory, independent directors should be more effective at monitoring the CEO. This would, subsequently, lead to more adequately designed compensation packages, which, consequently, should lead to better alignment between higher levels of CEO pay and higher levels of firm performance. Instead, this study is in line with other studies by Andrés et al. (2017) and Capezio et al. (2011), who did not find evidence that independent directors are more effective at monitoring the CEO and/or enhancing the positive effect of CEO pay on firm performance than non-independent directors. As well as, the results are in line with the study of Marinova, Plantenga and Remery (2016) who found no significant effects of independent board directors on firm performance as well for Dutch listed firms.

Table 5.6 – Regression results for moderating effect of independent supervisory board members on the effect of CEO pay on future firm performance

Variable	ROA (t +1)					RET (t +1)				
Intercept	.063***	.057**	.055**	.089***	.075***	.119	.147	.168*	.129	.061
	(3.089)	(2.509)	(2.401)	(3.905)	(3.221)	(1.468)	(1.638)	(1.794)	(1.474)	(.676)
Indep_dir	.033	.038	.030	.026	.021	.027	.027	-.096	.020	.037
	(1.040)	(1.162)	(.934)	(.783)	(.638)	(.215)	(.211)	(-.730)	(.145)	(.279)
CEO_BS		-.006					.014			
		(-.591)					(.378)			
CEO_BS*Indep_dir		-.008					-.413**			
		(-.174)					(-2.182)			
CEO_OB			.001					.020		
			(.138)					(.996)		
CEO_OB*Indep_dir			.025					.030		
			(.959)					(.288)		
CEO_VP				.009**					-.015	
				(2.528)					(-1.061)	
CEO_VP*Indep_dir				-.009					.075	
				(-.451)					(.933)	
CEO_TC					.007					-.032
					(1.238)					(-1.419)
CEO_TC*Indep_dir					.006					.066
					(.216)					(.553)
LN_employees	.005**	.006**	.005**	.002	.003	.016**	.013	.012	.019**	.023**
	(2.334)	(2.275)	(1.970)	(.856)	(1.350)	(1.977)	(1.300)	(1.244)	(2.021)	(2.438)
BV_leverage	-.043*	-.042*	-.033	-.049*	-.046*	-.093	-.072	-.131	-.153	-.085
	(-1.730)	(-1.670)	(-1.272)	(-1.898)	(-1.841)	(-.931)	(-.726)	(-1.236)	(-1.511)	(-.848)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	245	245	231	226	245	234	234	218	219	234
Adjusted R^2	.082	.076	.065	.112	.081	.025	.038	.024	.043	.026

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

5.3.5 Hypothesis 5: Moderating effect of gender diverse supervisory boards

As mentioned in the literature, female directors on the supervisory board bring additional skills and knowledge to the supervisory board than men-only boards. Therefore, supervisory boards with female members should be more effective at monitoring the executive and design more effective compensation packages. Given this, as proposed by hypothesis 5, firms with supervisory boards that contain higher proportions of female members should show stronger/more positive effects of higher CEO pay levels on subsequent firm performance. The results of the analyses to test hypothesis 5 are reported in Table 5.7. As can be seen in the table, higher proportions of gender diversity on the firm's supervisory board does not significantly affect accounting-based firm performance, since the coefficients of the SB_diverse variable do not show significant effects on ROA. Furthermore, also the interaction terms of the CEO pay variables * SB_diverse are not significant in the ROA models. Therefore, there is no evidence to suggest that firms with higher proportions of female members on the firm's supervisory board and pay their CEOs higher levels of either base salary, other benefits, variable compensation and total compensation, also show significantly higher accounting-based firms performance (ROA) than firms who have lower gender diverse supervisory boards. On the other side, in the RET models, the SB_diverse variable is significantly and positively related to market-based firm performance (RET) at the 5% and 1% level. Given this, these results suggest that firms who have higher proportions of female directors on their supervisory board also show higher annual stock returns. This could be explained by the fact that female directors on the firm's supervisory board are indeed more effective at enhancing the relationships with stakeholders than male-dominated supervisory boards, as mentioned by Ahmadi et al. (2018) and Lückerath-Rovers (2013). Therefore, shareholders could prefer firms with the more gender diverse supervisory boards, simply because their interests are more protected in these firms than firms with men-only supervisory boards. Moreover, in line with the ROA models, none of the interactions terms of the CEO pay variables * SB_diverse variable are significantly related to a firm's market-based performance. Therefore, no evidence to support hypothesis 5 for market-based firm performance as well.

In order to improve the validity and reliability of the earlier findings, several robustness tests have been performed. The first robustness test replaces ROA for ROS and RET for Tobin's Q. Table D24 in Appendix D reports the results of these robustness tests, and shows that the SB_diverse variable is not significantly related to either ROS or Tobin's Q. Given this, this is in line with a prior study on Dutch and Danish listed firm who also finds no significant effect of board gender diversity on firm performance as measured by Tobin's Q (Marinova et al., 2016). Therefore, the only firm performance variable that seems to be significantly related to gender diverse supervisory boards is RET (i.e. annual stock return). Furthermore, in the ROS models, the only significant interaction terms are CEO base salary * SB_diverse (b=.252**, t=2.502) and other benefits * SB_diverse (b=.152***, t=2.753). The other interaction terms are not significant in the ROS models. These results suggest that firms who pay their CEOs higher levels of base salary and other benefits, and also have higher proportions of female directors on the supervisory board, show a stronger and more positive effect on firm performance, as measured by ROS, than firms

with lower proportions of female directors on the supervisory board. However, given that the results in the ROA models are not significant, these results are highly ambiguous. Whereas, in the earlier analyses, ROS has shown to be significantly related to the CEO pay variables. Therefore, the question remains whether it is due to using ROS as the firm performance measure, or that the significance of the interaction terms is indeed caused by gender diverse supervisory boards. Additionally, looking at the Tobin's Q models, all interaction terms show a negative sign with firm performance as measured by Tobin's Q. While, the interaction term of CEO base salary * SB_diverse is even statistically significant and negative (b= -.788**, t= -2.031). The other interaction terms, on the other hand, are not statistically significant. Therefore, again, no support for hypothesis 5 is found in Table D24. In addition, a second robustness test replaced the employee firm size variable for the total sales firm size variable. As can be seen in Table D25, the SB_diverse variable is not significantly related to ROA. However, in line with Table 5.7, it is significantly and positively related to RET. Furthermore, Table D25 shows that the interaction term of CEO base salary * SB_diverse is significant and negative at the 10% level (b= -.093*, t=-1.765) in the ROA model, which is conflicting with the results of Table 5.7. However, this confirms the ambiguity among the earlier regression results and that hypothesis 5 cannot be supported. Furthermore, Table D25 shows that the interaction terms in the RET models are not statistically significant. Besides, a third robustness test replaced the book value based leverage variable for a market value based leverage variable. The results of this robustness test are shown in Table D26 and show no differences with the results of Table 5.7. Despite, the market value based leverage variable is more significantly and negatively related to ROA than the book value based leverage variable. Moreover, a fourth robustness test used averaged data. As can be seen in Table D27 of Appendix D, the results of that robustness test do not lead to other conclusions as mentioned here earlier. Finally, using another measure for firm's board gender diversity does not alter earlier findings and conclusion regarding hypothesis 5 as well (see Table D28 of Appendix D).

All things considered, no robust evidence is found in Table 5.7 and the Tables D24 to D28 of Appendix D to support hypothesis 5. Therefore, there is no evidence to suggest that firms who pay their CEOs higher levels of compensation, and also have higher gender diverse supervisory boards, have stronger/more positive effects of CEO pay on subsequent firm performance. Given this, the results of this study are conflicting with the agency theory and human capital theory. This because both theories suggested that higher gender diverse supervisory boards should be more effective at monitoring the CEO, and thus design more effective compensation packages that more adequately motivate the executives to improve firm performance. Further, the results are also in conflict with those found by Lucas-Pérez et al. (2015) and Sarhan et al. (2018). This because both studies find that a higher percentages of female members on the (supervisory) board leads to more adequately designed compensation packages that are more closely related to firm performance. Whereas, it is more in line with other studies who found no robust significant effects of firm's board gender diversity as well, such as Marinova et al. (2016), Rose (2007) and Lückerath-Rovers (2013).

Table 5.7 – Regression results for moderating effect gender diverse supervisory boards on the effect of CEO pay on future firm performance

Variable	ROA (t +1)					RET (t +1)				
Intercept	.062***	.055**	.058**	.089***	.078***	.149*	.135	.177*	.162*	.086
	(3.035)	(2.444)	(2.557)	(3.962)	(3.435)	(1.845)	(1.512)	(1.930)	(1.890)	(.979)
SB_diverse	.007	.007	.006	.003	-.001	.301**	.298**	.279**	.342***	.332***
	(.217)	(.227)	(.175)	(.100)	(-.023)	(2.483)	(2.317)	(2.168)	(2.866)	(2.716)
CEO_BS		-.006					-.014			
		(-.623)					(-.353)			
CEO_BS*SB_diverse		-.080					-.211			
		(-1.557)					(-1.030)			
CEO_OB			.001					.011		
			(.145)					(.566)		
CEO_OB*SB_diverse			.031					-.013		
			(1.094)					(-.115)		
CEO_VP				.009***					-.015	
				(2.685)					(-1.115)	
CEO_VP*SB_diverse				-.029					.044	
				(-1.414)					(.551)	
CEO_TC					.008					-.037*
					(1.482)					(-1.686)
CEO_TC*SB_diverse					-.026					.063
					(-.830)					(.511)
LN_employees	.005**	.006**	.004*	.002	.003	.014*	.016	.012	.016*	.022**
	(2.431)	(2.368)	(1.921)	(.977)	(1.304)	(1.763)	(1.641)	(1.260)	(1.830)	(2.372)
BV_leverage	-.043*	-.036	-.034	-.045*	-.045*	-.108	-.092	-.139	-.165	-.101
	(-1.703)	(-1.424)	(-1.284)	(-1.729)	(-1.785)	(-1.098)	(-.922)	(-1.327)	(-1.649)	(-1.019)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	245	245	231	226	245	234	234	218	219	234
Adjusted R^2	.078	.080	.062	.117	.082	.051	.047	.044	.075	.056

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

6. Conclusion

In this chapter the conclusion of this study is described. First, a section presents the conclusion regarding the results of the analyses as described in the previous chapter and answers the research question. Second, another section will discuss the limitations of this study and recommendations for future research.

6.1 Conclusion and discussion

The effect between CEO pay and firm performance has received substantial attention from numerous scholars around the globe for decades. Despite this, still ambiguity among the results exists. Furthermore, the relevancy of this subject has received new evidence when a great public debate arose in the Netherlands when a large Dutch Bank, ING Group, proposed a remuneration increase for their CEO in 2018. This specific event was one of the triggers to examine the effect of CEO pay on firm performance in the Netherlands. In this section, the research question as described in section 1.2 will be answered. In order to answer that question, five hypotheses have been formulated that have been answered in the previous chapter. The first hypothesis stated that higher levels of CEO pay should lead to higher firm performance in the subsequent year. While, the second hypothesis proposed that firms with CEOs who longer hold the CEO position at the firm, also show stronger/more positive effects of higher CEO pay levels on firm performance in the following year. Furthermore, the third hypothesis tested the moderating effect of audit committees on the effect between CEO pay and subsequent firm performance. Specifically, this third hypothesis stated that firms who have set up a separate audit committee show stronger effects of higher CEO pay levels on subsequent firm performance. Whereas, the fourth hypothesis examined whether higher proportions of independent directors on the firm's board strengthened a positive effect of CEO pay on subsequent firm performance. Finally, the fifth hypothesis stated that higher proportions of female directors on the firm's supervisory board should lead to stronger/more positive effects of higher levels of CEO pay on subsequent firm performance.

