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**The effect of equity-based CEO compensation on
corporate social responsibility**

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Abstract

This master thesis investigates the effect of equity-based CEO compensation on corporate social responsibility, with the additional research into the moderating role of internal monitoring. The results show that an increase in equity-based compensation does not increase the level of corporate social responsibility, but it decreases the strength and concerns of CSR, with a slight moderating effect of institutional ownership. These findings show that equity-based compensation does not improve the level of CSR, it only makes CEOs more motivated to solve concerns of CSR. This will reduce the effort in improving the strengths of CSR, which neutralizes the CSR score. Stakeholders that want to increase the level of CSR should make the CEO more aware to not ignore the strengths of CSR when their portion of equity-based compensation increases.

1. Introduction

The last couple of years show a growing demand in a higher level of corporate social responsibility (CSR) because there are many movements against climate change and social problems as racism. Activist groups try to convince companies to invest in CSR, but only the high-level managers can make a difference in their organization, especially the CEO.

Investors may want to make the CEO to invest more in CSR because this will satisfy the needs of activist groups and their own interests. The board of directors of a company can respond to the requests of the investors by re-designing the compensation of the CEO, with the goal to motivate the CEO to invest in CSR. This paper examines the effect of the portion of equity-based compensation of CEOs on corporate social responsibility, with an additional investigation of the moderating effect of internal monitoring on this association. This master thesis tries to answer the following research question:

RQ: Does equity-based compensation of CEOs influence the level of CSR of a company?

The importance of CSR is different between people within a company, but overall, this importance of CSR is increasing over time (Qrius, 2010) for customers and stakeholders (McWilliams & Siegel, 2001). Consumers do take CSR into account when they make purchasing decisions (Bhattacharya & Sen, 2004), which is one of the advantages of CSR. Other advantages are that CSR may attract prospective employees (Turban & Greening, 1997) and reduces firm risk (Albuquerque et al., 2018). This could lead to a competitive advantage (Porter & Kramer, 2006), even when Aupperle et al. (1985) states otherwise. It suggests that CSR is beneficial for the performance of the company, but the literature of the effect of CSR on firm performance is mixed. There are papers that find a positive effect (Bian et al, 2016; Choi et al., 2010; Deckop et al., 2006; Deng et al., 2013; Jo & Harjoto, 2011; Park et al., 2017; Russo & Fouts, 1997; Waddock & Graves, 1997; Wang & Zarkis, 2017), no effect (Blomgren, 2011; McWilliams & Siegel, 2001; Van de Velde et al., 2005) or negative effect (Aupperle et al., 1985; Nollet et al., 2016; Ullman, 1985) of CSR on firm performance. Most of the papers state that CSR has many different benefits for a company. This makes it useful for a company to hire a CEO that focuses on CSR to improve the company, especially when stakeholders are interested in CSR. The board can influence the CEO with a certain compensation scheme to improve CSR-related decisions a CEO has to make, which is investigated in this paper. This master thesis focuses on the effect of the portion of equity-based compensation of a CEO on the level of corporate social responsibility of a company, but it also examines if internal monitoring can influence this relationship. Stock options make

a CEO more aware of the long term of the company, which can improve the level of CSR of a company. However, CEOs can take more risky projects, because their wealth could have a downward protection from the option (Martin, Wiseman & Homez-Mejia, 2016).

Finding an answer to the research question can be beneficial for different stakeholders. The results might suggest that shareholders can improve their wealth by incentivizing the CEO to improve the CSR of a company, which could improve the compensation of a CEO as well. Many stakeholders of a company are interested in CSR, for example customers, employees, activists, and other stakeholders. Finding a positive effect of the portion of equity-based compensation on the level of CSR is beneficial to those stakeholders when companies are increasing the portion of equity-based compensation of their CEO.

The sample of this research consists of data of the level of CSR from the MSCI-database and characteristics of the CEO and their companies from Execucomp and Compustat from 1995 till 2013 of 801 companies. OLS-regressions show that the portion of equity-based compensation does not influence the level of CSR. However, when the score of CSR is divided into strengths and concerns, a significant effect can be found.¹ Equity-based compensation has a negative effect on both the strengths and concerns of CSR. Because both sides of CSR are decreasing, the overall level of CSR does not change. These results show that a CEO will solve concerns of CSR when equity-based compensation is increased, but the improvements in strengths in CSR are therefore ignored, which leads to a more neutral state of CSR, with less concerns and less strengths. Investors and the board of directors should therefore highlight the importance of strengths of CSR to the CEO when the equity-based compensation of the CEO is increased. The second investigation in this paper is including internal and external monitoring as a moderating variable, that is measured as the governance index and institutional ownership. The results show that the effect of strengths and concerns of CSR is more pronounced when the company has a high level of institutional ownership. These findings give the suggestion that highlighting the strengths of CSR to the CEO is only effective when the level of institutional ownership within the company is high. There is no evidence found that the level of corporate governance moderates the relationship between equity-based compensation and CSR.

¹ The strengths of the CSR-score show the positive variables that increase the level of CSR, while the concerns show the negative variables that decrease the level of CSR. The strengths and concerns are divided into the different categories of the MSCI-database, six dimensions of these database are used for this research (community, product, environment, employee, diversity and humanity).

This master thesis can contribute to different fields in the literature. It will first contribute to the field that investigates the effect of equity-based compensation on CSR, because there are different findings of this effect in prior literature (Berrone & Gomez-Mejia, 2009; Callan & Thomas, 2014; Claassen & Ricci, 2015; Fabrizi et al., 2014; Frye et al., 2006; Mahapatra, 1984; Mahoney & Thorne, 2005; Mahoney & Thorne, 2006; McGuire et al., 2003; McGuire et al., 2019; Park et al., 2019). This paper contributes with the finding that an increase in the portion of equity-based compensation decreases the strengths and concerns of CSR. The second field of literature this paper can contribute to, is the field of literature that looks at the moderating effect of internal monitoring on the association between CSR and firm performance. Karim et al. (2018) uses ownership of inside directors, director tenure and the proportion of independent board members as proxies for corporate governance. This paper uses the Governance index as a more detailed proxy for corporate governance. Park et al. (2019) looks at the moderating effect of institutional ownership, which is also a part of internal monitoring. They only looked at restaurant firms, whereas this paper uses data of different industries in the United States. I also make a distinction of institutional ownership with and without voting power, as a contribution of the effect of internal monitoring of institutional owners. Ownership with voting power has a stronger moderating effect than ownership without voting power, the results therefore suggest that more intensive internal monitoring makes a difference in the association between equity-based compensation and CSR.

This research gives the following implications. A higher portion of equity-based compensation might not result in a higher portion of CSR, but the CEO tries to decrease the concerns of CSR. This has a positive effect on CSR, but the CEO ignores possibilities for strength of CSR. Stakeholders should therefore convince the CEO that he or she should maintain his effort in investigating new ways to improve the strengths of CSR.

The structure of this master thesis is as follows. Chapter 2 gives the theoretical background of this research, where I will explain different theories regarding the research question, and I will develop hypotheses which will be tested in the data analysis. The paper continues with the research design in chapter 3, with an explanation of the regressions, the operationalization of the research and the sample selection procedure of the data. Chapter 4 provides descriptive statistics and the empirical results for this thesis, with a conclusion in chapter 5.

2. Theoretical background and hypothesis development

The theoretical background is divided into different parts. I will first explain corporate social responsibility and theories that can be used for this concept. I will continue with a review on the effects of CEO characteristics on CSR, to show that characteristics of CEOs matter in the level of CSR. I will then state the literature that investigates the effect of CEO compensation on CSR, to illustrate the fact that the decisions of CEOs can be aligned to the interests of stakeholders. Internal monitoring can affect this association, so the effect of institutional ownership and corporate governance is also described. After this literary review, the hypotheses are stated.

2.1 Corporate social responsibility

Corporate social responsibility is a concept with different variations. Friedman (1970) was one of the first that gave a definition to corporate social responsibility. He states that CSR is the actions a firm makes to be aligned with the desires of the shareholders and to comply with legal and ethical requirements, while making maximum profit. Other papers (Hill et al., 2007; Matten and Moon, 2008; McWilliams & Siegel, 2001;) state that CSR is mostly related to the interests and the social wellbeing of the stakeholders. Aguinis and Glavas (2012) add that it is a strategic choice of top-level-managers to implement CSR activities in the firm. This decision can be made by several reasons (Porter and Kramer, 2006), for example as a moral obligation of a way to make a good reputation for the company or to gain competitive advantage (McWilliams and Siegel, 2010).

2.2 Theories about CSR

There are theories that can be linked to the decision of implementing CSR in a company. The shareholder perspective is one of those, because shareholders want to maximize the value of the firm (Friedman, 1970). CSR can improve the value of company (Callan and Thomas, 2014), so CEOs can increase the benefits of the shareholders by making strategic choices that will improve the level of CSR. However, stakeholder theory is a far more used concept that is related to CSR. Stakeholder theory looks beyond the benefits for shareholders but looks at non-financial stakeholders that can support the firm (Freeman, 1983; McWilliams et al., 2006). Donaldson and Preston (1995) suggest that this theory can be divided into three types (normative, descriptive and instrumental) and that these dimensions support each other.