Overall, based on the results of the OLS regression analyses and robustness tests, none of the five hypothesis is supported. This because highly ambiguous results regarding the hypotheses have emerged from the various analyses. For example, for hypothesis 1 only CEO variable compensation was significantly and positively related to ROA. However, this effect disappeared during several robustness tests. Whereas, all CEO pay variables are positive and significant when firm performance was measured by ROS and Tobin's Q. While, none of the CEO pay variables was significantly related to firm performance when measured by RET (i.e. annual stock return). Furthermore, regarding the moderating effect of the different corporate governance variables (i.e. hypothesis 2 to 5), none of the interaction terms showed higher beta coefficients, stronger statistical significance or the right positive directions. However, even though the hypotheses have not been supported, several interesting findings have surfaced after conducting this study. To illustrate, regardless of the ambiguous results between CEO pay and firm performance, CEO variable compensation (the sum of short-term incentive-based annual bonuses and long-term incentive-based compensation) seems to be the only CEO pay variable that is the most robust

and the most important pay variable to positively affect firm performance in the upcoming year. This because it showed significance in seventeen out of the thirty models that tested hypothesis 1, and no other CEO pay variable showed similar results. Besides, CEO tenure seems to be moderating the effect of CEO pay on accounting-based firm performance as measured by ROA. This because, the interaction terms between the CEO pay variables * CEO tenure made the insignificant beta coefficients of the regular CEO pay variables in the ROA models statistically significant and positive at the 1% and 5% level. These results are robust after conducting several robustness tests. This result indicates that as CEO tenure increases, CEO pay may become a more effective mechanism to incentivize CEOs to increase firm performance. Thus, aligning the interests between the managers and shareholders as aimed by agency theory. Furthermore, the results show that the audit committee dummy variable (AC_dummy) may be negatively related to future firm performance when measured by ROA and RET. This may indicate that firms who have set up a separate audit committee are more likely the show lower accounting-based and market-based firm performance. Additionally, higher proportions of independent directors on the firm's supervisory board may negatively affect firm performance when measured ROS and Tobin's Q. This because the beta signs are predominantly negative in most of these models, though insignificant. However, in some ROS models, higher board independence is statistically significant and negatively related to accounting-based firm performance as measured by ROS. These results are conflicting with earlier studies and theory, because independence directors on the board are seen as an effective mechanism to protect shareholder value. Given the results of this study, there is no evidence to suggest that independent directors are more effective than non-independent directors at protecting the shareholders' interests. Finally, the results of the OLS regression analyses show that higher levels of gender diversity on the firm's (supervisory) board is highly statistically significant and positively related to a firm's annual stock return (RET) for the sample of Dutch listed firms. More importantly, this result remains robust after conducting the robustness tests. Therefore, this result confirms the claim in the literature that women are more effective at enhancing the relationships with stakeholders than male-only supervisory boards, which was also found by Ahmadi et al. (2018).

All things considered, none of the hypotheses in this study are confirmed after conducting the OLS regression analyses and the robustness tests. Therefore, to answer the research question that was formulated, the effect of CEO pay on subsequent firm performance highly depends on how firm performance is measured, which control variables are included and which CEO compensation variables are used in the models. Given this, there seems to be no unambiguous statistically significant and robust effect of CEO pay on subsequent firm performance for the Dutch listed firms in this sample over 2014 to 2017. Furthermore, also the corporate governance variables CEO tenure, presence of an audit committee, independent directors on the firm's board and gender diverse supervisory board, do not seem to significantly influence the effect of CEO pay on subsequent firm performance. Even though, some moderating effects of the corporate governance variables have been found, these effects, however, do not remain after conducting several robustness tests.

6.2 Limitations and recommendations for future research

As described here above, this study showed some relevant results in the context of CEO pay on firm performance research in the Dutch setting. However, it is important to note that there are some limitations regarding this study. The first limitation is that this study only examined listed firms. The publicly listed firms are subjected to specific regulations and legislations contrary to the privately-held firms. Therefore, the results of this study are not/very limited generalizable to the privately held firms. Furthermore, the second limitation of this study is that this study only examined Dutch listed firms on the Amsterdam Euronext. Given that every country has its own specific institutional environment, legislations, regulations and corporate governance practises, the results of this study are also hardly generalizable to other publicly traded firms abroad. Therefore, these results remain only valid in the context of Dutch publicly traded firms on the Amsterdam Euronext. In addition, this study only examined the effect of CEO pay at year t on subsequent firm performance at year t+1 for three years. As acknowledged by other studies, it could be possible that the results in this study are influenced by this one-year timeframe, since CEO pay is usually determined for a longer period of time and also aims to focus on long-term value creation. Given this, the insignificant results of the CEO pay variables on firm performance could be caused by the one-year timeframe, and using a longer timeframe may deliver more reliable and valid results. Besides, it is important to mention that the data in this study is mainly hand-collected. Given this, it may be possible that data have been recorded incorrectly into the dataset and may have influenced the results. However, given that in the main analyses the total number of observations amounts over 240, the sample size should be big enough to not let incorrectly recorded data have influenced the results. To add, there is also no database available in the Netherlands that contains the CEO pay and corporate governance data for every year and every Dutch listed firm. For this reason, there was also no other possibility to mitigate this limitation. Finally, another limitation of this study is concerned with CEO turnovers. During the sample period, several firms experienced CEO switches. This could undesirably affect the OLS regression results, since it introduces variation in CEO compensation to the model which is not related to firm performance. Instead, it is attributed to the difference in the compensation contracts from the former CEO to the new CEO. However, given that only 20 CEO turnovers are observed in the full sample of 253 observations, which is less than 8% of the total sample, it is expected that the sample size is big enough to not have let CEO turnovers have seriously influenced the regression results.

Based on the results and limitations, recommendations for future research regarding CEO pay on firm performance can be given. The first recommendation for future research is concerned with the one-year timeframe limitation as mentioned here above. As previously mentioned, CEO pay is usually determined for a longer period of time, and using a one-year timeframe may not allow certain effects of CEO pay on firm performance to be incorporated into the analysis. Specifically, CEO variable compensation (annual bonus and long-term incentive-based pay) are usually partly unconditionally granted in the first year and then awarded spread over a time period of mostly three to five years. Therefore, instead of using a t+1 lead, future research should incorporate t+3 or maybe even t+5 leads in

order to incorporate the longer-term value enhancing aim of CEO compensation into the analyses. Furthermore, a second recommendation is that future research should also focus on privately-held firms in the Dutch context. Most studies regarding the effects of CEO pay on firm performance focus mainly on public firms, whereas privately held firms are generally neglected. This could of course also be explained by the fact that obtaining data for public firms is usually easier and more efficient than for private firms. However, private firms are a very important group of firms that have specific characteristics that cannot be examined by only focussing on public firms. Therefore, future research should also focus more on the effect of CEO pay on firm performance for privately held firms. In addition, as known so far, corporate governance as a moderator for the effect of CEO pay on firm performance has not been examined extensively in the Dutch context. Therefore, this study is one of the very few that has examined the moderating effect of several corporate governance variables on the effect of CEO pay on firm performance. Given this, future research should examine the moderating effect of other corporate governance variables as well. For example, as acknowledged by the Dutch Monitoring Commission Corporate Governance of Van Manen, most Dutch listed firm are predominantly owned by foreign shareholders. Given this, future studies could examine the impact of this type of ownership composition on CEO pay and the effect of CEO pay on firm performance. Finally, the last recommendation is concerned with using different research methods. Different types of research methods have already been used by scholars to examine the effect of CEO pay on firm performance. However, most studies only focused on regression analysis. Given this, it may be interesting to use different types of research methods in one study to find out how it affects the results. Also, it could increase the validity and reliability of the results, as well as give insights into a superior method to examine the subject of CEO pay and firm performance.

Appendices

Appendix A1 – Sample firms

	2014	2015	2016		2014	2015	2016
Aalberts Industries				IMCD			
ABN AMRO				ING Groep			
Accell Group				Intertrust			
Advanced Metallurgical Group				Kardan			
Aegon				Kas Bank			
Ahold Delhaize				Kendrion			
Air France-KLM				Kiadis Pharma			
Ajax				KPN			
Akzo Nobel				Lucas Bols			
ALTICE EUROPE N.V.				Nedap			
Amsterdam Commodities				Neways Electronics			
AND International Publishers				NIBC Holding N.V.			
Arcadis				NN Group			
ASM International				Novisource			
ASML Holding				NSI			
ASR Nederland				OCI			
Avantium				Ordina			
BAM Groep				Pharming Group			
Basic-Fit				Philips			
Batenburg Techniek				PostNL			
BE Semiconductor Industries				RANDSTAD			
Beter Bed				RELX			
BinckBank				RoodMicrotec			
Boskalis Westminster				Royal Delft Group			
Brill				Royal Dutch Shell			
Brunel International				SBM Offshore			
Corbion				Sif Holding			
Core Laboratories				SIGNIFY NV			
Ctac				Sligro Food Group			
Curetis				SnowWorld			
DPA Group				Stern Groep			
DSM				Takeaway.com			
Esperite				TIE Kinetix			
Eurocommercial Properties				TKH Group			
Fagron				TomTom			
Flow Traders				Unilever			
ForFarmers				Value8			
Fugro				Van Lanschot Kempen			
Galapagos				Vastned			
Gemalto				Vopak Koninklijke			
GrandVision				Wereldhave			
Heijmans				Wessanen			
Heineken				Wolters Kluwer			
Holland Colours				**Total**	**79**	**85**	**89**
Hydratec Industries				*Present in the sample*			
ICT Group				*Not present in the sample*			

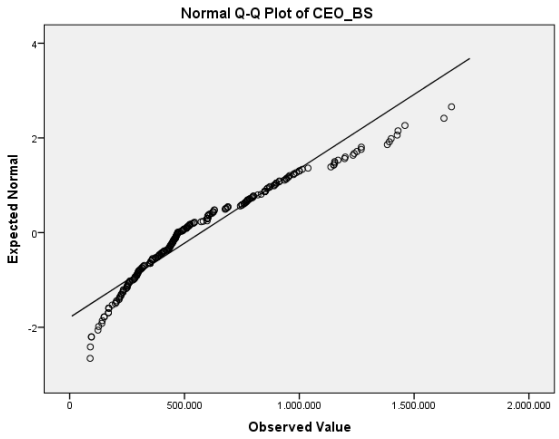
Appendix A2 – NACE Rev. 2 classification per sample firm

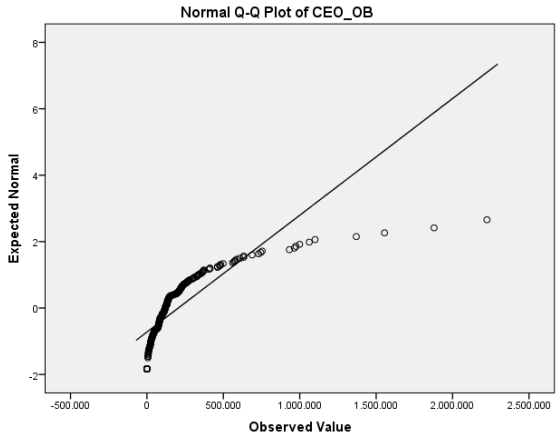
Name	NACE REV 2 class	Reclassification group
Aalberts Industries	C - Manufacturing	Manufacturing
ABN AMRO	K - Financial and insurance activities	Financial, insurance and administrative services
Accell Group	C - Manufacturing	Manufacturing
Advanced Metallurgical Group	C - Manufacturing	Manufacturing
Aegon	K - Financial and insurance activities	Financial, insurance and administrative services
Ahold Delhaize	G - Wholesale and retail trade; repair of motor vehicles and motorcycles	Commodities, retail and transport
Air France-KLM	H - Transportation and storage	Commodities, retail and transport
Ajax	R - Arts, entertainment and recreation	Other service companies
Akzo Nobel	C - Manufacturing	Manufacturing
ALTICE EUROPE N.V.	J - Information and communication	Other service companies
Amsterdam Commodities	G - Wholesale and retail trade; repair of motor vehicles and motorcycles	Commodities, retail and transport
AND International Publishers	J - Information and communication	Other service companies
Arcadis	M - Professional, scientific and technical activities	Other service companies
ASM International	C - Manufacturing	Manufacturing
ASML Holding	C - Manufacturing	Manufacturing
ASR Nederland	K - Financial and insurance activities	Financial, insurance and administrative services
Avantium	C - Manufacturing	Manufacturing
BAM Groep	F - Construction	Real estate and construction
Basic-Fit	R - Arts, entertainment and recreation	Other service companies
Batenburg Techniek	F - Construction	Real estate and construction
BE Semiconductor Industries	C - Manufacturing	Manufacturing
Beter Bed	C - Manufacturing	Manufacturing
BinckBank	K - Financial and insurance activities	Financial, insurance and administrative services
Boskalis Westminster	F - Construction	Real estate and construction
Brill	J - Information and communication	Other service companies
Brunel International	M - Professional, scientific and technical activities	Other service companies
Corbion	C - Manufacturing	Manufacturing
Core Laboratories	B - Mining and quarrying	Commodities, retail and transport
Ctac	J - Information and communication	Other service companies
Curetis	Q - Human health and social work activities	Other service companies
DPA Group	N - Administrative and support service activities	Financial, insurance and administrative services
DSM	C - Manufacturing	Manufacturing
Esperite	G - Wholesale and retail trade; repair of motor vehicles and motorcycles	Commodities, retail and transport
Eurocommercial Properties	L - Real estate activities	Real estate and construction
Fagron	Q - Human health and social work activities	Other service companies
Flow Traders	K - Financial and insurance activities	Financial, insurance and administrative services
ForFarmers	A - Agriculture, forestry and fishing	Commodities, retail and transport
Fugro	M - Professional, scientific and technical activities	Other service companies
Galapagos	M - Professional, scientific and technical activities	Other service companies
Gemalto	J - Information and communication	Other service companies
GrandVision	G - Wholesale and retail trade; repair of motor vehicles and motorcycles	Commodities, retail and transport
Heijmans	F – Construction	Real estate and construction
Heineken	C - Manufacturing	Manufacturing
Holland Colours	C - Manufacturing	Manufacturing
Hydratec Industries	C - Manufacturing	Manufacturing