Freeman (1994) states that the normative type is the most important dimension, because it looks at how humans should live. The stewardship theory (Donaldson and Davis, 1991) also states managers want to do the right thing without looking at the consequences on financial performance, which illustrates the moral attitude of CEOs. The manager of the company is therefore important, because he or she makes the strategic choices of the firm (Hambrick, 2007). However, it is difficult to align the interests of the CEO with the interests of stakeholders according to the agency theory. This theory states that CEOs want to improve their own interests, rather than maximize the value of the shareholders or other parties (Jensen & Meckling, 1976). This can be at the expense of the principal (Eisenhardt, 1989), and indirectly the interests of stakeholders. However, according to the institutional theory (Jain & Jamali, 2016), the extent of this dilemma is influenced by informal and formal institutions. This conflict between an agent and the principal can be reduced by managerial ownership (Karim et al., 2018), by monitoring the agent (Deckop et al., 2006) or corporate governance (Oh et al., 2017). Institutional ownership and corporate governance can improve the CSR according to the good management theory (Waddock and Graves, 1997).

2.3 The effect of CEO characteristics

Prior literature shows that the characteristics of CEOs can make a difference in a company. Kaplan et al. (2012) mentions that CEO characteristics, like general ability and execution skills, could indeed improve the performance of a company. This is also in line with Olsen et al. (2016) and Datta & Guthrie (1994), who add that a background in research and development or engineering improves this effect even more. They also find evidence that younger CEOs have higher abnormal return than older CEOs, so age could also influence the company. The results of Peni (2014) are mixed regarding the effect of age on firm performance, but they do find a positive effect of female CEOs on firm performance. This is also the insight of Glass and Cook (2018). McKnight and Tomkins (2004) and Nguyen et al. (2018) also find evidence that age declines the firm valuation, this is also the case with tenure. CEO tenure also has a negative effect on shareholder return according to McKnight and Tomkins (2004).

CEO characteristics can also influence the level of CSR in a company. Kang (2017) specifically states that fixed effects like CEO characteristics should be considered when investigating CSR. Huang (2013) and Manner (2010) state that educational specializations like humanities, CEO tenure (Chen et al., 2019; Oh et al., 2018) and gender influence the CSR

performance of a company. Manner (2010) also found that CSR is lower for firms that have a CEO with a bachelor's degree in economics, so the specialization of CEOs matters. Waldman et al. (2006) focuses on the quality of leadership of a CEO and the link between CSR activities and the strategy of the business. Ability is also a factor for the level of CSR in a company (Yuan et al., 2019), but this effect is weakened for CEOs who are close to the end of their career. This suggests that CEO with high ability are better at long-term investments that will improve benefits for stakeholders, which leads to a better CSR level. Even political background (Di Giuli & Kostovetsky, 2014; Hong, 2012), integrative complexity and decentralization of decision making in top management teams (Wong et al., 2011), the level of ethics and social responsibility (Godos-Díez et al., 2011) and the personal values of a CEO (Hemingway & Maclagan, 2004) can influence the level of CSR of a company.

Lastly, Bian et al. (2016) shows that there is a positive association between CSR and firm performance, but this is only the case for CEOs with a low tenure during an industry's cooling-off period. These papers all provide evidence that characteristics of CEOs matters, and that they should be included in this research.

2.4 The effect of CEO compensation

The literature also shows that there is an effect of CEO compensation on CSR, with different findings. Rekker et al. (2014) show that total CEO compensation reduces the level of CSR in a company, but it depends on the category of CSR. Fabrizi et al. (2014) expands this research by dividing incentives for CEOs into monetary and non-monetary incentives. While non-monetary incentives have a positive influence on CSR, monetary incentives that try to reduce the agency problem have a negative influence on CSR. This is also in line with the research of Freye et al. (2006), who state that the link between CEO pay and firm performance is weak for companies with a high CSR. Stanwick and Stanwick (2001) and Park et al. (2019) state that CEOs are not incentivized to improve the CSR of the company when it comes to the structure of the compensation system. For example, short-term compensation has a negative effect on KLD ratings (Manner, 2010), which is the opposite for the research of Bian et al. (2016). The findings of Manner (2010) are also consistent with McGuire et al. (2003), because they found negative association with salary and long-term incentives on CSR. Jian and Lee (2015) add to the discussion that CEO compensation only influences normal CSR of a company, reducing excessive investments in CSR.

However, there are many papers that do find a positive relationship between CEO pay and CSR or performance, because equity-based compensation can lead to a long-term vision of CEOs, which improves CSR (Kang, 2017; McGuire et al., 2019). This improvement leads to a higher firm performance in the long term (Mahapatra, 1984). Callan and Thomas (2014) shows that long-term CEO pay has a greater effect on social performance than short-term CEO pay. This is also the case for Olsen et al. (2016) regarding the effect of equity ownership on abnormal returns. Mahoney and Thorne (2005), Mahoney and Thorne (2006), Deckop et al. (2006), Claassen and Ricci (2015) and Karim et al. (2018) also find evidence that equity-based compensation has a positive effect on CSR, while there is a negative effect of cash-based compensation. Berrone and Gomez-Mejia (2009) found evidence that long-term oriented compensation increases pollution prevention success, which is an aspect of CSR.

The literature of CEO Compensation on CSR of a company overall suggests that equity-based compensation can contribute to corporate social responsibility, because the high ownership of a company makes CEOs incentivized to consider the interests of the shareholders.

2.5 The effect of monitoring

There is also a field in the literature that looks at the effect of ownership and corporate governance on corporate social responsibility. The effect of CEOs with more power in the company can influence the performance of the company. A CEO that holds seats in multiple boards has a negative effect on performance, while CEO duality has a positive effect (Peni, 2014). Skeikh (2019) also states that CEO power regarding structural and ownership dimensions are negatively related to CSR. Jiraporn and Chintrakarn (2013) on the other hand, state an increase in CEO power first leads to an improvement of CSR, but the level decreases when the power of the CEO increases more.

Insiders are, for instance, more likely to overinvest in CSR (Barnea & Rubin, 2010), but the increase of CSR through insiders depends on the dimension of CSR (Johnson & Greening, 1999). On the other hand, other research found a negative relationship between top management equity holdings and CSR (Oh et al., 2011) or a non-linear effect (Oh et al., 2017).

The effect of mutual and investment bank funds on CSR is quite mixed. Johnson and Greening (1999) and Dam & Scholtens (2012) found no effect, Neubaum and Zahra (2006) and Aguilera et al. (2006) found a negative effect and Lopatta et al. (2017) found a positive

effect. Shareholder activism can also lead to a decrease in CSP, because shareholders do not want to invest resources in this aspect of the firm (David et al., 2007). However, institutional ownership is related to CSR, which has been investigated in different papers. Oh et al. (2011) and Neubaum and Zahra (2006) found that institutional investors have a positive effect on CSR ratings. Other research found a non-linear effect of institutional ownership on CSR (Oh et al., 2017; Pucheta-Marínez & Chiva-Ortells, 2018). Graves and Waddock (1994) show that the number of institutions have a positive significant effect on social performance, but an insignificant effect of the percentage of shares held by institutions.

Ownership is part of corporate governance, which influences CSR in different ways. Jo and Harjoto (2011) found a positive effect of corporate governance on CSR, whereas Arora & Dharwadkar (2011) suggest that corporate governance decreases positive CSR and negative CSR. Hong et al. (2016) shows that corporate governance is a factor that determines managerial incentives to participate in CSR.

Corporate governance can also be a moderating variable for the relationship between CEO compensation and CSR, which is also the effect that is investigated in this research. Karim et al. (2018) and Joubert (2019) found that this relationship is higher for companies with a high level of inside director ownership, but Jian and Lee (2015) suggest that firms with high corporate governance have a stronger negative relationship between CEO compensation and CSR.

2.6 Hypothesis development

As stated in the previous paragraphs, the agency theory states that the interests of the CEO need to be aligned with the shareholders, which is beneficial to the company. Stakeholder theory adds that other stakeholders also want to influence a company, which makes it possible to influence the choices of the CEO in a way that he or she looks at actions that benefit both the company and society. Prior literature shows that steering the interests of the CEO through their salary does not increase CSR (Fabrizi et al., 2014; Manner, 2010; McGuire et al., 2003; Rekker et al., 2014), but equity-based compensation can increase the level of CSR of a company according to Callan and Thomas (2014), Claassen & Ricci (2015), Deckop et al. (2006), Kang (2017), Karim et al. (2018), Mahoney and Thorne (2005), Mahoney and Thorne (2006) and McGuire et al. (2019). Equity-based compensation makes the CEO more incentivized to focus on the interests of the shareholders and stakeholders, because their

compensation is more linked to the long-term orientation of the company. Their interests should be more in line with the interests of different stakeholders, especially when CSR is linked to a better performance in a company. The first hypothesis is as follows:

H1: Equity-based compensation has a positive effect on corporate social responsibility.

This hypothesis is stated in the alternative form. The null-hypothesis therefore states that equity-based compensation does not influence corporate social responsibility. It might be possible that equity-based compensation highlights the long-term orientation of the company, without leading to actions that increase the CSR of a company. CEOs can invest in certain project that are beneficial for the long-term, but that are not increasing the level of CSR.

The second hypothesis looks at the moderating effect of monitoring on the association between equity-based compensation and corporate social responsibility. The extent of the agent dilemma is influenced by informal and formal institutions (Jain & Jamali, 2016), which are represented by internal and external monitoring. The good management theory also states that corporate governance and institutional ownership can improve the CSR of the company. Monitoring the CEO can make the effect of equity-based compensation on CSR stronger, because monitoring can lower the power of the CEO, which forces him or her to look at the firm in the long term. The likelihood of the CEO influencing business decisions and their own compensation is lower when the CEO is in control of institutional owners and corporate governance (Karim et al., 2018). This makes it less likely for the CEO to have short based compensation, which makes the part of equity-based compensation even higher. Institutional owners can also control the CEO to maximize social engagements (Jouber, 2019). This research divides monitoring into two variables: corporate governance for internal monitoring and institutional ownership for external monitoring. Both topics can influence the CEO, which makes them two valid proxies for this research. The second hypothesis is as follows:

H2a: The positive association between equity-based compensation and corporate social responsibility is more pronounced with the level of corporate governance.

H2b: The positive association between equity-based compensation and corporate social responsibility is more pronounced with the level of institutional ownership.

The null hypothesis states that monitoring (corporate governance or institutional ownership) does not moderate the association between equity-based compensation and corporate social responsibility. If institutional owners are not interested in CSR, it is less likely that they

monitor the CEO in CSR improvements. The monitoring effect of corporate governance could also be insignificant because corporate governance might not highlight the importance of CSR. The second hypothesis tests whether monitoring is linked with the association between equity-based compensation and CSR.

3. Research Design

This chapter discusses the operationalization of the constructs that are examined in this thesis. I will explain the Libby boxes and describe the variables that are included in this research. After that, the regression model is shown, with the sample selection procedure to collect the data.

3.1 Variable description

The Libby boxes illustrates the framework of this research. The effect of equity-based compensation of the CEO on the level of CSR of a company is investigated, but also the moderating effect of internal monitoring. This effect is investigated by a company per year. The dependent variable Y (the level of CSR of company i in year t) is measured with reputation indexes (Cochran & Wood, 1984). The MSCI database provides data for the CSR-score, with seven different dimensions and six controversial business issue areas. The dimensions are community, corporate governance, diversity, employee relations, environment, human rights and product quality. The six controversial business issue areas are alcohol, firearms, nuclear power, tobacco, gambling, and military. This database consists of binary variables for every dimension of CSR, with positive indicators (strengths) and negative indicators (concerns). The strengths show actions that have a positive effect on CSR, for example volunteer programs in the community dimension or gay and lesbian policies in the diversity dimension. The concerns represent actions that have a negative effect on CSR, for example child labour in the employee dimension, or toxic spills in the environment dimension. The strengths vary from volunteer programs for the community dimension, or gay and lesbian policies in the diversity dimension. The concerns from the CSR score vary from child labor in the employee dimensions or toxic spills for the environment dimension. The normal score of CSR is subtracting the concerns from the strengths per dimensions and in total (Karim, Lee and Suh, 2018; Sheikh, 2019; Yuan et al., 2019), a more detailed measure is the average of the dimensions, where the concerns are subtracted from the strengths (Chen,

2019; Jian and Lee, 2015). Another way that has been used in prior literature is the sum of the total CSR strength and concerns of each dimension (Oh et al., 2017; Yuan et al., 2019). However, this has some disadvantages because some variables are missing or are changing over time. I overcame this problem by scaling the strength and concerns by the maximum score of every dimension for every observation, which will result in a score between -1 and 1 for every dimension (Albuquerque et al., 2018; Deng, Kang & Low, 2013; McGuire et al., 2019). The average of the scaled scores of the dimensions is the total CSR-score, which will be the base measure in this research (CSR Score 1 in table 2). This score is also divided into the score of the strengths and the score of the total concerns, because strengths and concerns do not measure the exact same dimension in opposite directions (Kang, 2017; Mattingly & Berman, 2006; Skeikh, 2019). The average of the dimensions without scaling will be used as a control proxy for CSR (CSR Score 2 in table 2).

The third measure of the CSR-score is based on the research of Callan and Thomas (2014). They scale the dimensions of CSR on a 5-point scale. -2 states that a dimension has two or more concerns than strength, -1 indicates that a dimension has one concern, while 1 shows a dimension with one strength, and +2 states that a dimension has two or more strengths than concerns. The average of these dimensions is the average CSR-score, which will be the third measure of CSR for this research (CSR Score 3 in table 2). The three different scores of CSR are also divided into a score of every category, thus makes it possible to investigate every category.

This research excludes the dimension that reflects corporate governance, because this measure is related to the moderating variable, which can lead to multicollinearity. Other papers also exclude this dimension, because this dimension is more focused on the social aspects of corporate governance and is viewed different from the other dimensions (Di Giuli & Kostovetsky, 2014; Jian & Lee, 2015; McGuire et al., 2019; Sheikh, 2019; Yuan et al., 2019). The controversial business issue areas are also not included in this research, because they cannot give a proper score that can be used for the average. These business issue areas are also not included in other papers (Karim, Lee and Suh, 2018; McGuire et al., 2019; Sheikh, 2019; Yuan et al., 2019). This leaves the database with six different dimensions for CSR: environment, community relations, humanity, employee relations, diversity, and product characteristics.

The independent variable is equity-based CEO compensation. The portion of equity-based compensation is measured by subtracting the salary and bonus from the total compensation,

and then dividing it by the compensation (Claassen & Ricci, 2015; Karim et al., 2018; Koch et al., 2010; Mahoney & Thorne, 2005; McGuire et al., 2003). This data is retrieved from Execucomp.

The moderating effect is internal monitoring and external monitoring, which has two categories: corporate governance and institutional ownership. Corporate governance is measured by the corporate governance index, while institutional ownership is measured the shares with and without voting power for institutional owners. ISS can deliver data for the governance index. This is an index that gives a score of 24 corporate governance provisions that is drawn from the Investor Responsibility Research Center (Gompers et al., 2003). Previous research also uses this index, for example Arora & Dharwadkar (2001), Jo & Harjoto (2011), Park et al. (2019) and Skeikh (2019). The institutional ownership variable is measured as the number of outstanding shares held by institutional owners at the end of the year. The Thomson Reuters database also divides these shares from 1999 into the following categories: sole voting shares, shared voting shares and shares without voting power.

This research also has some control variables that might influence the level of CSR of a company to have a more accurate result of the effect of equity-based compensation and to reduce the danger of endogeneity. This is necessary because there are many individual, organizational and institutional factors that influence the level of CSR of a company (Aguinis and Glavas, 2012). The first field of control variables includes the individual factors, while the second field of control variables are organizational factors. The moderating effect of this research, internal monitoring, can be put into the organizational and institutional factors group, because Aguinis and Glavas (2012) put corporate governance practices and institutional ownership in both type of groups.

The first field of control variables measures the effect of CEO characteristics, because they are correlated with CSR and CEO compensation (Kang, 2017; Karim et al., 2018). Gender will be a proxy variable that states 1 if the CEO is a female and 0 otherwise (Glass & Cook, 2018; Huang, 2013; Manner, 2010; Peni, 2014; Yuan et al., 2019). Chen et al. (2019) measures the CEO tenure as the natural logarithm of the years that the CEO is in his position, but most search (Arora & Dharwadkar, 2011; Berrone & Gomez-Meija, 2009; Bian et al., 2016; Huang, 2013; Jian & Lee, 2015; Kang, 2017; Karim et al., 2018; McGuire et al., 2019; McKnight, 2004; Nguyen et al., 2018; Park et al., 2019; Peni, 2014; Yuan et al., 2019) measures tenure as the number of years of a CEO's service. The age of the CEO is also included in this research, because it is also included in prior literature (Arora & Dharwadkar,

2011; Bian et al., 2016; Huang, 2013; Jian & Lee, 2015; Kang, 2017; Karim et al., 2018; McGuire et al., 2019; McKnight & Tomkins, 2004; Nguyen et al., 2018; Peni, 2014).

Factors of a company are also included as control variables. The first variable is company size. Different measures are used for this variable, for example the natural logarithm of assets (Barnea, 2010; Fabrizi et al., 2014; Joubert, 2019; Koch et al., 2010; McGuire et al., 2019; Neubaum & Zahra, 2006; Nguyen et al., 2018; Park et al., 2019; Peni, 2014; Pucheta-Martinez & Chiva-Ortells, 2018; Rekker et al., 2014; Wang & Sarkis, 2017; Yuan et al., 2019), the natural logarithm of total employees (Deckop et al., 2006; McGuire et al., 2003; Padgett & Galan, 2010), total sales (Mahoney & Thorne, 2005; Mahoney & Thorne, 2006; Oh et al., 2017) and the lag of total sales (Manner, 2010; Oh et al., 2011; Padgett & Galan, 2010; Stanwick & Stanwick, 2001). The first proxy of size is used for this research, because total sales could lead to multicollinearity with other variables.