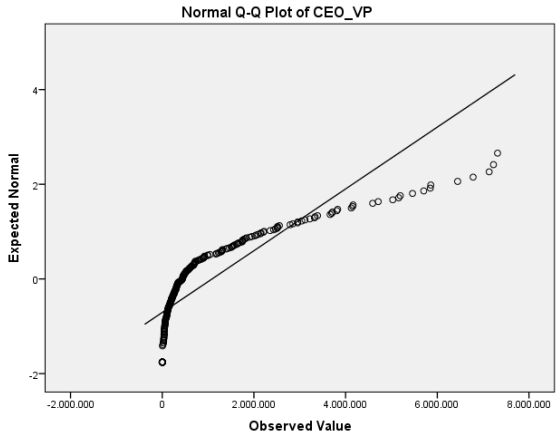
ICT Group	J - Information and communication	Other service companies
IMCD	C - Manufacturing	Manufacturing
ING Groep	K - Financial and insurance activities	Financial, insurance and administrative services
Intertrust	M - Professional, scientific and technical activities	Other service companies
Kardan	L - Real estate activities	Real estate and construction
Kas Bank	K - Financial and insurance activities	Financial, insurance and administrative services
Kendrion	C - Manufacturing	Manufacturing
Kiadis Pharma	C - Manufacturing	Manufacturing
KPN	J - Information and communication	Other service companies
Lucas Bols	C - Manufacturing	Manufacturing
Nedap	C - Manufacturing	Manufacturing
Neways Electronics	C - Manufacturing	Manufacturing
NIBC Holding N.V.	K - Financial and insurance activities	Financial, insurance and administrative services
NN Group	K - Financial and insurance activities	Financial, insurance and administrative services
Novisource	K - Financial and insurance activities	Financial, insurance and administrative services
NSI	L - Real estate activities	Real estate and construction
OCI	C - Manufacturing	Manufacturing
Ordina	J - Information and communication	Other service companies
Pharming Group	C - Manufacturing	Manufacturing
Philips	C - Manufacturing	Manufacturing
PostNL	H - Transportation and storage	Commodities, retail and transport
RANDSTAD	N - Administrative and support service activities	Financial, insurance and administrative services
RELX	J - Information and communication	Other service companies
RoodMicrotec	C - Manufacturing	Manufacturing
Royal Delft Group	C - Manufacturing	Manufacturing
Royal Dutch Shell	B - Mining and quarrying	Commodities, retail and transport
SBM Offshore	B - Mining and quarrying	Commodities, retail and transport
Sif Holding	C - Manufacturing	Manufacturing
SIGNIFY NV	C - Manufacturing	Manufacturing
Sligro Food Group	G - Wholesale and retail trade; repair of motor vehicles and motorcycles	Commodities, retail and transport
SnowWorld	R - Arts, entertainment and recreation	Other service companies
Stern Groep	G - Wholesale and retail trade; repair of motor vehicles and motorcycles	Commodities, retail and transport
Takeaway.com	J - Information and communication	Other service companies
TIE Kinetix	J - Information and communication	Other service companies
TKH Group	C - Manufacturing	Manufacturing
TomTom	C - Manufacturing	Manufacturing
Unilever	C - Manufacturing	Manufacturing
Value8	K - Financial and insurance activities	Financial, insurance and administrative services
Van Lanschot Kempen	K - Financial and insurance activities	Financial, insurance and administrative services
Vastned	L - Real estate activities	Real estate and construction
Vopak Koninklijke	H - Transportation and storage	Commodities, retail and transport
Wereldhave	L - Real estate activities	Real estate and construction
Wessanen	C - Manufacturing	Manufacturing
Wolters Kluwer	J - Information and communication	Other service companies

Appendix B – Data transformations

Before







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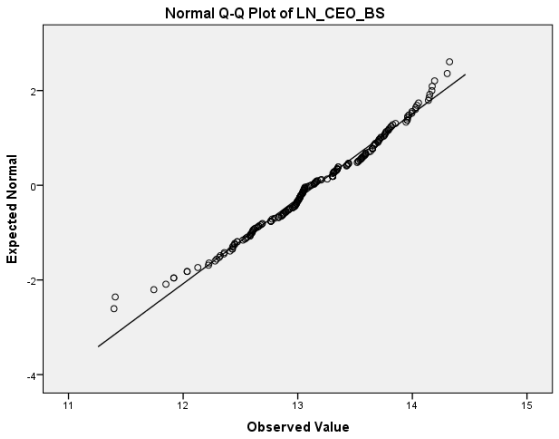
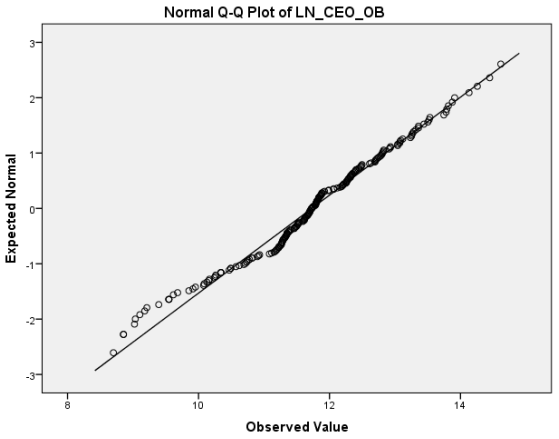
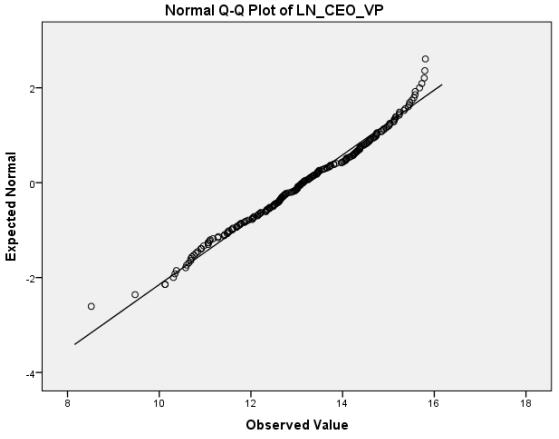
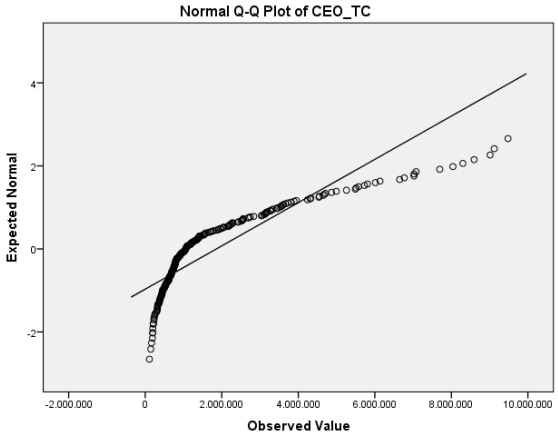
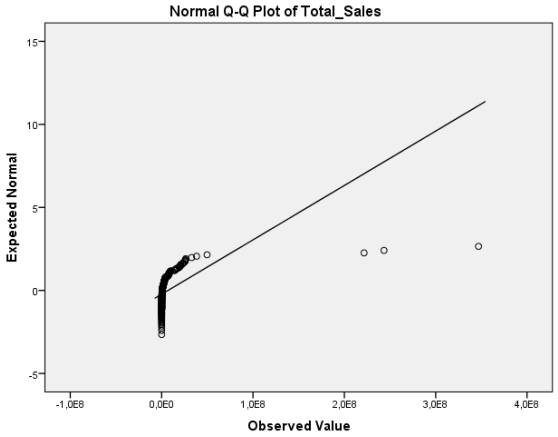


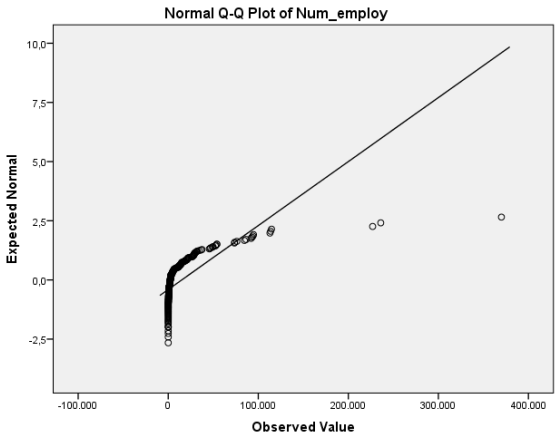




Before







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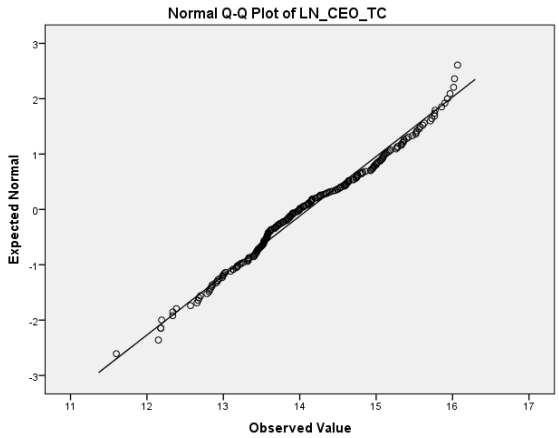

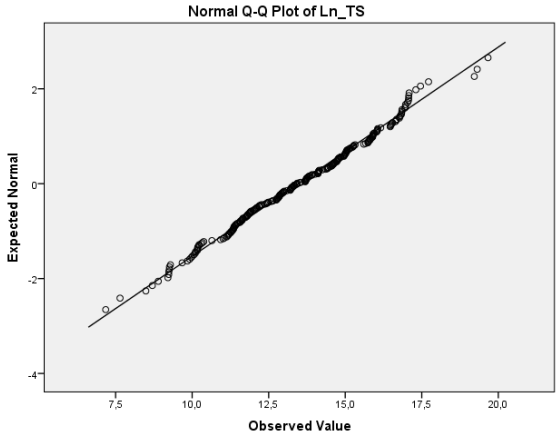

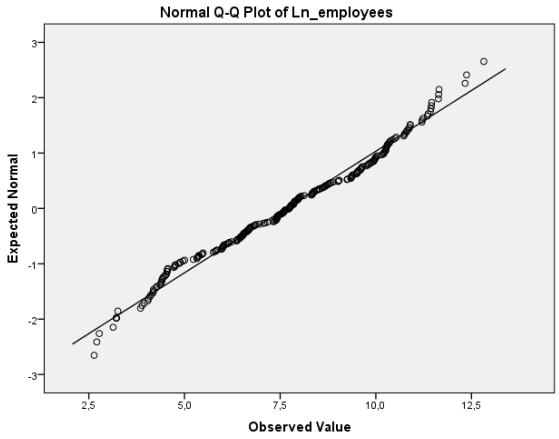

Appendix C – VIF values OLS regression models

ROA models hypothesis 1 **

Model		Tolerance	VIF
1	(Constant)		
	Ln_employees	,887	1,127
	BV_Leverage	,628	1,592
	Industry_dum1	,790	1,266
	Industry_dum2	,845	1,183
	Industry_dum3	,583	1,714
	Industry_dum4	,798	1,254
	year_dum1	,727	1,376
	year_dum2	,726	1,377

Model		Tolerance	VIF
1	(Constant)		
	LN_CEO_VP	,690	1,449
	Ln_employees	,661	1,514
	BV_Leverage	,653	1,531
	Industry_dum1	,779	1,283
	Industry_dum2	,847	1,180
	Industry_dum3	,593	1,686
	Industry_dum4	,793	1,261
	year_dum1	,714	1,400
	year_dum2	,711	1,406

Model		Tolerance	VIF
1	(Constant)		
	LN_CEO_BS	,681	1,469
	Ln_employees	,633	1,579
	BV_Leverage	,627	1,594
	Industry_dum1	,785	1,274
	Industry_dum2	,843	1,186
	Industry_dum3	,583	1,715
	Industry_dum4	,778	1,285
	year_dum1	,727	1,376
	year_dum2	,726	1,377

Model		Tolerance	VIF
1	(Constant)		
	LN_CEO_TC	,671	1,490
	Ln_employees	,643	1,555
	BV_Leverage	,622	1,606
	Industry_dum1	,782	1,279
	Industry_dum2	,837	1,195
	Industry_dum3	,563	1,776
	Industry_dum4	,780	1,282
	year_dum1	,725	1,379
	year_dum2	,723	1,383

Model		Tolerance	VIF
1	(Constant)		
	LN_CEO_OB	,734	1,362
	Ln_employees	,705	1,418
	BV_Leverage	,614	1,628
	Industry_dum1	,776	1,288
	Industry_dum2	,858	1,166
	Industry_dum3	,587	1,703
	Industry_dum4	,788	1,269
	year_dum1	,722	1,384
	year_dum2	,722	1,385

** On account of simplicity only the VIF values of the models used in the OLS regression analysis of hypothesis 1 (table 5.3) have been reported. However, other models reported similar VIF values. The actual VIF values of all the models range from 1.049 to 2.817. Given this, these values remain significantly within the critical range of 5 to 10. Therefore, multicollinearity seems no problem in the OLS regression models.