The second control variable is the ROA, measured as the net income over total assets (Hong, 2016; McGuire et al., 2003; Neubaum & Zahra, 2006; Oh et al., 2011; Oh et al., 2017; Padgett & Galan, 2010; Yuan et al., 2019). The third variable is a proxy of risk, this will be the leverage ratio (Barnea & Rubin, 2010; Fabrizi et al., 2014; Mahoney & Thorne, 2006; McGuire et al., 2003; McGuire et al., 2019; Neubaum & Zahra, 2006; Nguyen et al., 2018; Nollet et al., 2016; Oh et al., 2017; Opler & Titman, 1994; Padgett & Galan, 2010; Park et al., 2019; Peni, 2014; Pucheta-Martínez & Chiva-Ortells, 2018; Rekker et al., 2014; Skeikh, 2019; Wang & Zarkis, 2017; Yuan et al., 2019). The leverage ratio of the company is measured as the total liabilities divided by the total assets. Padgett & Galan (2010) show that R&D intensity influences CSR. R&D intensity is measured as the total research and development expenses over total sales (Hong et al., 2016; McGuire et al., 2019; Skeikh, 2019).

I control for year and industry fixed effects by a year dummy variable and the 2-digit SIC code for industries.

The first hypothesis can be tested through the following regression:

$$CSR_{it} = \alpha + \beta_1 * \text{CEO equity-based compensation} + \beta_2 * \text{Size} + \beta_3 * \text{ROA} + \beta_4 * \text{Risk} + \beta_5 * \text{Tenure} + \beta_6 * \text{Gender} + \text{Year dummies} + \text{Industry dummies} + \varepsilon$$

The main interest is β_1 , this illustrates the effect of equity-based compensation of a CEO on CSR. The hypothesis can be accepted if this coefficient is positively significant. The second hypothesis has the following regression:

$$\text{CSR}_{it} = \alpha + \beta_1 * \text{CEO equity-based compensation} + \beta_2 * \text{Corporate governance index} + \beta_3 * \text{CEO equity-based compensation} * \text{Corporate governance index} + \beta_4 * \text{Gender} + \beta_5 * \text{Tenure} + \beta_6 * \text{Size} + \beta_7 * \text{ROA} + \beta_8 * \text{Risk} + \text{Year dummies} + \text{Industry dummies} + \varepsilon$$

$$\text{CSR}_{it} = \alpha + \beta_1 * \text{CEO equity-based compensation} + \beta_2 * \text{Institutional ownership} + \beta_3 * \text{CEO equity-based compensation} * \text{Institutional ownership} + \beta_4 * \text{Gender} + \beta_5 * \text{Tenure} + \beta_6 * \text{Size} + \beta_7 * \text{ROA} + \beta_8 * \text{Risk} + \text{Year dummies} + \text{Industry dummies} + \varepsilon$$

The first and third beta shows the effect of CEO compensation on CSR with the moderating variable included. The second and third beta shows the effect of the moderating effect on CSR. The sum of the first and third coefficients should be positive to accept the second hypothesis.

3.2 Sample selection

The sample is collected with the following databases. The data of CSR is retrieved from the MSCI-database from WRDS, because this database is widely used in prior research (Deng et al., 2013; Jian & Lee, 2015; Yuan et al., 2019). The variables from CEO characteristics and the other control variables are retrieved from Compustat and Execucomp. The years from 1992 till 2016 are being included for the sample, but the amount of years is reduced after some restrictions. Companies from the S&P 500 list, S&P Midcap Index, S&P Smallcap Index and companies that are not on a major S&P index. ISS delivers the data for the governance index, while the data from institutional ownership is collected from Thomson Reuters. Only firms from the United States are included in this research. The final sample has 4,473 observations for 802 unique firms from 1995 till 2013.

Table 1 Sample selection. This table reports the sample selection procedures for the period 1992-2016 with the merges of different databases. Panel A summarizes the selection of the sample, Panel B summarizes the selection of the sample for the second hypothesis and Panel C shows the number of observations per year.

Panel A. Sample selection				
Database	Action			Number of observations
MSCI		52,520		
	Drop duplicates	-13		
			52,507	
Execucomp			281,297	
Merged database				132,145
Compustat		314,082		
	Drop duplicates	-29,463		
			284,619	
Merged database				131,252
	Drop observations when the person is not a CEO			-118,307
				12,945
	Drop if SIC 4900-4999			-746
				12,199
	Drop if SIC 6000-6999			-2,418
				9,781
	Drop when portion of equity-based compensation is negative			-10
				9,771
	Drop if a variable is missing			-5,298
				4,473
Panel B. Sample selection for the second hypothesis				
Thomson Reuters			261,757	
Merged database				4,211
ISS		13,998		
	Drop 1991 and duplicates	-1,495		
			12,503	
Merged database				1,129
Panel C. Sample observations by year				
Year	Number of observations	%	Cumulative	
1995	119	2.66	2.66	
1997	127	2.84	5.50	
2000	121	2.71	8.20	
2001	213	4.76	12.97	
2002	230	5.14	18.11	
2003	390	8.72	26.83	
2004	400	8.94	35.77	
2005	320	7.15	42.92	
2006	362	8.09	51.02	
2007	445	9.95	60.97	
2008	418	9.34	70.31	
2009	432	9.66	79.97	
2010	428	9.57	89.54	
2011	421	9.41	98.95	
2012	44	0.98	99.93	
2013	3	0.07	100.00	

The sample selection is shown in table 1. The databases of MSCI, Execucomp, and Compustat are being merged after dropping the duplicates. This combined database has the following adjustments. The observations from people that are not a CEO are being left out from the sample. Observations where a person is in his first or last year as a CEO are also deleted from the sample, because the first and last year of a CEO position can influence the results (Ali & Zhang, 2015). Regulated industries (SIC code 4900-4999) and the financial industry (SIC code 6000-6999) are not useful for the sample, so they are deleted from the database (Jian & Lee, 2015). Observations with missing variables are also deleted from the database. The size, leverage, R&D intensity, and the portion of equity-based compensation are being winsorized from 0.5% to account for outliers. The portion of equity-based compensation are being separated from the median, which makes them binary variables. Table 2 shows the descriptive statistics of this sample.

This database is combined with the databases that have the variables for corporate governance and institutional ownership for the second hypothesis. The database is merged with ISS when the effect of corporate governance is examined, while the Thomson Reuters database is merged with the sample for the hypothesis that shows the moderating effect of institutional ownership.

The ISS database has observations from seven different years, but only observations from five years can be merged with the sample. The merged database of the sample and ISS has 1,129 observations from the years 1995, 2000, 2002, 2004 and 2006.

The Thomson Reuters database has over 60 million observations, but this amount has been reduced to 261,757 observations with the following adjustments. Duplicates were being removed, where the observations of company per year have been merged. The combined database with the merges has 4,211 observations from 2000 till 2013 (see table 1, Panel B).

4. Empirical Results

This chapter shows the results of the data analysis. This chapter starts with the descriptive statistics and the correlation matrix of the sample. After these statistics, the first and second hypotheses are tested, with some additional tests and robustness checks in the end.

4.1 Descriptive statistics

The descriptive statistics are shown in table 2 in the appendix, with the variables that are included in this research. All continuous variables are winsorized at the 0.5th and 99.5th percentile to account for outliers. The three CSR-scores do not show extreme values. The main measure for CSR has a mean around zero, showing that the average firm has a neutral score regarding corporate social responsibility. These results are similar to the results of other papers that use the scaled version of CSR (Albuquerque et al., 2018; Deng et al., 2013). The means of the different dimensions of CSR are also similar to each other. The portion of equity-based compensation is widely spread, with an average portion of 64% percent of equity-based compensation of the total compensation. Another remarkable thing is the low amount of female CEO's in the sample, this is only 2.7% of the sample. This low amount is consistent with prior research (Yuan et al., 2019). The corporate governance index does not have extreme high values, because the maximum score of this index is 24. The variables of institutional ownership show the portion of shares held by institutional owners, with an average of 76%. If these shares are split into three groups (shares with sole voting power, shares with shared voting power and shares with voting power), the shares with sole voting power are the mostly used shares for institutional owners.

Table 2 Descriptive statistics. This table describes the descriptive statistics of the sample for all the variables for the period 1995-2013. Panel A shows the statistics of the CSR-score of the KLD database. CSR score 1 is the scaled version of CSR with the concern score subtracted from the strength score. CSR score 2 is the same score without the scaling. CSR score 3 shows the CSR score 2, but from a scale from -2 till 2. The first and second CSR scores are divided into the strength and concern variables, while the first CSR score is divided into the six different dimensions, with their corresponding strength and concern scores. Panel B shows the independent variable and control variables. Equitycomp is the portion of equity-based compensation from the total compensation. Age is the age of the CEO, female is a binary variable that is equal to 1 if the CEO is a female and tenure is the amount of years that the CEO is in his/her position. The organizational control variables are the ROA (net income divided by total assets), leverage is the total debt divided by total assets, size is the natural logarithm of total assets and the R&D intensity is the R&D expenses divided by net sales. Panel C shows the moderating variables for the second hypothesis. G-index shows the corporate governance index of Gomers et al. (2003), while sharesportion is the portion of shares held by institutional ownership. This variable is divided into three types: soleportion (with shares with sole voting power), sharedportion (with shares with shared voting power) and noportion (shares with no voting power).

Variable	N	Mean	Std. Dev.	Minimum	Maximum
CSR Score 1	4,473	-0.0103895	0.1008773	-0.5	0.7287037
CSR Score 2	4,473	0.0394217	0.4419277	-1.5	2.5
CSR Score 3	4,473	0.0129667	0.3684449	-1.333333	1.5
CSR strength 1	4,473	0.0606517	0.0983805	0	0.9
CSR concerns 1	4,473	0.0710412	0.078054	0	0.7111111
CSR strength 2	4,473	1.153365	1.86501	0	14
CSR concerns 2	4,473	1.262017	1.880302	0	14
Environment score	4,473	0.0213271	0.1592556	-0.7142857	1
Environment strength score	4,473	0.0651874	0.1545808	0	1
Environment concerns score	4,473	0.0438603	0.1156995	-	0.8333333
Community score	4,473	0.0217788	0.1737887	-1	1
Community strength score	4,473	0.0506744	0.1437428	0	1
Community concerns score	4,473	0.0288956	0.1278326	0	1
Humanity score	4,473	-0.0112602	0.1101546	-0.6666667	1
Humanity strength score	4,473	0.0084954	0.0876342	0	1
Humanity concerns score	4,473	0.0197556	0.0753913	0	0.6666667
Employee score	4,473	-0.0292312	0.1902119	-0.8	1
Employee strength score	4,473	0.0786979	0.1391264	0	1
Employee concerns score	4,473	0.1079291	0.1555345	0	1
Diversity score	4,473	-0.0381535	0.2997994	-0.6666667	1
Diversity strength score	4,473	0.1102182	0.181124	0	1
Diversity concerns score	4,473	0.1483717	0.2084467	0	0.6666667
Product score	4,473	-0.0267978	0.2171072	-1	1
Product strength score	4,473	0.0506372	0.1645117	0	1
Product concerns score	4,473	0.077435	0.174259	0	1
Equitycomp	4,473	0.6403295	0.2546052	0	0.9999987
Age	4,473	55.97138	7.051376	39	82
Female	4,473	0.0270512	0.1622508	0	1
Tenure	4,473	7.274983	6.939487	1	39
ROA	4,473	0.0523574	0.0995639	-0.5512845	0.3024271
Leverage	4,473	0.4822518	0.2213944	0.0654777	1.320871
Size	4,473	7.549303	1.553582	4.331089	12.33726
R&D intensity	4,473	0.078335	0.1410124	0	1.358877
Governance index	1,129	9.44907	2.574307	2	17
Sharesportion	3,712	0.7621993	0.1664288	0.1679374	0.994323
Soleportion	3,712	0.527609	0.1295772	0.1234652	0.8051179
Sharedportion	3,712	0.0521992	0.0345739	0.0038723	0.2132258
Noportion	3,712	0.1652228	0.0716089	0.0147622	0.3694902

Table 3 illustrates the correlations between the variables. The portion of equity-based compensation has positive and significant correlations with the CSR-scores, which suggests a positive effect that is investigated in this research. Other variables that are significantly correlated with CSR are age, gender, ROA, the size of the company and R&D intensity, with only age as a negative correlation.

Table 3 Correlation matrix. This table shows the correlations between the variables of the first hypothesis. * after the correlation shows significance at 5 per cent or better.

	CSR Score	Strength score	Concerns score	Equitycomp	Age	Female	Tenure	ROA	Leverage	Size	R&D
CSR Score	1										
Strength score	0.6934*	1									
Concerns score	-0.4185*	0.3643*	1								
Equitycomp	0.0749*	0.1919*	0.1451*	1							
Age	-0.0377*	0.0253	0.0807*	-0.0839*	1						
Female	0.0852*	0.0608*	-0.0334*	-0.0007	-0.0716*	1					
Tenure	-0.0148	-0.0751*	-0.0755*	-0.1440*	0.4344*	-0.0620*	1				
ROA	0.0962*	0.1214*	0.0287	0.0752*	0.0457*	0.0073	0.0212	1			
Leverage	-0.0114	0.1878*	0.2514*	0.0771*	0.0899*	0.0449*	-0.1341*	-0.1480*	1		
Size	0.1530*	0.5442*	0.4882*	0.2980*	0.0765*	-0.0585*	0.0878*	0.1424*	0.3896*	1	
R&D intensity	0.0444*	-0.0497*	-0.1200*	0.0560*	-0.0951*	-0.0075	0.0566*	-0.3991*	-0.1670*	-0.1764*	1

4.2 Test of hypothesis 1

Hypothesis 1 states that the portion of equity-based compensation increases the level of CSR of a company. A t-test has been made with a comparison between the two groups based on the sample median. The comparison between these two groups can be found in table 4. The means of these two groups are significantly different from each other for the total CSR-score, total strength-score of CSR and the total concerns-score of CSR, which supports the hypothesis.

Table 4 T-test with a comparison between the means of the highest and lowest equity-based compensation group, separated by the median.

Variable	Difference between groups	T-value	P-value
CSR Score 1	-0.0157448	-5.2347	0.000
CSR Strength Score	-0.0365675	-12.6486	0.000
CSR Concerns Score	-0.0208228	-9.0004	0.000

Another way to look at the effect of equity-based compensation on CSR is dividing the sample into quartiles. The means of every quartile are shown in table 5, but only the quartile with the highest equity-based compensation has a higher average CSR-score. These findings can suggest that only high portions of equity-based compensation can make a difference in the level of CSR. The strength and concerns-score show an increasing trend for the quartiles, suggesting that a higher portion of equity-based compensation increases the activities of positive CSR-actions, but also the negative CSR-actions.

Table 5 CSR scores for equity-based compensation portfolios. This table reports the CSR score (total score, strength and concerns) for equity-based compensation portfolios. The observations are sorted into quartiles based on the portion of equity-based compensation. This table shows the average CSR score for each group.

Quartile	N	Mean CSR Score	Mean CSR Strength Score	Mean CSR Concerns Score
1	1,119	-0.0177905	0.0381116	0.055902
2	1,118	-0.0187301	0.0466364	0.0653665
3	1,118	-0.0141221	0.0571429	0.0712649
4	1,118	0.0090914	0.1007363	0.0916449
Total	4,473	-0.0103895	0.0606517	0.0710412

The regression of equity-based compensation on CSR is shown in table 6. The first column shows the simple regression, with a positive and significant effect of 0.030. This effect suggests that an increase of the portion of equity-based compensation of 1% will increase the CSR score with 0.030. This is still the case when individual control variables (age, gender,

tenure) and year and industry fixed effects are included in the regression in the second column, with a positive and significant effect of 0.028. However, when organizational control variables are included in the regression, the effect of the portion of equity-based compensation on CSR switches to a negative and insignificant effect. This is different when looking at the strengths (column 4-6) and concerns (column 7-9) of CSR. The effect of the portion of equity-based compensation is significant for every regression with these dependent variables. The effect on the strength score of CSR is -0.020, while it is -0.017 on the concerns of the CSR-score. When the negative effect for the strength is subtracted from the effect on the concerns (because the concerns are negative in the total CSR-score), the effect of equity-based compensation on CSR is shown. These results therefore indicate that the portion of equity-based compensation lowers the strength variables of CSR (which leads to a decrease in the CSR-score), but also lowers the concern variables of CSR (which leads to an increase in the CSR-score). Therefore, the portion of equity-based compensation offset strengths and concerns. Prior research does not have an explanation for this result. Skeikh (2019) found a negative effect of the power of the CEO on the strength regressions, but negative and insignificant effects on the concerns. The author suggests that powerful CEOs reduce CSR strength, but do not increase CSR concerns. Kang (2017) shows a positive and significant effect of stock options on the strength variables of CSR, but a negative and insignificant effect on the concerns of CSR. Kang (2017) suggests that CEOs with a high stock ownership invest in social and ethical issues, but do not try to invest in concerns of CSR. Another explanation is that CSR concerns are also influenced by other factors that are not controllable for firms and their CEOs. The regressions of table 6 suggest that a higher portion of equity-based compensation does not force CEOs to invest in improving CSR strengths but make the CEO more motivated to tackle actions that are hurtful to society. Preventing and/or decreasing CSR concerns will shift the focus from CSR strengths, which explains the decrease in CSR strengths. This will eventually lead to a neutral effect on the CSR-score.

Table 6 Regressions of the effect of the portion of equity-based compensation on the level of CSR, divided into the total score, CSR strength and CSR concerns. Column 1, 4, and 7 show the simple regression with only equity-based compensation as an explanatory variable. Column 2, 5 and 8 show this regression with individual control variables and year and industry fixed effects, while column 3, 6 and 9 show the full model with the addition of organizational factors. T-significance is reported in parentheses, with ***, ** and * for significance at 1%, 5% and 10%, respectively.