RET models hypothesis 1 **

Model		Tolerance	VIF
1	(Constant)		
	LN_CEO_BS	,667	1,499
	Ln_employees	,624	1,601
	BV_Leverage	,662	1,512
	Industry_dum1	,798	1,254
	Industry_dum2	,842	1,187
	Industry_dum3	,624	1,603
	Industry_dum4	,775	1,290
	year_dum1	,713	1,403
	year_dum2	,712	1,405

Model		Tolerance	VIF
1	(Constant)		
	LN_CEO_TC	,690	1,449
	Ln_employees	,657	1,522
	BV_Leverage	,659	1,518
	Industry_dum1	,795	1,257
	Industry_dum2	,835	1,198
	Industry_dum3	,607	1,646
	Industry_dum4	,779	1,283
	year_dum1	,711	1,406
	year_dum2	,711	1,407

		Tolerance	VIF
1	(Constant)		
	LN_CEO_OB	,720	1,390
	Ln_employees	,699	1,430
	BV_Leverage	,658	1,521
	Industry_dum1	,785	1,274
	Industry_dum2	,858	1,166
	Industry_dum3	,623	1,606
	Industry_dum4	,782	1,278
	year_dum1	,710	1,408
	year_dum2	,710	1,408

Model		Tolerance	VIF
1	(Constant)		
	LN_CEO_VP	,728	1,373
	Ln_employees	,687	1,455
	BV_Leverage	,671	1,489
	Industry_dum1	,793	1,261
	Industry_dum2	,845	1,184
	Industry_dum3	,620	1,614
	Industry_dum4	,794	1,259
	year_dum1	,709	1,410
	year_dum2	,708	1,412

** On account of simplicity only the VIF values of the models used in the OLS regression analysis of hypothesis 1 (table 5.3) have been reported. However, other models reported similar VIF values. The actual VIF values of all the models range from 1.049 to 2.817. Given this, these values remain significantly within the critical range of 5 to 10. Therefore, multicollinearity seems no problem in the OLS regression models.

Appendix D – Tabulated results robustness tests

Table D1 – Robustness test removing firm size and firm leverage for ROA and RET

Variable	$ROA_{(t+1)}$					$RET_{(t+1)}$				
Intercept	.091***	-.013	0.021	-.044	-.071	.213***	-.414	-.084	.254	.235
	(5.539)	(.898)	(.670)	(-1.059)	(-1.093)	(3.216)	(-1.041)	(-.415)	(1.504)	(.878)
LN_CEO_BS		.008					.049			
		(1.060)					(1.598)			
LN_CEO_OB			.006					.028		
			(1.352)					(1.629)		
LN_CEO_VP				.010***					.000	
				(3.625)					(-.017)	
LN_CEO_TC					.012**					-.002
					(2.573)					(-.087)
BV_leverage	-.028	-.033	-.025	-.044*	-.041*	-.044	-.070	-.112	-.114	-.042
	(-1.151)	(-1.303)	(-.945)	(-1.747)	(-1.663)	(-.449)	(-.712)	(-1.074)	(-1.142)	(-.423)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	245	245	231	226	245	234	234	218	219	234
Adjusted R^2	.062	.094	.055	.118	.084	.016	.022	.028	.033	.011

Variable	$ROA_{(t+1)}$					$RET_{(t+1)}$				
Intercept	.044**	.083	0.033	-.049	-.045	.081	-.162	-.048	.263	.458
	(2.519)	(.755)	(.673)	(-1.183)	(-.650)	(1.154)	(-.365)	(-.233)	(1.568)	(1.623)
LN_CEO_BS		-.003					.020			
		(-.354)					(.580)			
LN_CEO_OB			.001					.013		
			(.237)					(.698)		
LN_CEO_VP				.009**					-.014	
				(2.534)					(-1.035)	
LN_CEO_TC					.007					-.030
					(1.329)					(-1.379)
LN_employees	.004**	.005*	.004*	.002	.002	.015*	.012	.010	.016*	.021**
	(2.121)	(1.963)	(1.658)	(.653)	(1.052)	(1.856)	(1.217)	(1.096)	(1.778)	(2.309)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	245	245	231	226	245	234	234	218	219	234
Adjusted R^2	.075	.071	.063	.107	.078	.030	.027	.028	.041	.033

*Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1. *** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D2 – Robustness test removing firm size and firm leverage for ROS and Tobin's Q

Variable	ROS $_{(t+1}$					Tobin's Q $_{(t+1}$				
Intercept	.119***	-.374*	-.167*	-.226***	-.404***	2.010***	.679	1.402***	.733**	.360
	(3.552)	(-1.895)	(-1.685)	(-2.755)	(-3.161)	(16.069)	(.892)	(3.696)	(2.194)	(.714)
LN_CEO_BS		.038**					.104*			
		(2.534)					(1.772)			
LN_CEO_OB			.026***					.059*		
			(3.065)					(1.822)		
LN_CEO_VP				.028***					.103***	
				(4.665)					(4.176)	
LN_CEO_TC					.039***					.122***
					(4.229)					(3.377)
BV_leverage	-.055	-.075	-.085	-.111**	-.098**	-.530***	-.585***	-.609***	-.666***	-.647***
	(-1.097)	(-1.505)	(-1.629)	(-2.190)	(-1.982)	(-2.893)	(-3.166)	(-3.011)	(-3.442)	(-3.547)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	233	233	221	214	233	237	237	222	220	237
Adjusted R²	.059	.081	.078	.121	.125	.266	.273	.274	.302	.298

Variable	ROS $_{(t+1}$					Tobin's Q $_{(t+1}$				
Intercept	.100***	-.570***	-.213**	-.299***	-.566***	1.790***	.128	1.279***	.394	-.176
	(2.727)	(-2.590)	(-2.127)	(-3.720)	(-4.164)	(13.187)	(.148)	(3.256)	(1.168)	(-.320)
LN_CEO_BS		.056***					.138**			
		(3.086)					(1.936)			
LN_CEO_OB			.032***					.054		
			(3.379)					(1.483)		
LN_CEO_VP				.040***					.130***	
				(5.754)					(4.597)	
LN_CEO_TC					.055***					.159***
					(5.068)					(3.689)
LN_employees	-.001	-.010**	-.009*	-.018***	-.015***	-.010	-.030	-.020	-.052***	-.046**
	(-.348)	(-2.054)	(-1.953)	(-3.799)	(-3.186)	(-.628)	(-1.622)	(-1.133)	(-2.890)	(-2.577)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	233	233	221	214	233	237	237	222	220	237
Adjusted R²	.054	.089	.083	.159	.148	.240	.249	.248	.291	.280

*Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1. *** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D3 – Robustness test hypothesis 1 results for big firms and SME firms

Variable	ROA $_{(t+1)}$			Big sized firms		RET $_{(t+1)}$				
Intercept	.088***	.219**	0.080	-.003	.058	.270***	.076	.312	.478**	.694**
	(5.512)	(1.996)	(1.484)	(-.065)	(.806)	(3.756)	(.157)	(1.309)	(2.431)	(2.177)
LN_CEO_BS		-.010					.015			
		(-1.213)					(.403)			
LN_CEO_OB			.000					-.005		
			(.027)					(-.269)		
LN_CEO_VP				.007**					-.013	
				(2.053)					(-.892)	
LN_CEO_TC					.002					-.031
					(.418)					(-1.365)
BV_leverage	-.004	.001	.010	-.005	-.006	-.074	-.080	-.018	-.139	-.037
	(-.144)	(.056)	(.368)	(-.197)	(-.243)	(-.661)	(-.713)	(-.156)	(-1.245)	(-.322)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	200	200	188	186	200	186	186	174	176	186
Adjusted R^2	.145	.147	.145	.156	.141	.030	.026	.039	.069	.035

Variable	ROA $_{(t+1)}$			SME firms		RET $_{(t+1)}$				
Intercept	.116*	-.009	.005	.030	-.023	-.115	.471	-.258	.446	.585
	(1.814)	(-.031)	(.040)	(.232)	(-.106)	(-.627)	(.460)	(-.538)	(.988)	(.778)
LN_CEO_BS		.010					-.046			
		(.436)					(-.582)			
LN_CEO_OB			.007					.037		
			(.653)					(.878)		
LN_CEO_VP				.010					-.047	
				(1.076)					(-1.558)	
LN_CEO_TC					.010					-.049
					(.673)					(-.961)
BV_leverage	-.132	-.136	-.095	-.210**	-.132	.177	.190	-.283	.181	.133
	(-1.508)	(-1.529)	(-1.028)	(-2.325)	(-1.499)	(.721)	(.765)	(-.940)	(.718)	(.535)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	45	45	43	40	45	48	48	44	43	48
Adjusted R^2	.193	.174	.228	.233	.180	.009	.026	.012	.068	.011

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1. ***Firm size classification is based on the Eurostat definition of SME-sized firms and large enterprises. A firm is considered an SME-firm when is has < 250 employees at the firm, while a firm is considered a large enterprise when is has ≥ 250 employees at the firm.*** **** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D4 – Robustness test hypothesis 1 using ROS and Tobin's Q

Variable	**ROS** $_{(t+1}$					**Tobin's Q** $_{(t+1}$				
Intercept	.123***	-.559**	-.202**	-.276***	-.557***	1.999***	.277	1.347***	.581*	-.043
	(2.881)	(-2.543)	(-2.009)	(-3.415)	(-4.107)	(13.070)	(.324)	(3.480)	(1.720)	(-.080)
LN_CEO_BS		.057***					.143**			
		(3.157)					(2.043)			
LN_CEO_OB			.034***					.071*		
			(3.558)					(1.957)		
LN_CEO_VP				.041***					.134***	
				(5.956)					(4.791)	
LN_CEO_TC					.057***					.166***
					(5.248)					(3.930)
LN_employees	-.001	-.009*	-.009*	-.017***	-.014***	.002	-.019	-.013	-.041**	-.035**
	(-.131)	(-1.870)	(-1.783)	(-3.590)	(-3.005)	(.123)	(-1.024)	(-.735)	(-2.274)	(-1.979)
BV_leverage	-.054	-.063	-.074	-.091*	-.082*	-.536***	-.546***	-.588***	-.574***	-.577***
	(-1.046)	(-1.249)	(-1.424)	(-1.833)	(-1.692)	(-2.818)	(-2.891)	(-2.875)	(-2.932)	(-3.124)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	233	233	221	214	233	237	237	222	220	237
Adjusted R^2	.055	.091	.087	.169	.155	.263	.273	.273	.315	.307

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D5 – Robustness test hypothesis 1 replacing the firm size variable

Variable	ROA $_{(t+1)}$					RET $_{(t+1)}$				
Intercept	.043	.105	.029	-.043	-.069	.036	-.023	-.007	.247	.595**
	(1.460)	(.868)	(.582)	(-1.055)	(-.950)	(.309)	(-.046)	(-.034)	(1.479)	(2.017)
LN_CEO_BS		-.006					.006			
		(-.527)					(.123)			
LN_CEO_OB			.002					.013		
			(.356)					(.537)		
LN_CEO_VP				.013***					-.022	
				(3.188)					(-1.354)	
LN_CEO_TC					.012*					-.057**
					(1.696)					(-2.062)
LN_Total_Sales	.004*	.005*	.003	-.002	.000	.016*	.015	.009	.025**	.035***
	(1.922)	(1.681)	(.929)	(-.730)	(.071)	(1.877)	(1.154)	(.706)	(2.201)	(2.798)
BV_leverage	-.042	-.042*	-.029	-.041	-.042	-.105	-.104	-.125	-.184*	-.115
	(-1.631)	(-1.660)	(-1.099)	(-1.559)	(-1.645)	(-1.037)	(-1.018)	(-1.171)	(-1.789)	(-1.144)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	245	245	231	226	245	232	232	216	217	232
Adjusted R^2	.073	.070	.055	.116	.080	.030	.026	.028	.056	.044

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D6 – Robustness test hypothesis 1 replacing the firm leverage variable

Variable	**ROA** $_{(t+1)}$					**RET** $_{(t+1)}$				
Intercept	.081***	.171	.071	.020	.050	.062	-.206	-.056	.268	.416
	(4.523)	(1.622)	(1.472)	(.489)	(.731)	(.842)	(-.461)	(-.270)	(1.514)	(1.429)
LN_CEO_BS		-.007					.022			
		(-.868)					(.608)			
LN_CEO_OB			.001					.012		
			(.173)					(.614)		
LN_CEO_VP				.006					-.015	
				(1.642)					(-1.029)	
LN_CEO_TC					.002					-.028
					(.466)					(-1.256)
LN_employees	.005***	.007***	.005**	.004	.005**	.013	.010	.009	.016*	.020**
	(2.807)	(2.819)	(2.261)	(1.651)	(2.074)	(1.653)	(1.020)	(.967)	(1.729)	(2.073)
MV_leverage	-.120***	-.121***	-.117***	-.115***	-.199***	.078	.081	.097	-.010	.058
	(-5.438)	(-5.479)	(-5.111)	(-5.057)	(-5.310)	(.835)	(.870)	(.998)	(-.100)	(.615)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	234	234	220	219	234	234	234	218	219	234
Adjusted R^2	.176	.175	.159	.199	.173	.028	.026	.028	.036	.031

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D7 – Robustness test hypothesis 1 using averaged data

Variable	**ROA** $_{(t+1)}$					**RET** $_{(t+1)}$				
Intercept	.080***	.121	-.006	.003	-.030	.092	-.397	-.144	.268	.350
	(3.067)	(.808)	(-.094)	(.058)	(-.309)	(1.057)	(-.760)	(-.654)	(1.430)	(1.034)
LN_CEO_BS		-.003					.041			
		(-.278)					(.949)			
LN_CEO_OB			.009					.030		
			(1.359)					(1.445)		
LN_CEO_VP				.007					-.015	
				(1.502)					(-.994)	
LN_CEO_TC					.009					-.021
					(1.177)					(-.789)
LN_employees	.003	.003	.001	.001	.001	.021**	.015	.009	.024**	.025**
	(1.071)	(1.050)	(.797)	(.271)	(.327)	(2.195)	(1.312)	(.880)	(2.418)	(2.296)
BV_leverage	-.051	-.051	-.054	-.053	-.057	-.139	-.141	-.195*	-.144	-.128
	(-1.470)	(-1.456)	(-1.459)	(-1.523)	(-1.620)	(-1.195)	(-1.209)	(-1.672)	(-1.292)	(-1.086)
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	85	85	81	83	85	86	86	81	84	86
Adjusted R^2	.097	.087	.092	.099	.102	.042	.041	.051	.072	.038

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D8 – Robustness test hypothesis 1 excluding financial firms

Variable	ROA (t +1)					RET (t +1)				
Intercept	.062*** (2.782)	.012 (.086)	-.002 (-.030)	-.059 (-1.231)	-.088 (-1.058)	.140 (1.628)	.543 (.982)	.047 (.196)	.432** (2.243)	.723** (2.208)
LN_CEO_BS		.004 (.358)					-.034 (-.738)			
LN_CEO_OB			.006 (1.105)					.010 (.458)		
LN_CEO_VP				.012*** (2.952)					-.024 (-1.486)	
LN_CEO_TC					.013* (1.871)					-.048* (-1.844)
LN_employees	.004 (1.505)	.003 (.970)	.001 (.527)	-.002 (-.589)	.000 (.007)	.012 (1.375)	.017 (1.536)	.010 (.921)	.020* (1.907)	.025** (2.222)
BV_leverage	-.024 (-.901)	-.024 (-.873)	-.017 (-.592)	-.022 (-.831)	-.023 (-.860)	-.102 (-.981)	-.107 (-1.021)	-.134 (-1.219)	-.168 (-1.594)	-.111 (-1.070)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	210	210	201	201	210	205	205	194	196	205
Adjusted R^2	.039	.035	.025	.092	.050	.015	.012	.014	.042	.026

Variable	ROS (t +1					Tobin's Q (t +1				
Intercept	.138*** (3.131)	-.644** (-2.418)	-.205* (-1.839)	-.308*** (-3.516)	-.622*** (-4.116)	1.845*** (11.076)	.413 (.379)	1.119** (2.472)	.565 (1.427)	.042 (.065)
LN_CEO_BS		.066*** (2.976)					.119 (1.328)			
LN_CEO_OB			.036*** (3.354)					.075* (1.712)		
LN_CEO_VP				.046*** (5.838)					.125*** (3.685)	
LN_CEO_TC					.065*** (5.228)					.149*** (2.867)
LN_employees	.000 (.026)	-.011* (-1.869)	-.011** (-1.999)	-.019*** (-3.533)	-.019*** (-3.410)	.027 (1.506)	.008 (.363)	.011 (.497)	-.024 (-1.094)	-.014 (-.623)
BV_leverage	-.082 (-1.591)	-.077 (-1.508)	-.081 (-1.542)	-.090* (-1.825)	-.098* (-1.694)	-.608*** (-2.893)	-.592*** (-2.903)	-.621*** (-2.843)	-.568*** (-2.670)	-.577*** (-2.874)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	199	199	191	190	199	207	207	196	198	207
Adjusted R^2	.004	.035	.047	.158	.117	.206	.209	.203	.244	.234

*Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1. *** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D9 – Robustness test hypothesis 1 using subsample

Variable	ROA (t +1)					RET (t +1)				
Intercept	.052*	-.091	-.068	-.037	-.129	.166	.453	-.031	.510**	.762**
	(1.880)	(-.562)	(-1.041)	(-.665)	(-1.291)	(1.579)	(.468)	(-.115)	(2.310)	(2.001)
LN_CEO_BS		.012					-.024			
		(.370)					(-.467)			
LN_CEO_OB			.013**					.019		
			(2.015)					(.666)		
LN_CEO_VP				.011**					-.038*	
				(2.093)					(-1.900)	
LN_CEO_TC					.016*					-.052
					(1.890)					(-1.627)
LN_employees	.008***	.006	.003	.001	.002	.019*	.023*	.016	.037***	.034**
	(2.719)	(1.552)	(.960)	(.332)	(.643)	(1.821)	(1.707)	(1.200)	(2.770)	(2.451)
BV_leverage	-.071*	-.072*	-.085**	-.084**	-.086**	-.186	-.185	-.191	-.157	-.149
	(-1.899)	(-1.930)	(-2.223)	(-2.301)	(-2.272)	(-1.299)	(-1.289)	(-1.245)	(-1.117)	(-1.036)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	133	133	127	131	133	129	129	123	127	129
Adjusted R^2	.035	.034	.045	.052	.054	.014	.008	.018	.047	.027

Variable	ROS (t +1					Tobin's Q (t +1				
Intercept	.059	-.744***	-.224**	-.300***	-.679***	1.693***	-.272	.703	.191	-.669
	(1.340)	(-3.063)	(-2.169)	(-3.683)	(-4.720)	(7.510)	(-.203)	(1.272)	(.408)	(-.824)
LN_CEO_BS		.068***					.166			
		(3.357)					(1.490)			
LN_CEO_OB			.033***					.113**		
			(3.099)					(1.987)		
LN_CEO_VP				.042***					.161***	
				(5.274)					(3.676)	
LN_CEO_TC					.066***					.208***
					(5.337)					(3.020)
LN_employees	.013***	.001	.003	-.009	-.009	.036	.009	.007	-.035	-.026
	(2.877)	(.232)	(.486)	(-1.584)	(-1.523)	(1.612)	(.318)	(.259)	(-1.218)	(-.876)
BV_leverage	-.128**	-.134**	-.177***	-.173***	-.187***	-.422	-.437	-.603*	-.558*	-.591*
	(-2.192)	(-2.383)	(-2.938)	(-3.274)	(-3.450)	(-1.382)	(-1.437)	(-1.855)	(-1.889)	(-1.963)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	131	131	125	129	131	133	133	127	131	133
Adjusted R^2	.091	.160	.154	.233	.256	.062	.071	.089	.143	.119

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1. Firms included in this sample are: Manufacturing; Wholesale and retail trade; repair of motor vehicles and motorcycles; Information and communication.

**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D10 – Robustness test hypothesis 2 using ROS and Tobin's Q

Variable	ROS (t +1					Tobin's Q (t +1				
Intercept	.122***	.204***	.182***	.263***	.237***	2.000***	2.183***	2.131***	2.306***	2.239***
	(2.841)	(4.283)	(3.801)	(5.776)	(5.078)	(12.869)	(12.620)	(11.789)	(13.623)	(13.446)
CEO_ten	.000	.000	.001	-.002	.000	.000	-.001	.002	-.001	-.001
	(.139)	(-.104)	(.529)	(-.933)	(-.174)	(-.033)	(-.227)	(.312)	(-.089)	(-.090)
CEO_BS		.071***					.188**			
		(3.679)					(2.510)			
CEO_BS*CEO_ten		.007**					.024*			
		(2.066)					(1.661)			
CEO_OB			0.32***					.013*		
			(3.339)					(1.706)		
CEO_OB*CEO_ten			.003*					.013*		
			(1.703)					(1.939)		
CEO_VP				.041***					.138***	
				(5.928)					(4.963)	
CEO_VP*CEO_ten				.001					.013**	
				(.734)					(2.359)	
CEO_TC					.057***					.167***
					(5.171)					(3.989)
CEO_TC*CEO_ten					.001					.020**
					(.343)					(2.469)
LN_employees	-.001	-.010**	-.008	-.017***	-.014***	.002	-.022	-.010	-.044**	-.036**
	(-.121)	(-2.044)	(-1.587)	(-3.635)	(-2.968)	(.119)	(-1.163)	(-.538)	(-2.470)	(-2.044)
BV_leverage	-.053	-.064	-.060	-.090*	-.080	-.536***	-.531***	-.516**	-.484**	-.467**
	(-1.041)	(-1.282)	(-1.142)	(-1.799)	(-1.614)	(-2.807)	(-2.807)	(-2.484)	(-2.424)	(-2.472)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	233	233	221	214	233	237	237	222	220	237
Adjusted R^2	.051	.100	.091	.165	.148	.259	.275	.279	.327	.319

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D11 – Robustness test hypothesis 2 replacing the firm size variable

Variable	ROA (t +1)					RET (t +1)				
Intercept	.045	.054	.011	.119***	.064	.024	.026	.053	-.100	-.314*
	(1.493)	(1.236)	(.264)	(2.929)	(1.458)	(.199)	(.148)	(.307)	(-.640)	(-1.816)
CEO_ten	.000	-.001	.000	-.001	-.001	.002	.002	.003	.004	.003
	(-.331)	(-.722)	(.532)	(-1.385)	(-.902)	(.683)	(.614)	(.900)	(1.163)	(.991)
CEO_BS		.008					.003			
		(.710)					(.064)			
CEO_BS*CEO_ten		.007***					.002			
		(4.136)					(.340)			
CEO_OB			-.004					.004		
			(-.718)					(.154)		
CEO_OB*CEO_ten			.004***					.007*		
			(5.249)					(1.806)		
CEO_VP				.012***					-.027	
				(2.678)					(-1.606)	
CEO_VP*CEO_ten				.002***					.002	
				(3.139)					(.817)	
CEO_TC					.007					-.072**
					(.975)					(-2.529)
CEO_TC*CEO_ten					.004***					.007*
					(4.214)					(1.881)
LN_Total_Sales	.004*	.004	.006**	-.001	.002	.017*	.017	.014	.029**	.042***
	(1.852)	(1.192)	(1.980)	(-.459)	(.768)	(1.946)	(1.247)	(1.153)	(2.483)	(3.288)
BV_leverage	-.042	-.043*	-.014	-.039	-.032	-.105	-.104	-.096	-.175*	-.096
	(-1.641)	(-1.728)	(-.561)	(-1.524)	(-1.296)	(-1.031)	(-1.021)	(-.901)	(-1.698)	(-.953)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	245	245	231	226	245	232	232	216	217	232
Adjusted R^2	.069	.126	.153	.151	.140	.028	.020	.035	.058	.056

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D12 – Robustness test hypothesis 2 replacing the firm leverage variable

Variable	ROA (t +1)					RET (t +1)				
Intercept	.085***	.080***	.076***	.097***	.084***	.052	.074	.049	.057	-.002
	(4.636)	(3.962)	(3.874)	(4.956)	(4.208)	(.696)	(.871)	(.586)	(.729)	(-.022)
CEO_ten	-.001	-.001	.000	-.001	-.001	.003	.002	.004	.004	.003
	(-1.014)	(-1.140)	(-.306)	(-1.583)	(-1.235)	(.866)	(.729)	(1.214)	(1.201)	(.828)
CEO_BS		.002					.026			
		(.183)					(.661)			
CEO_BS*CEO_ten		.005***					.004			
		(2.934)					(.557)			
CEO_OB			-.001					.008		
			(-.214)					(.431)		
CEO_OB*CEO_ten			.003***					.008**		
			(4.063)					(2.116)		
CEO_VP				.006*					-.015	
				(1.760)					(-1.037)	
CEO_VP*CEO_ten				.001**					.002	
				(2.178)					(.671)	
CEO_TC					.003					-.029
					(.487)					(-1.298)
CEO_TC*CEO_ten					.003***					.007*
					(2.927)					(1.820)
LN_employees	.005***	.006**	.006***	.003	.005*	.014*	.010	.011	.017*	.020**
	(2.693)	(2.469)	(2.587)	(1.380)	(1.946)	(1.709)	(1.060)	(1.225)	(1.749)	(2.110)
MV_leverage	-.124***	-.111***	-.100***	-.107***	-.101***	.087	.102	.159	.029	.128
	(-5.530)	(-4.925)	(-4.380)	(-4.519)	(-4.343)	(.928)	(1.056)	(1.590)	(.279)	(1.281)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	234	234	220	219	234	234	234	218	219	234
Adjusted R^2	.179	.201	.217	.216	.200	.027	.021	.043	.037	.040