	CSR Score			CSR Strength Score			CSR Concern Score		
	1	2	3	4	5	6	7	8	9
Intercept	-0.030*** (5.02)	-0.128 (-1.32)	-0.247*** (-2.60)	0.013*** (3.37)	0.129 (1.41)	-0.177** (-2.28)	0.043*** (9.80)	0.257*** (3.69)	0.070 (1.13)
Equitycomp	0.030*** (-7.22)	0.028*** (4.55)	-0.003 (-0.48)	0.074*** (13.08)	0.055*** (9.60)	-0.020*** (-3.86)	0.044*** (13.62)	0.028*** (6.33)	-0.017*** (-4.06)
Age		-0.000 (-1.06)	-0.000* (-1.87)		0.001*** (2.76)	-0.000 (-0.22)		0.001*** (5.11)	0.000*** (2.58)
Female		0.054*** (5.87)	0.059*** (6.63)		0.035*** (4.08)	0.053*** (7.23)		-0.018*** (-2.78)	-0.007 (-1.15)
Tenure		-0.000 (-1.28)	-0.000 (-1.05)		-0.001*** (-4.84)	-0.001*** (-2.95)		-0.001*** (-4.60)	-0.000** (-2.05)
ROA			0.046*** (3.24)			0.023** (1.97)			-0.023** (-2.49)
Leverage			-0.023*** (-3.27)			-0.004 (-0.77)			0.019*** (4.03)
Size			0.014*** (12.96)			0.037*** (40.68)			0.022*** (30.67)
R&D intensity			0.003 (1.35)			0.002 (1.04)			-0.001 (-0.76)
Year fixed effects	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Industry fixed effects	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
N	4,473	4,473	4,473	4,473	4,473	4,473	4,473	4,473	4,473
R²	0.0056	0.1212	0.1595	0.0368	0.1701	0.4155	0.0210	0.2399	0.3958
Adjusted R²	0.0054	0.1085	0.1466	0.0366	0.1581	0.4065	0.0208	0.2289	0.3865

Overall, the results do not suggest a significant and positive effect of the portion of equity-based compensation on the level of corporate social responsibility, but it does influence the strength and concerns of the CSR score, which explains the neutral effect on the CSR score.

4.3 Test of hypothesis 2

The second hypothesis states that the positive association between equity-based compensation and corporate social responsibility is more pronounced with the level of internal monitoring. Internal monitoring is measured with two different factors: corporate governance and institutional ownership. Table 7 shows the regressions of the effect of equity-based compensation on CSR, with corporate governance as the moderating effect. The full model regressions of equity-based compensation on CSR (total score, strengths, and concerns) are not significant with the governance index as a moderating variable. Only the model for CSR concerns shows a significantly negative effect of the corporate governance. These results do not give the idea that corporate governance does moderate the association between equity-based compensation and CSR.

Table 7 Regression of the effect of the portion of equity-based compensation on CSR, with the corporate governance index as the moderating variable. The level of CSR is divided into total score, CSR strengths and CSR concerns. The columns show the corporate governance index as a binary variable which is equal to 1 if the firm belongs to the highest half of the sample regarding the corporate governance index (values from 10 and higher). The models show the full models of table 6, with individual and organizational control variables and time and industry fixed effects. T-significance is reported in parentheses, with ***, ** and * for significance at 1%, 5% and 10%, respectively.

	CSR Score	CSR Strength Score	CSR Concerns Score
Intercept	-0.079** (-2.35)	-0.178*** (-7.27)	-0.099*** (-3.88)
Equitycomp	-0.004 (-0.39)	-0.015* (-1.86)	-0.011 (-1.26)
High G-index	0.016 (1.40)	-0.006 (-0.73)	-0.022** (-2.59)
Equitycomp * High G-index	-0.004 (0.21)	0.004 (0.30)	0.007 (0.56)
Age	-0.000 (-0.67)	0.000 (0.06)	0.000 (0.95)
Female	0.049*** (3.08)	0.051*** (4.42)	0.002 (0.16)
Tenure	-0.000 (-0.82)	-0.001*** (-2.85)	-0.000* (-1.64)
ROA	0.137*** (4.44)	0.095*** (4.27)	-0.041* (-1.78)
Leverage	-0.034** (-2.39)	-0.010 (-0.95)	0.024** (2.26)
Size	0.002 (1.00)	0.025*** (18.30)	0.023*** (16.26)
R&D Intensity	0.020* (1.82)	0.012 (1.53)	-0.008 (-0.95)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
N	1,129	1,129	1,129
R²	0.1923	0.3887	0.4145
Adjusted R²	0.1533	0.3591	0.3862

Table 8 provides regressions with institutional ownership as the moderating effect. The models of the strengths and concerns show significant moderating effects. The effect of equity-based compensation on the strength (concerns) score is an insignificant -0.001 (-0.003), but this decreases with 0.034 (0.018) with the moderating effect of institutional ownership. Equity based compensation does not decrease the strength and concerns-score of CSR, but it does for the highest 50% regarding the share of institutional ownership. High institutional ownership shows a more pronounced effect of equity-based compensation of the strength and concerns score of CSR, but in a negative way. This result shows that institutional owners enhances the neutralizing effect of CSR when the equity-based compensation of a CEO increases.

*Table 8 Regression of the effect of the portion of equity-based compensation on CSR, with the portion of institutional ownership as the moderating variable. The level of CSR is divided into total score, CSR strengths and CSR concerns. Institutional ownership is a binary variable which is equal to 1 if the firm belongs to the highest half of the sample regarding institutional ownership. The models show the full models of table 6, with individual and organizational control variables and time and industry fixed effects. T-significance is reported in parentheses, with ***, ** and * for significance at 1%, 5% and 10%, respectively.*

	CSR Score	CSR Strength Score	CSR Concerns Score
Intercept	-0.256*** (-2.61)	-0.189** (-2.38)	0.067 (1.05)
Equitycomp	0.003 (0.34)	-0.001 (-0.20)	-0.005 (-0.78)
High Institutional Ownership	-0.002 (-0.19)	-0.005 (-0.66)	-0.003 (-0.53)
Equitycomp * High Institutional Ownership	-0.016 (-1.19)	-0.034*** (-3.22)	-0.018** (-2.18)
Age	-0.000 (-1.55)	-0.000 (-0.18)	0.000** (2.16)
Female	0.064*** (6.08)	0.055*** (6.44)	-0.009 (-1.33)
Tenure	-0.000 (-1.15)	-0.001** (-2.55)	-0.000 (-1.41)
ROA	0.044*** (2.82)	0.025** (2.00)	-0.019* (-1.85)
Leverage	-0.024*** (-3.17)	0.000 (0.07)	0.025*** (4.97)
Size	0.015*** (12.30)	0.037*** (36.96)	0.022*** (27.23)
R&D Intensity	0.003 (1.27)	0.002 (1.02)	-0.001 (-0.68)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
N	3,712	3,712	3,712
R²	0.1708	0.4539	0.4212
Adjusted R²	0.1555	0.4439	0.4105

4.4 Additional tests

4.4.1 Component of CSR

Some additional tests are made to give a more detailed view on the significant effect of equity-based compensation on the strengths and concerns of CSR. The first additional test looks if equity-based compensation influences certain dimensions of CSR (environment, community relations, humanity, employee relations, diversity, and product). The regression models of every dimension of strengths and concerns are illustrated in table 9, with panel A for the strengths and panel B for the concerns. The portion of equity-based compensation on the strength scores has significantly negative effects on almost every dimension, except for diversity. The significant effects for the concerns are on the environment, humanity, and product dimensions. It could be that CEOs specifically tackle concerns of CSR on these dimensions because these dimensions are more to be shown to different stakeholders of the company. The environment concerns are focused on climate change, which is an aspect of CSR that is important for different stakeholders, while humanity are focused on human rights. Product concerns are showing the quality of products and the way the market the products to the customer. These three dimensions are found to be important for the CEO in the regressions. However, it is still unclear why the diversity dimension for strength does not decline. These findings are not found in prior research that divided the different dimensions of CSR (Karim et al., 2018; Rekker et al., 2014; Skeikh, 2019).

Table 9 Regressions of the effect of equity-based compensation on the scaled strength and scaled concerns score of CSR, when every dimension has his own regression. Panel A the regressions of the strength of the different dimensions, while Panel B shows the regressions of the concerns of the different dimensions. The models show the full models of table 6, with individual and organizational control variables and time and industry fixed effects. T-significance is reported in parentheses, with *, ** and * for significance at 1%, 5% and 10%, respectively.**

Panel A Strength Scores						
	Environment	Community	Humanity	Employee	Diversity	Product
Intercept	-0.414*** (-3.19)	-0.140 (-1.10)	-0.075 (-0.87)	0.004 (0.03)	-0.181 (-1.20)	-0.330** (-2.14)
Equitycomp	-0.028*** (-3.29)	-0.031*** (-3.63)	-0.020*** (-3.52)	-0.022*** (-2.64)	-0.006 (-0.63)	-0.026** (-2.50)
Age	0.000 (0.21)	-0.000 (-1.21)	-0.000 (-1.23)	0.000 (1.27)	-0.001 (-1.54)	0.001** (2.00)
Female	0.020 (1.61)	0.006 (0.52)	0.006 (0.75)	-0.000 (-0.06)	0.237*** (16.74)	0.048*** (3.28)
Tenure	-0.001*** (-2.95)	-0.000 (-0.82)	-0.000* (-1.72)	-0.001*** (-4.79)	0.000 (1.12)	-0.001*** (-3.07)
ROA	0.077*** (3.34)	0.045** (2.00)	0.014 (0.90)	0.053** (2.42)	0.066** (2.46)	0.066** (2.43)
Leverage	0.029***	0.009	-0.003	-0.064***	0.008	-0.021