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D13 – Robustness test hypothesis 2 using averaged data

Variable	ROA (t +1)					RET (t +1)				
Intercept	.083***	.091***	.081***	.094***	.092***	.077	.111	.160*	.061	.034
	(3.107)	(3.141)	(2.881)	(3.288)	(3.158)	(.871)	(1.104)	(1.705)	(.685)	(.345)
CEO_ten	-.001	-.001	-.004**	-.001	-.001	.004	.004	.000	.003	.004
	(-.577)	(-1.264)	(2.531)	(-1.085)	(-1.270)	(1.069)	(.997)	(.105)	(.677)	(.990)
CEO_BS		.009					.029			
		(.743)					(.631)			
CEO_BS*CEO_ten		.008***					-.004			
		(3.177)					(-.411)			
CEO_OB			.005					.026		
			(.730)					(1.217)		
CEO_OB*CEO_ten			.004***					.005		
			(3.269)					(.988)		
CEO_VP				.006					-.016	
				(1.311)					(-1.049)	
CEO_VP*CEO_ten				.001					.001	
				(1.433)					(.439)	
CEO_TC					.006					-.024
					(.865)					(-.906)
CEO_TC*CEO_ten					.004***					.002
					(2.947)					(.512)
LN_employees	.003	.003	.002	.001	.001	.021**	.016	.011	.025**	.026**
	(.989)	(.789)	(.568)	(.172)	(.370)	(2.275)	(1.435)	(1.097)	(2.467)	(2.413)
BV_leverage	-.052	-.053	-.027	-.043	-.038	-.133	-.133	-.162	-.128	-.108
	(-1.492)	(-1.603)	(-.770)	(-1.210)	(-1.110)	(-1.138)	(-1.135)	(-1.352)	(-1.118)	(-.902)
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	85	85	81	83	85	86	86	81	84	86
Adjusted R^2	.090	.177	.193	.104	.178	.044	.029	.049	.060	.032

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D14 – Robustness test hypothesis 2 using average firm performance of two subsequent years

Variable	ROA $_{(t+1)}$					RET $_{(t+1)}$				
Intercept	.065***	.072***	.064***	.086***	.078***	.248***	.232***	.232***	.238***	.220***
	(3.450)	(3.471)	(3.046)	(4.055)	(3.782)	(4.065)	(3.341)	(3.401)	(3.409)	(3.204)
CEO_ten	-.001	-.001	.000	-.001	-.001	.002	.002	.003	.003	.002
	(-.798)	(-1.086)	(-.188)	(-1.498)	(-1.191)	(.962)	(.946)	(1.224)	(1.387)	(.924)
CEO_BS		.008					-.013			
		(.976)					(-.465)			
CEO_BS*CEO_ten		.006***					.002			
		(4.007)					(.399)			
CEO_OB			.002					-.004		
			(.561)					(-.285)		
CEO_OB*CEO_ten			.004***					.003		
			(4.513)					(1.288)		
CEO_VP				.009***					-.008	
				(2.724)					(-.729)	
CEO_VP*CEO_ten				.002***					.001	
				(2.734)					(.521)	
CEO_TC					.008*					-.013
					(1.707)					(-.818)
CEO_TC*CEO_ten					.003***					.004
					(3.544)					(1.360)
LN_employees	.006***	.006***	.006***	.003	.003	.008**	.010	.010	.008	.011
	(3.149)	(2.628)	(2.712)	(1.299)	(1.444)	(1.397)	(1.471)	(1.484)	(1.091)	(1.627)
BV_leverage	-.067***	-.067***	-.054**	-.057**	-.034	-.237***	-.233***	-.223***	-.200**	-.220***
	(-2.897)	(-2.982)	(-2.234)	(-2.391)	(-1.378)	(-3.239)	(-3.166)	(-2.906)	(-2.565)	(-2.969)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	244	244	230	225	244	217	217	203	204	217
Adjusted R^2	.112	.163	.177	.150	.164	.092	.085	.096	.090	.093

Variable	ROS $_{(t+1)}$					Tobin's Q $_{(t+1)}$				
Intercept	.137***	.225***	.210***	.287***	.272***	1.704***	1.853***	1.785***	1.976***	1.909***
	(3.346)	(5.012)	(4.605)	(6.763)	(6.288)	(14.324)	(14.128)	(13.272)	(15.578)	(15.135)
CEO_ten	.001	.000	.001	-.001	.000	.001	.000	.003	.001	.001
	(.400)	(.141)	(.721)	(-.582)	(.137)	(.217)	(.018)	(.606)	(.262)	(.308)
CEO_BS		.076***					.159***			
		(4.201)					(2.887)			
CEO_BS*CEO_ten		.008**					.028***			
		(2.382)					(2.618)			
CEO_OB			0.35***					.047*		
			(3.870)					(1.772)		
CEO_OB*CEO_ten			.002					.010**		
			(.938)					(1.989)		
CEO_VP				.045***					.117***	
				(7.074)					(5.809)	
CEO_VP*CEO_ten				.000					.012***	
				(.295)					(3.037)	
CEO_TC					.065***					.139***
					(6.444)					(4.517)
CEO_TC*CEO_ten					.000					.019***
					(-.177)					(3.132)
LN_employees	.000	-.011**	-.008*	-.019***	-.017***	-.006	-.024*	-.013	-.047***	-.038***
	(-.107)	(-2.314)	(-1.787)	(-4.335)	(-3.686)	(-.482)	(-1.724)	(-.960)	(-3.486)	(-2.856)
BV_leverage	-.070	-.082*	-.095*	-.096**	-.107**	-.264*	-.257*	-.209	-.203	-.199
	(-1.422)	(-1.737)	(-1.877)	(-2.045)	(-2.313)	(-1.817)	(-1.800)	(-1.351)	(-1.381)	(-1.405)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	231	231	219	212	231	222	222	206	207	222
Adjusted R^2	.034	.102	.082	.202	.181	.246	.278	.279	.355	.334

*Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1. *** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D15 – Robustness test hypothesis 3 using ROS and Tobin's Q

Variable	ROS (t +1					Tobin's Q (t +1				
Intercept	.184***	.212***	.211***	.269***	.261***	2.149***	2.204***	2.240***	2.392***	2.355***
	(4.004)	(4.438)	(4.301)	(5.665)	(5.436)	(13.084)	(12.899)	(12.253)	(13.631)	(13.791)
AC_dummy	.072***	.029	.036	.013	.013	.197**	.029	.065	.037	.016
	(3.172)	(.926)	(1.201)	(.511)	(.473)	(2.358)	(.267)	(0.589)	(.383)	(.162)
CEO_BS		.039*					.078			
		(1.896)					(1.012)			
CEO_BS*AC_dummy		-.051					-.348**			
		(-1.143)					(-2.158)			
CEO_OB			.027**					.052		
			(2.574)					(1.308)		
CEO_OB*AC_dummy			-.004					-.071		
			(-.154)					(-.837)		
CEO_VP				.039***					.117***	
				(4.995)					(3.775)	
CEO_VP*AC_dummy				-.004					-.064	
				(-.265)					(-1.094)	
CEO_TC					.051***					.143***
					(4.197)					(3.077)
CEO_TC*AC_dummy					-.029					-.139
					(-1.205)					(-1.514)
LN_employees	-.007	-.011**	-.010**	-.017***	-.016***	-.014	-.021	-.018	-.045**	-.040**
	(-1.535)	(-2.169)	(-2.107)	(-3.637)	(-3.287)	(-.855)	(-1.116)	(-1.004)	(-2.428)	(-2.199)
BV_leverage	-.062	-.056	-.073	-.092*	-.079	-.545***	-.486**	-.576***	-.571***	-.556***
	(-1.225)	(-1.100)	(-1.405)	(-1.841)	(-1.611)	(-2.897)	(-2.570)	(-2.812)	(-2.902)	(-3.012)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	233	233	221	214	233	237	237	222	220	237
Adjusted R^2	.092	.103	.088	.162	.157	.277	.323	.273	.314	.310

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D16 – Robustness test hypothesis 3 replacing the firm size variable

Variable	ROA (t +1)					RET (t +1)				
Intercept	.032	.012	.038	.104**	.090**	-.058	-.022	.077	-.073	-.214
	(.893)	(.287)	(.884)	(2.517)	(2.043)	(-.422)	(-.128)	(.447)	(-.467)	(-1.256)
AC_dummy	-.007	-.030**	-.013	-.026**	-.022	-.063	-.113*	-.093	-.058	-.059
	(-.571)	(-2.036)	(-.931)	(-1.973)	(-1.630)	(-1.356)	(-1.913)	(-1.590)	(-1.115)	(-1.087)
CEO_BS		-.007					.022			
		(-.627)					(.457)			
CEO_BS*AC_dummy		-.067***					-.107			
		(-3.111)					(-1.231)			
CEO_OB			.004					.023		
			(.604)					(.921)		
CEO_OB*AC_dummy			.000					-.032		
			(.024)					(-.702)		
CEO_VP				.015***					-.018	
				(3.525)					(-1.012)	
CEO_VP*AC_dummy				-.002					-.013	
				(-.305)					(-.421)	
CEO_TC					.013*					-.052*
					(1.853)					(-1.765)
CEO_TC*AC_dummy					-.019					-.048
					(-1.558)					(-.944)
LN_Total_Sales	.005*	.007**	.004	-.001	.001	.023**	.020	.013	.027**	.024**
	(1.921)	(2.066)	(1.210)	(-.199)	(.227)	(2.308)	(1.544)	(1.066)	(2.352)	(2.448)
BV_leverage	-.041	-.029	-.030	-.037	-.038*	-.112	-.090	-.126	-.181*	-.079
	(-1.624)	(-1.121)	(-1.114)	(-1.440)	(-1.504)	(-1.103)	(-.881)	(-1.186)	(-2.352)	(-.788)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	245	245	231	226	245	232	232	216	217	232
Adjusted R^2	.070	.100	.051	.124	.086	.034	.033	.030	.053	.042

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D17 – Robustness test hypothesis 3 replacing the firm leverage variable

Variable	ROA (t +1)					RET (t +1)				
Intercept	.072***	.071***	.070***	.083***	.084***	.032	.062	.063	.060	.022
	(3.653)	(3.479)	(3.428)	(4.108)	(4.034)	(.397)	(.738)	(.744)	(.736)	(.262)
AC_dummy	-.012	-.025*	-.016	-.031**	-.025*	-.044	-.113*	-.094	-.038	-.038
	(-1.170)	(-1.806)	(-1.194)	(-2.520)	(-1.954)	(-.990)	(-1.942)	(-1.616)	(-.748)	(-.708)
CEO_BS		-.004					.045			
		(-.441)					(1.115)			
CEO_BS*AC_dummy		-.043**					-.123			
		(-2.042)					(-1.404)			
CEO_OB			.004					.025		
			(.808)					(1.175)		
CEO_OB*AC_dummy			.006					-.037		
			(.561)					(-.798)		
CEO_VP				.009**					-.010	
				(2.426)					(-.612)	
CEO_VP*AC_dummy				-.004					-.001	
				(-.507)					(-.025)	
CEO_TC					.006					-.024
					(.983)					(-.974)
CEO_TC*AC_dummy					-.016					-.030
					(-1.391)					(-.597)
LN_employees	.007***	.007***	.006***	.005**	.005**	.017*	.013	.012	.018*	.021**
	(3.037)	(3.031)	(2.633)	(2.045)	(2.212)	(1.917)	(1.334)	(1.280)	(1.831)	(2.110)
MV_leverage	-.121***	-.111***	-.119***	-.110***	-.116***	.071	.103	.086	-.005	.061
	(-5.482)	(-4.934)	(-5.192)	(-4.884)	(-5.227)	(.757)	(1.081)	(.379)	(-.052)	(.640)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	234	234	220	219	234	234	234	218	219	234
Adjusted R^2	.177	.185	.163	.215	.181	.028	.034	.031	.030	.025

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D18 – Robustness test hypothesis 3 using averaged data