	(2.74)	(0.87)	(-0.49)	(-6.30)	(0.66)	(-1.64)
Size	0.044*** (28.16)	0.038*** (24.61)	0.010*** (9.52)	0.042*** (28.36)	0.059*** (32.66)	0.037*** (18.32)
R&D Intensity	0.003 (0.16)	0.015 (0.88)	0.019* (1.70)	0.094*** (5.85)	0.065*** (3.30)	0.033 (1.63)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	4,473	4,473	4,473	4,473	4,473	4,473
R²	0.3372	0.2536	0.1064	0.2649	0.3508	0.1741
Adjusted R²	0.3269	0.2421	0.0926	0.2535	0.3408	0.1613
Panel B Concern scores						
	Environment	Community	Humanity	Employee	Diversity	Product
Intercept	0.295*** (3.21)	-0.012 (-0.10)	-0.161** (-2.44)	-0.127 (-0.91)	0.250 (1.35)	0.201 (1.44)
Equitycomp	-0.015** (-2.43)	-0.008 (-0.98)	-0.019*** (-4.33)	-0.007 (-0.76)	-0.016 (-1.32)	-0.030*** (-3.17)
Age	0.001** (2.34)	0.001*** (3.18)	0.000** (2.54)	0.000 (0.66)	0.000 (0.18)	0.000 (0.36)
Female	0.015* (1.77)	0.029*** (2.59)	-0.007 (-1.18)	0.003 (0.24)	-0.088*** (-5.06)	0.008 (0.61)
Tenure	-0.001*** (-4.50)	-0.001** (-2.03)	-0.000 (-1.35)	0.000 (0.14)	0.001* (1.94)	-0.001*** (-2.94)
ROA	-0.058*** (-3.57)	-0.028 (-1.35)	0.004 (0.34)	-0.105*** (-4.25)	-0.048 (-1.47)	-0.008 (-0.32)
Leverage	0.037*** (4.92)	0.021** (2.18)	0.005 (0.90)	0.059*** (5.12)	-0.042*** (-2.76)	0.003 (0.22)
Size	0.029*** (26.36)	0.021*** (14.98)	0.016*** (19.68)	0.031*** (18.73)	-0.021*** (-9.28)	0.058*** (34.84)
R&D Intensity	-0.075*** (-6.20)	-0.048*** (-3.08)	0.015* (1.73)	-0.049*** (-2.69)	0.006 (0.23)	-0.008 (-0.43)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	4,473	4,473	4,473	4,473	4,473	4,473
R²	0.4019	0.1853	0.2752	0.2384	0.2571	0.3945
Adjusted R²	0.3927	0.1727	0.2640	0.2267	0.2457	0.3852

4.4.2 Periods before and after the financial crisis

Skeikh (2019) argues that firms can behave differently when they face a financial crisis, so the sample is divided into a pre-financial crisis (2003-2008) and a post-financial crisis (2009-2013). The results of these two regressions are shown in table 10, but they are not very different than the results in the previous tables. The CSR score still shows insignificant results, while the strength and concerns decrease both before and after the financial crisis.

Table 10 Regressions of the effect of equity-based compensation on CSR, where regressions are made before and after the financial crisis. The level of CSR is divided into total score, CSR strengths and CSR concerns. The models show the full models of table 6, with individual and organizational control variables and time and industry fixed effects, where the sample is divided into a period before the financial crisis (till 2006) and after the financial crisis (from 2010). T-significance is reported in parentheses, with ***, ** and * for significance at 1%, 5% and 10%, respectively.

	CSR Score		CSR Strength Score		CSR Concerns Score	
	Before	After	Before	After	Before	After
Intercept	-0.150** (-2.04)	-0.425*** (-4.01)	-0.068 (-1.27)	-0.431*** (-4.71)	0.082 (1.45)	-0.006 (-0.09)
Equitycomp	0.002 (0.26)	-0.027 (-1.11)	-0.010** (-2.18)	-0.061*** (-2.87)	-0.011** (-2.39)	-0.034** (-2.29)
Age	-0.000 (-0.59)	-0.001 (-1.13)	0.000 (0.49)	-0.001 (-0.95)	0.000 (1.23)	0.000 (0.51)
Female	0.049*** (4.50)	0.115*** (4.68)	0.042*** (5.24)	0.096*** (4.53)	-0.008 (-0.89)	-0.019 (-1.27)
Tenure	-0.001** (-2.17)	0.000 (0.17)	-0.001*** (-4.92)	-0.000 (-0.52)	-0.000* (-1.83)	-0.000 (-1.02)
ROA	0.093*** (5.03)	0.108** (1.98)	0.057*** (4.28)	0.010 (0.22)	-0.035** (-2.48)	-0.098*** (-2.99)
Leverage	-0.037*** (-4.29)	-0.018 (-0.87)	-0.013** (-2.08)	-0.023 (-1.27)	0.024*** (3.61)	-0.005 (-0.38)
Size	0.002* (1.71)	0.055*** (16.05)	0.024*** (27.16)	0.076*** (26.04)	0.022*** (23.39)	0.022*** (10.74)
R&D Intensity	0.004 (0.92)	0.058*** (2.94)	0.002 (0.51)	0.028 (1.62)	-0.002 (-0.71)	-0.030*** (-2.57)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	2,282	896	2,282	896	2,282	896
R²	0.1821	0.3945	0.3832	0.5740	0.3955	0.3556
Adjusted R²	0.1608	0.3564	0.3671	0.5472	0.3797	0.3150

4.4.3. Different types of institutional ownership

Table 11 provides the separation of different types of shares for institutional owners: shares with sole voting power, shares with shared voting power and shares without voting power. A distinction of these types is made to investigate whether the voting power plays a role in the moderating effect of institutional ownership. A significant effect of shares with voting power and an insignificant effect of the shares without voting power indicates that the active role of institutional owners will moderate the relation between equity-based compensation and CSR. The results show that the shares with sole voting power significantly moderate the association between equity-based compensation and CSR, but this is not the case for the other two types of shares. This indicates that voting power does matter for institutional ownership.

Table 11 Regression of the effect of the portion of equity-based compensation on CSR, with the portion of institutional ownership as the moderating variable. Institutional ownership is divided into shares with sole voting power (Panel A), shares with shared voting power (Panel B) and no voting power (Panel C). The level of CSR is divided into total score, CSR strengths and CSR concerns. Institutional ownership is a binary variable which is equal to 1 if the firm belongs to the highest half of the sample regarding institutional ownership. The models show the full models of table 6, with individual and organizational control variables and time and industry fixed effects. T-significance is reported in parentheses, with ***, ** and * for significance at 1%, 5% and 10%, respectively.

Panel A: Shares with sole voting power			
	CSR Score	CSR Strength Score	CSR Concerns Score
Intercept	-0.259*** (-2.62)	-0.190** (-2.36)	0.069 (1.07)
Equitycomp	-0.005 (-0.51)	-0.010 (-1.31)	-0.005 (-0.86)
Ownership	-0.000 (-0.03)	0.000 (0.05)	0.001 (0.11)
Equitycomp*Ownership	-0.004 (-0.33)	-0.024** (-2.30)	-0.020** (-2.39)
Age	-0.000 (-1.35)	0.000 (0.43)	0.000*** (2.62)
Female	0.064*** (6.06)	0.054*** (6.30)	-0.010 (-1.41)
Tenure	-0.000 (-1.28)	-0.001*** (-2.99)	-0.000* (-1.78)
ROA	0.042*** (2.66)	0.020 (1.56)	-0.022** (-2.13)
Leverage	-0.026*** (-3.33)	-0.003 (-0.43)	0.023*** (4.59)
Size	0.016*** (12.50)	0.038*** (36.61)	0.022*** (26.83)
R&D Intensity	0.003 (1.21)	0.002 (0.87)	-0.001 (-0.77)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
N	3,712	3,712	3,712
R²	0.1679	0.4432	0.4185
Adjusted R²	0.1526	0.4329	0.4078
Panel B: Shares with shared voting power			
	CSR Score	CSR Strength Score	CSR Concerns Score
Intercept	-0.264*** (2.69)	-0.025** (-2.55)	0.059 (0.92)
Equitycomp	-0.007 (-0.78)	-0.017** (-2.23)	-0.010 (-1.61)
Ownership	-0.013 (-1.49)	-0.010 (-1.38)	0.003 (0.55)
Equitycomp*Ownership	0.003 (0.24)	-0.012 (-1.14)	-0.015* (-1.79)
Age	-0.000 (-1.25)	0.000 (0.49)	0.000** (2.52)
Female	0.063*** (6.03)	0.054*** (6.31)	-0.010 (-1.34)
Tenure	-0.000 (-1.42)	-0.001*** (-3.07)	-0.000* (-1.68)
ROA	0.044*** (2.78)	0.022* (1.73)	-0.021** (-2.09)