Variable	ROA (t +1)					RET (t +1)				
Intercept	.073**	.075**	.082***	.084***	.097***	.065	.119	.163*	.079	.066
	(2.593)	(2.602)	(2.746)	(2.817)	(3.155)	(.712)	(1.214)	(1.759)	(.862)	(.660)
AC_dummy	-.009	-.035*	-.028	-.023	-.027	-.050	-.105	-.093*	-.049	-.057
	(-.635)	(-1.821)	(-1.621)	(-1.377)	(-1.540)	(-.994)	(-1.590)	(-1.717)	(-.907)	(-.932)
CEO_BS		.000					.072			
		(.032)					(1.529)			
CEO_BS*AC_dummy		-.073**					-.056			
		(-2.527)					(-.557)			
CEO_OB			.014*					.049**		
			(1.931)					(2.076)		
CEO_OB*AC_dummy			-.005					.004		
			(-.353)					(.096)		
CEO_VP				.010*					-.012	
				(1.835)					(-.678)	
CEO_VP*AC_dummy				-.002					-.024	
				(-.191)					(-.720)	
CEO_TC					.013					-.014
					(1.480)					(-.469)
CEO_TC*AC_dummy					-.016					-.041
					(-.979)					(-.707)
LN_employees	.004	.004	.002	.002	.002	.024**	.017	.012	.025**	.025**
	(1.234)	(1.281)	(.558)	(.542)	(.468)	(2.404)	(1.500)	(1.144)	(2.430)	(2.309)
BV_leverage	-.051	-.041	-.058	-.054*	-.058*	-.141	-.137	-.210*	-.144	-.132
	(-1.459)	(-1.200)	(-1.568)	(-1.531)	(-1.674)	(-1.210)	(-1.173)	(-1.801)	(-1.285)	(-1.113)
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	85	85	81	83	85	86	86	81	84	86
Adjusted R^2	.091	.140	.103	.098	.109	.042	.049	.063	.062	.025

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D19 – Robustness test hypothesis 4 using ROS and Tobin's Q

Variable	ROS (t +1)					Tobin's Q (t +1)				
Intercept	.122***	.197***	.188***	.260***	.242***	2.010***	2.143***	2.144***	2.376***	2.316***
	(2.873)	(4.167)	(3.891)	(5.669)	(5.152)	(13.177)	(12.602)	(11.866)	(13.937)	(13.770)
Indep_dir	-.004	-.078	-.064*	-.079	-.106	.397	.304	.259	.259	.257
	(-.058)	(-1.167)	(-.956)	(-1.190)	(-1.637)	(1.625)	(1.205)	(.986)	(.991)	(1.039)
CEO_BS		.065***					.114			
		(3.443)					(1.566)			
CEO_BS*Indep_dir		.128					-.334			
		(1.341)					(-.905)			
CEO_OB			.035***					.061		
			(3.607)					(1.622)		
CEO_OB*Indep_dir			.059					.121		
			(1.122)					(.592)		
CEO_VP				.043***					.135***	
				(5.979)					(4.757)	
CEO_VP*Indep_dir				.013					-.247	
				(.342)					(-1.529)	
CEO_TC					.061***					.166***
					(5.354)					(3.799)
CEO_TC*Indep_dir					.027					-.293
					(.477)					(-1.302)
LN_employees	-.001	-.010*	-.008	-.017***	-.015***	-.001	-.018	-.010	-.044**	-.038**
	(-.125)	(-1.930)	(-1.596)	(-3.558)	(-3.016)	(-.045)	(-.986)	(-.562)	(-2.424)	(-2.121)
BV_leverage	-.053	-.072	-.079	-.090*	-.085*	-.547***	-.536***	-.595***	-.595***	-.581***
	(-1.043)	(-1.430)	(-1.508)	(-1.807)	(-1.747)	(-2.888)	(-2.826)	(-2.894)	(-3.032)	(-3.149)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	233	233	221	214	233	237	237	222	220	237
Adjusted R^2	.051	.094	.087	.166	.158	.268	.273	.271	.318	.308

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D20 – Robustness test hypothesis 4 replacing the firm size variable

Variable	ROA (t +1)					RET (t +1)				
Intercept	.047 (1.578)	.022 (.505)	.046 (1.111)	.132*** (3.300)	.093** (2.157)	.031 (.258)	.010 (.059)	.144 (.862)	-.049 (-.321)	-.211 (-1.257)
Indep_dir	.031 (.990)	.039 (1.186)	.030 (.927)	.029 (.849)	.020 (.621)	-.056 (-.419)	-.026 (-.188)	-.198 (-1.432)	-.040 (-.286)	-.016 (-.116)
CEO_BS		-.010 (-.843)					-.008 (-.176)			
CEO_BS*Indep_dir		-.022 (-.451)					-.410** (-2.113)			
CEO_OB			.001 (.108)					.018 (.747)		
CEO_OB*Indep_dir			.020 (.777)					.094 (.873)		
CEO_VP				.013*** (3.064)					-.023 (-1.362)	
CEO_VP*Indep_dir				-.012 (-.617)					.044 (.525)	
CEO_TC					.011 (1.495)					-.058** (-2.030)
CEO_TC*Indep_dir					.001 (.024)					.034 (.284)
LN_Total_Sales	.004* (1.729)	.006* (1.784)	.003 (1.052)	-.002 (-.800)	.000 (.102)	.016* (1.916)	.018 (1.417)	.009 (.727)	.025** (2.213)	.035*** (2.798)
BV_leverage	-.042 (-1.643)	-.042 (-1.641)	-.031 (-1.162)	-.042 (-1.599)	-.042 (-1.647)	-.104 (-1.026)	-.089 (-.876)	-.132 (-1.238)	-.182* (-1.758)	-.115 (-1.141)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	245	245	231	226	245	232	232	216	217	232
Adjusted R^2	.073	.068	.053	.111	.074	.027	.037	.030	.048	.036

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D21 – Robustness test hypothesis 4 replacing the firm leverage variable

Variable	ROA (t +1)					RET (t +1)				
Intercept	.081***	.072***	.073***	.094***	.082***	.063	.100	.082	.067	.015
	(4.511)	(3.542)	(3.603)	(4.743)	(4.021)	(.848)	(1.214)	(.969)	(.852)	(.180)
Indep_dir	.013	.022	.013	.013	.007	.025	.026	-.089	.006	.034
	(.415)	(.662)	(.387)	(.401)	(.205)	(.197)	(.200)	(-.672)	(.047)	(.258)
CEO_BS		-.009					.015			
		(-1.006)					(.400)			
CEO_BS*Indep_dir		.001					-.426**			
		(.017)					(-2.261)			
CEO_OB			.000					.015		
			(-.051)					(.737)		
CEO_OB*Indep_dir			.035					.024		
			(1.373)					(.236)		
CEO_VP				.005					-.016	
				(1.546)					(-1.130)	
CEO_VP*Indep_dir				-.006					.077	
				(-.299)					(.949)	
CEO_TC					.002					-.031
					(.301)					(-1.357)
CEO_TC*Indep_dir					.014					.063
					(.474)					(.532)
LN_employees	.005***	.007***	.006**	.004*	.005**	.013	.010	.009	.016*	.020**
	(2.743)	(2.845)	(2.472)	(1.607)	(2.124)	(1.605)	(.994)	(.975)	(1.734)	(2.096)
MV_leverage	-.119***	-.121***	-.115***	-.115***	-.118***	.078	.079	.095	-.011	.058
	(-5.391)	(-5.422)	(-5.035)	(-5.037)	(-5.275)	(.838)	(.856)	(.969)	(-.115)	(.609)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	234	234	220	219	234	234	234	218	219	234
Adjusted R^2	.173	.169	.159	.192	.166	.024	.039	.021	.032	.024

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D22 – Robustness test hypothesis 4 using averaged data

Variable	ROA (t +1)					RET (t +1)				
Intercept	.082***	.072**	.088**	.097***	.101***	.091	.155	.209**	.074	.041
	(3.134)	(2.475)	(2.938)	(3.438)	(3.313)	(1.040)	(1.611)	(2.224)	(.840)	(.411)
Indep_dir	.062	.085*	.033	.082	.066	-.008	-.017	-.134	-.001	-.039
	(1.374)	(1.750)	(.538)	(1.503)	(1.351)	(-.054)	(-.109)	(-.759)	(-.004)	(-.240)
CEO_BS		-.011					.040			
		(-.863)					(.924)			
CEO_BS*Indep_dir		-.083					-.534**			
		(-1.165)					(-2.314)			
CEO_OB			.007					.039*		
			(1.050)					(1.763)		
CEO_OB*Indep_dir			.013					-.070		
			(.310)					(-.567)		
CEO_VP				.007					-.018	
				(1.387)					(-1.142)	
CEO_VP*Indep_dir				-.034					.093	
				(-1.094)					(.899)	
CEO_TC					.008					-.025
					(1.015)					(-.932)
CEO_TC*Indep_dir					-.047					.144
					(-1.035)					(.914)
LN_employees	.003	.004	.001	.000	.001	.021**	.013	.007	.024**	.026**
	(.912)	(1.125)	(.349)	(.150)	(.178)	(2.167)	(1.176)	(.697)	(2.338)	(2.361)
BV_leverage	-.051	-.045	-.053	-.052	-.055	-.139	-.117	-.195*	-.144	-.122
	(-1.479)	(-1.283)	(-1.442)	(-1.489)	(-1.582)	(-1.185)	(-1.020)	(-1.668)	(-1.282)	(-1.024)
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	85	85	81	83	85	86	86	81	84	86
Adjusted R^2	.108	.106	.079	.104	.105	.030	.082	.051	.062	.023

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D23 – Robustness test hypothesis 4 using another measure for board independence

Variable	ROA $_{(t+1)}$					RET $_{(t+1)}$				
Intercept	.061***	.059***	.058**	.088***	.078***	.120	.151*	.175*	.147*	.073
	(3.000)	(2.596)	(2.529)	(3.901)	(3.415)	(1.482)	(1.676)	(1.882)	(1.692)	(.812)
Indep_dir[2]	-.016	-.019	-.012	-.017	-.023	.046	-.031	-.105	.007	.041
	(-.593)	(-.658)	(-.407)	(-.614)	(-.829)	(.431)	(-.268)	(-.845)	(.064)	(.382)
CEO_BS		-.002					.019			
		(-.263)					(.512)			
CEO_BS*Indep_dir[2]		-.018					-.293			
		(-.426)					(-1.637)			
CEO_OB			.002					.020		
			(.513)					(1.015)		
CEO_OB*Indep_dir[2]			.023					-.052		
			(.992)					(-.540)		
CEO_VP				.010***					-.014	
				(2.726)					(-.980)	
CEO_VP*Indep_dir[2]				-.012					.130*	
				(-.640)					(1.769)	
CEO_TC					.009					-.029
					(1.576)					(-1.314)
CEO_TC*Indep_dir[2]					-.025					.086
					(-.833)					(.749)
LN_employees	.005**	.006**	.004*	.002	.003	.016*	.013	.011	.016*	.022**
	(2.524)	(2.289)	(1.894)	(1.025)	(1.405)	(1.904)	(1.365)	(1.229)	(1.698)	(2.233)
BV_leverage	-.043*	-.044*	-.030	-.050*	-.048*	-.091	-.109	-.134	-.143	-.079
	(-1.725)	(-1.733)	(-1.144)	(-1.917)	(-1.910)	(-.911)	(-1.086)	(-1.229)	(-1.418)	(-.791)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	245	245	231	226	245	234	234	218	219	234
Adjusted R²	.079	.072	.063	.112	.083	.025	.030	.025	.052	.026

Variable	ROS $_{(t+1)}$					Tobin's Q $_{(t+1)}$				
Intercept	.118***	.189***	.188***	.255***	.235***	1.989***	2.151***	2.175***	2.312***	2.273***
	(2.795)	(4.064)	(3.972)	(5.665)	(5.143)	(12.981)	(12.643)	(12.129)	(13.695)	(13.746)
Indep_dir[2]	-.099*	-.099*	-.106*	-.085	-.109**	-.219	-.266	-.259	-.233	-.257
	(-1.765)	(-1.757)	(-1.785)	(-1.556)	(-2.020)	(-1.032)	(-1.166)	(-1.054)	(-1.069)	(-1.216)
CEO_BS		.063***					.158**			
		(3.483)					(2.223)			
CEO_BS*Indep_dir[2]		.109					.086			
		(1.295)					(.253)			
CEO_OB			.036***					.079**		
			(3.824)					(2.134)		
CEO_OB*Indep_dir[2]			.044					.064		
			(.949)					(.349)		
CEO_VP				.041***					.132***	
				(5.905)					(4.714)	
CEO_VP*Indep_dir[2]				-.004					-.030	
				(-.102)					(-.195)	
CEO_TC					.058***					.169***
					(5.330)					(3.967)
CEO_TC*Indep_dir[2]					-.014					-.047
					(-.251)					(-.204)
LN_employees	.001	-.009*	-.008	-.015***	-.013***	.005	-.017	-.012	-.037**	-.032*
	(.187)	(-1.745)	(-1.591)	(-3.263)	(-2.711)	(.295)	(-.940)	(-.655)	(-2.029)	(-1.808)
BV_leverage	-.058	-.064	-.073	-.094*	-.089*	-.538***	-.545***	-.583***	-.575***	-.582***
	(-1.139)	(-1.275)	(-1.416)	(-1.877)	(-1.819)	(-2.829)	(-2.869)	(-2.838)	(-2.920)	(-3.141)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	233	233	221	214	233	237	237	222	220	237
Adjusted R²	.064	.108	.101	.170	.163	.263	.272	.272	.312	.305

*Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1. *** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D24 – Robustness test hypothesis 5 using ROS and Tobin's Q

Variable	ROS (t +1)					Tobin's Q (t +1)				
Intercept	.131***	.202***	.185***	.263***	.240***	2.029***	2.133***	2.191***	2.351***	2.306***
	(3.061)	(4.324)	(3.970)	(5.823)	(5.200)	(13.128)	(12.632)	(12.261)	(13.985)	(13.939)
SB_diverse	.094	.048	.097	.051	.057	.298	.135	.222	.292	.182
	(1.496)	(.747)	(1.491)	(.861)	(.939)	(1.269)	(.552)	(.884)	(1.243)	(.793)
CEO_BS		.062***					.104			
		(3.240)					(1.400)			
CEO_BS*SB_diverse		.252**					-.788**			
		(2.502)					(-2.031)			
CEO_OB			.027***					.068*		
			(2.805)					(1.825)		
CEO_OB*SB_diverse			.152***					-.040		
			(2.753)					(-.190)		
CEO_VP				.041***					.131***	
				(5.894)					(4.721)	
CEO_VP*SB_diverse				-.025					-.174	
				(-.642)					(-1.108)	
CEO_TC					.056***					.161***
					(5.078)					(3.786)
CEO_TC*SB_diverse					.002					-.296
					(.032)					(-1.277)
LN_employees	-.001	-.010**	-.007	-.017***	-.014***	.000	-.016	-.013	-.042**	-.036**
	(-.268)	(-2.034)	(-1.488)	(-3.591)	(-3.005)	(-.008)	(-.867)	(-.738)	(-2.306)	(-2.016)
BV_leverage	-.059	-.085*	-.092*	-.089*	-.085*	-.551***	-.499***	-.596***	-.560***	-.573***
	(-1.149)	(-1.686)	(-1.788)	(-1.784)	(-1.736)	(-2.896)	(-2.626)	(-2.896)	(-2.851)	(-3.097)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	233	233	221	214	233	237	237	222	220	237
Adjusted R^2	.060	.110	.118	.165	.151	.265	.281	.269	.318	.308

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D25 – Robustness test hypothesis 5 replacing the firm size variable

Variable	ROA (t +1)					RET (t +1)				
Intercept	.044	.011	.049	.128***	.093**	.095	.011	.170	.035	-.154
	(1.428)	(.264)	(1.197)	(3.175)	(2.180)	(.793)	(.063)	(1.024)	(.231)	(-.929)
SB_diverse	.001	.001	.001	.008	-.001	.265**	.267**	.248*	.289**	.278**
	(.030)	(.047)	(.029)	(.241)	(-.045)	(2.129)	(2.068)	(1.906)	(2.359)	(2.241)
CEO_BS		-.012					-.032			
		(-.971)					(-.673)			
CEO_BS*SB_diverse		-.093*					-.237			
		(-1.765)					(-1.140)			
CEO_OB			.001					.010		
			(.155)					(.433)		
CEO_OB*SB_diverse			.028					-.001		
			(.974)					(-.010)		
CEO_VP				.013***					-.020	
				(3.134)					(-1.240)	
CEO_VP*SB_diverse				-.027					.027	
				(-1.311)					(.339)	
CEO_TC					.011					-.060**
					(1.638)					(-2.159)
CEO_TC*SB_diverse					-.026					.029
					(-.840)					(.231)
LN_Total_Sales	.004*	.007**	.003*	-.002	.000	.012	.019	.007	.019*	.031**
	(1.873)	(2.020)	(1.009)	(-.658)	(.133)	(1.415)	(1.454)	(.573)	(1.694)	(2.535)
BV_leverage	-.042	-.037	-.031	-.038	-.041	-.111	-.103	-.133	-.183*	-.124
	(-1.628)	(-1.430)	(-1.170)	(-1.445)	(-1.607)	(-1.108)	(-1.009)	(-1.255)	(-1.785)	(-1.233)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	245	245	231	226	245	232	232	216	217	232
Adjusted R^2	.069	.075	.050	.115	.075	.045	.043	.035	.072	.057

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D26 – Robustness test hypothesis 5 replacing the firm leverage variable

Variable	ROA (t +1)					RET (t +1)				
Intercept	.082***	.072***	.077***	.095***	.086***	.088	.078	.091	.098	.037
	(4.526)	(3.582)	(3.895)	(4.911)	(4.328)	(1.196)	(.952)	(1.100)	(1.266)	(.466)
SB_diverse	.010	.019	.015	.006	.008	.289**	.280**	.261**	.337***	.321***
	(.345)	(.554)	(.482)	(.201)	(.254)	(2.376)	(2.172)	(2.026)	(2.808)	(2.619)
CEO_BS		-.011					-.013			
		(-1.145)					(-.340)			
CEO_BS*SB_diverse		-.044					-.275			
		(-.889)					(-1.337)			
CEO_OB			-.001					.007		
			(-.201)					(.350)		
CEO_OB*SB_diverse			.038					-.026		
			(1.392)					(-.238)		
CEO_VP				.006					-.017	
				(1.636)					(-1.231)	
CEO_VP*SB_diverse				-.023					.032	
				(-1.201)					(.392)	
CEO_TC					.002					-.037*
					(.420)					(-1.659)
CEO_TC*SB_diverse					-.016					.050
					(-.523)					(.400)
LN_employees	.005**	.007***	.005**	.004*	.005**	.011	.013	.009	.015	.020**
	(2.761)	(2.921)	(2.406)	(1.690)	(2.065)	(1.380)	(1.296)	(.978)	(1.571)	(2.060)
MV_leverage	-.120***	-.118***	-.118***	-.112***	-.118***	.068	.089	.085	-.024	.037
	(-5.433)	(-5.230)	(-5.169)	(-4.938)	(-5.240)	(.734)	(.950)	(.877)	(-.250)	(.392)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	234	234	220	219	234	234	234	218	219	234
Adjusted R^2	.172	.172	.159	.197	.167	.048	.047	.039	.063	.052

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D27 – Robustness test hypothesis 5 using averaged data

Variable	ROA (t +1)					RET (t +1)				
Intercept	.079***	.074**	.092***	.093***	.097***	.121	.128	.195**	.101	.080
	(2.997)	(2.507)	(3.112)	(3.296)	(3.257)	(1.405)	(1.336)	(2.130)	(1.164)	(.835)
SB_divers	-.013	-.013	-.024	-.002	-.018	.315**	.283*	.187	.268*	.327**
	(-.280)	(-.260)	(-.434)	(-.048)	(-.383)	(2.100)	(1.763)	(1.121)	(1.776)	(2.161)
CEO_BS		-.005					.002			
		(-.406)					(.043)			
CEO_BS*SB_divers		-.093					-.332			
		(-1.229)					(-1.323)			
CEO_OB			.010					.025		
			(1.417)					(1.156)		
CEO_OB*SB_divers			-.004					.066		
			(-.090)					(.542)		
CEO_VP				.007					-.015	
				(1.505)					(-1.002)	
CEO_VP*SB_divers				-.024					.041	
				(-.762)					(.422)	
CEO_TC					.009					-.026
					(1.199)					(-.988)
CEO_TC*SB_divers					-.031					.025
					(-.675)					(.165)
LN_employees	.003	.004	.001	.001	.001	.018*	.017	.009	.022**	.023**
	(1.086)	(1.128)	(.220)	(.331)	(.346)	(1.908)	(1.530)	(.922)	(2.147)	(2.136)
BV_leverage	-.051	-.044	-.053	-.054	-.056	-.149	-.128	-.204	-.152	-.135
	(-1.445)	(-1.244)	(-1.408)	(-1.518)	(-1.590)	(-1.307)	(-1.106)	(-1.746)	(-1.376)	(-1.170)
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	85	85	81	83	85	86	86	81	84	86
Adjusted R^2	.087	.081	.070	.083	.086	.082	.080	.057	.096	.070

Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1.
**** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

Table D28 – Robustness test hypothesis 5 using alternative measure for gender diversity

Variable	ROA $_{(t+1)}$					RET $_{(t+1)}$				
Intercept	.067***	.058**	.061***	.093***	.081***	.165**	.150*	.198**	.178**	.101
	(3.263)	(2.554)	(2.688)	(4.172)	(3.557)	(2.016)	(1.670)	(2.161)	(2.059)	(1.140)
SB_diverse[2]	.058	.071*	.057	.074*	.055	.413***	.436***	.433***	.436***	.446***
	(1.447)	(1.689)	(1.354)	(1.844)	(1.330)	(2.589)	(2.598)	(2.599)	(2.750)	(2.731)
CEO_BS		-.009					-.014			
		(-.900)					(-.356)			
CEO_BS*SB_diverse[2]		-.070					-.303			
		(-1.036)					(-1.122)			
CEO_OB			.000					.010		
			(-.025)					(.491)		
CEO_OB*SB_diverse[2]			.035					-.079		
			(.989)					(-.571)		
CEO_VP				.010***					-.017	
				(2.726)					(-1.199)	
CEO_VP*SB_diverse[2]				-.053*					.037	
				(-1.960)					(.345)	
CEO_TC					.008					-.039*
					(1.355)					(-1.782)
CEO_TC*SB_diverse[2]					-.028					.059
					(-.713)					(.373)
LN_employees	.005**	.006**	.004*	.002	.003	.013*	.014	.010	.016*	.021**
	(2.230)	(2.332)	(1.902)	(.745)	(1.180)	(1.560)	(1.449)	(1.067)	(1.730)	(2.252)
BV_leverage	-.047*	-.041	-.039	-.043*	-.047*	-.121	-.097	-.149	-.186*	-.117
	(-1.851)	(-1.569)	(-1.462)	(-1.638)	(-1.851)	(-1.229)	(-.961)	(-1.416)	(-1.826)	(-1.171)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	245	245	231	226	245	234	234	218	219	234
Adjusted R²	.086	.085	.070	.134	.087	.053	.050	.053	.075	.058

Variable	ROS $_{(t+1)}$					Tobin's Q $_{(t+1)}$				
Intercept	.137***	.204***	.191***	.267***	.244***	2.029***	2.143***	2.191***	2.349***	2.299***
	(3.171)	(4.341)	(4.031)	(5.910)	(5.263)	(12.936)	(12.550)	(12.175)	(13.792)	(13.725)
SB_diverse[2]	.139*	.050	.110	.101	.083	.266	.122	.237	.253	.140
	(1.699)	(.589)	(1.298)	(1.274)	(1.038)	(.865)	(.383)	(.729)	(.813)	(.457)
CEO_BS		.060***					.122			
		(3.145)					(1.641)			
CEO_BS*SB_diverse[2]		.294**					-.552			
		(2.208)					(-1.069)			
CEO_OB			.028***					.066*		
			(2.849)					(1.753)		
CEO_OB*SB_diverse[2]			.130**					.041		
			(1.887)					(.155)		
CEO_VP				.041***					.133***	
				(5.906)					(4.758)	
CEO_VP*SB_diverse[2]				-.059					-.169	
				(-1.112)					(-.804)	
CEO_TC					.056***					.166***
					(5.037)					(3.869)
CEO_TC*SB_diverse[2]					-.032					-.218
					(-.420)					(-.732)
LN_employees	-.002	-.010**	-.007	-.017***	-.015***	.000	-.018	-.013	-.043**	-.037**
	(-.392)	(-1.974)	(-1.537)	(-3.712)	(-3.067)	(-.027)	(-.989)	(-.730)	(-2.360)	(-2.056)
BV_leverage	-.064	-.091*	-.095*	-.087*	-.085*	-.554***	-.513***	-.606***	-.560***	-.568***
	(-1.250)	(-1.775)	(-1.813)	(-1.731)	(-1.732)	(-2.894)	(-2.648)	(-2.924)	(-2.799)	(-3.036)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	233	233	221	214	233	237	237	222	220	237
Adjusted R²	.063	.106	.103	.170	.152	.262	.270	.268	.312	.302

*Notes: This table reports the unstandardized coefficients. The figures in parentheses represent the t-statistics. The variables and their definitions are described in table 3.1. *** Correlation is significant at the 0.01 level. ** Correlation is significant at the 0.05 level. * Correlation is significant at the 0.1 level.*

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