Leverage	-0.025*** (-3.27)	-0.001 (-0.23)	0.024*** (4.74)
Size	0.016*** (12.57)	0.038*** (37.56)	0.022*** (27.79)
R&D Intensity	0.003 (1.31)	0.002 (1.04)	-0.001 (-0.72)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
N	3,712	3,712	3,712
R²	0.1703	0.4446	0.4149
Adjusted R²	0.1550	0.4344	0.4041
Panel C: Shares with no voting power			
	CSR Score	CSR Strength Score	CSR Concerns Score
Intercept	-0.260*** (-2.64)	-0.196** (-2.44)	0.063 (0.99)
Equitycomp	-0.005 (-0.54)	-0.018** (-2.48)	-0.013** (-2.28)
Ownership	-0.004 (-0.46)	-0.016** (-2.12)	-0.012** (-1.97)
Equitycomp*Ownership	-0.002 (-0.19)	-0.004 (-0.42)	-0.002 (-0.24)
Age	-0.000 (-1.48)	-0.000 (-0.16)	0.000** (2.09)
Female	0.064*** (6.10)	0.056*** (6.50)	-0.008 (-1.23)
Tenure	-0.000 (-1.17)	-0.001** (-2.48)	-0.002 (-1.32)
ROA	0.043*** (2.73)	0.023* (1.83)	-0.019* (-1.90)
Leverage	-0.025*** (-3.25)	-0.001 (-0.10)	0.025*** (4.88)
Size	0.016*** (12.95)	0.039*** (38.70)	0.023*** (28.70)
R&D Intensity	0.003 (1.25)	0.002 (1.04)	-0.001 (-0.63)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
N	3,712	3,712	3,712
R²	0.1683	0.4449	0.4184
Adjusted R²	0.1531	0.4347	0.4077

4.5 Robustness checks

As a robustness test, CEO fixed effects are being included in the regression, which are shown in table 12. CEO fixed effects are included in prior literature (Kang, 2017) and can indicate if there are still characteristics from CEOs that are missing in the research. The first column shows the effect on the total score CSR, which is negative and significant on the 10% level. The strength score still has a significant and negative effect, whereas the score of concerns does not show a significant decrease. These results suggest that some variables of the CEO are missing in the regression.

Table 12 Regressions of the full models of equity-based compensation on CSR, with CEO fixed effects included. The level of CSR is divided into total score, CSR strengths and CSR concerns. The models show the full models of table 6, with individual and organizational control variables and time and industry fixed effects, with the addition of CEO fixed effects. T-significance is reported in parentheses, with ***, ** and * for significance at 1%, 5% and 10%, respectively.

	CSR Score	CSR Strength Score	CSR Concerns Score
Intercept	-0.277 (-1.41)	0.074 (0.47)	0.351*** (3.04)
Equitycomp	-0.010* (-1.67)	-0.010** (-2.18)	-0.000 (-0.13)
Age	-0.000 (-0.05)	0.000 (0.16)	0.001 (0.29)
Female	0.058 (0.83)	0.113** (1.99)	0.054 (1.31)
Tenure	-0.006 (-1.62)	0.003 (1.08)	0.009*** (4.23)
ROA	-0.006 (-0.38)	-0.006 (-0.47)	0.000 (0.01)
Leverage	0.047*** (3.71)	0.040*** (3.88)	-0.008 (-1.02)
Size	0.009** (2.01)	0.006 (1.50)	-0.004 (-1.38)
R&D Intensity	-0.002 (-0.94)	-0.001 (-0.53)	0.001 (0.87)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
CEO fixed effects	Yes	Yes	Yes
N	4,473	4,473	4,473
R²	0.7232	0.8129	0.8406
Adjusted R²	0.6224	0.7447	0.7825

Lastly, the other two CSR scores that are not scaled are also used for the main regression. The full models also do not find significant effects for equity-based compensation on the level of CSR of a company and show significantly negative effects for the strength and concern-scores of CSR (see table 13).

Table 13 Regressions of the equity-based compensation on the alternative measures of the CSR-score. The level of CSR is divided into total score, CSR strengths and CSR concerns, only for the second score. The models show the full models of table 6, with individual and organizational control variables and time and industry fixed effects. T-significance is reported in parentheses, with ***, ** and * for significance at 1%, 5% and 10%, respectively.

	CSR Score 2			CSR Score 3
	CSR Score	CSR Strength Score	CSR Concerns Score	
Intercept	0.003 (-2.92)	-3.440** (-2.34)	1.920 (1.43)	-0.627* (-1.83)
Equitycomp	-0.002** (0.10)	-0.435*** (-4.45)	-0.379*** (-4.25)	0.018 (0.77)
Age	0.273*** (-2.50)	0.003 (0.76)	0.010*** (3.17)	-0.002** (-2.20)
Female	-0.001 (7.14)	0.311** (2.25)	0.166 (1.32)	0.203*** (6.31)
Tenure	-0.001 (-0.51)	-0.018*** (-5.11)	-0.014*** (-4.26)	-0.001 (-1.19)
ROA	0.231*** (3.80)	0.610*** (2.78)	-0.469** (-2.34)	0.174*** (3.40)
Leverage	-0.111*** (-3.72)	-0.143 (-1.33)	0.723*** (7.35)	-0.143*** (-5.67)
Size	0.091*** (19.25)	0.721*** (42.00)	0.677*** (43.31)	0.066*** (16.47)
R&D Intensity	0.015 (1.62)	0.038 (1.12)	-0.065** (-2.10)	0.013* (1.67)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
N	4,473	4,473	4,473	4,473
R²	0.2001	0.4138	0.5212	0.1827
Adjusted R²	0.1878	0.4047	0.5138	0.1701

5. Conclusion

This chapter will summarize the research and shows the conclusions that are based on the findings. The contribution of this research will be mentioned, as well as the implications for key stakeholders. The chapter ends with a discussion of the research, with the limitations and suggestions for further research.

The research question is as follows: Does equity-based compensation of CEOs influence the level of CSR of a company? There are two hypotheses. The first hypothesis states that the portion of equity-based compensation increases the level of CSR. The regression with control variables and fixed effects show that an increase in the portion of equity-based compensation does not have a positive effect on CSR, it rather neutralizes the score. When the strengths and

concerns of CSR are being divided, an increase in equity-based compensation decreases the strength and concerns of CSR in a company. The first hypothesis can be rejected, but the results give some insights in the effort a CEO puts in the level of CSR. CEOs will try to get rid of the concerns of CSR when their equity-based compensation increases, because these concerns can put the company in a bad light, which increases the level of CSR in a company. However, putting more effort in erasing the concerns of CSR moves the attention away from the strength of CSR. CEOs do not put the same level of effort in looking at improvements in CSR regarding the strengths of CSR, which leads to a more neutral state of CSR.

The second hypothesis states that the positive association between equity-based compensation and corporate social responsibility is more pronounced with the level of corporate governance and institutional ownership, as proxies for internal monitoring. The results show that corporate governance does not monitor this association, but institutional ownership does moderate the decreasing effect on strengths and concerns of CSR, only for the shares with voting power. The second hypothesis cannot be accepted, but institutional ownership has a moderating effect when CSR is measured in strengths and concerns.

The main results overall show that equity-based compensation does not influence the general level of CSR, but it influences distribution of the score when looking at the strengths and concerns of CSR. This is a new conclusion in the literature that studies the effect of equity-based compensation on the level of CSR, which is the main contribution to existing papers. It also adds to the discussion that institutional ownership moderates this association between the portion of equity-based compensation and the strengths and concerns of CSR. This research also shows that individual factors as the gender and age of a CEO and organizational factors as size, the leverage and ROA influence CSR.

There is a big challenge for stakeholders when they want to influence the CEO in increasing CSR by increasing the equity-based compensation. A CEO will put more effort into the concerns of CSR, but stakeholders should highlight the importance of strengths of CSR when they want to increase the level of CSR of a company. It could also be beneficial to hire a female CEO because companies with a female CEO have a significant higher CSR level. However, caution should be made with this conclusion because the sample did not consist of many female CEOs.

This research has some limitations. The first limitation is the possibility of reversed causality, because prior literature (Berrone & Gomez-Mejia, 2009; Blomgren, 2011; Deng et al., 2013;

Karim et al., 2018; Van de Velde et al., 2005) show CSR as the independent variable in their research design. However, it is difficult to justify an increase in equity-based compensation when the level of CSR is increasing, because the increasing level of CSR should have a reason, which could be caused by the actions of a CEO. It is therefore more likely that the level of CSR is dependent of the CEO. The second limitation could be a measurement error in the dependent variable. CSR is measured by the KLD-score with different measurements, but other scores as the Bloomberg score measure the level of corporate social responsibility in other ways. Another limitation of the scaled CSR score is that every dimension of CSR has an equal weight, while this might not be the case for stakeholders or companies. The final limitation of this research is the possibility of omitted correlated variables, because there could be other factors that might influence the level of CSR. Aguinis and Glavas (2012) mention several other factors that influence CSR, for example employees, knowledge of CSR within an organization, activist pressure, and involvement of shareholders. Other organizational and external factors are political views of organization (Di Giuli & Kostovetsky, 2014; Hong & Kostovetsky, 2012) are firm age (Godos-Díez et al., 2011). There are still individual factors of the CEO that influence the CSR, for example non-monetary incentives (Fabrizi et al., 2014; Hemingway & Maclagan, 2004), the importance of ethics (Godos-Díez et al., 2011), the educational level of the CEO (Huang, 2013; Manner, 2010), general ability and execution skills (Kaplan et al., 2012; Yuan et al., 2019) and insider ownership (Oh et al., 2011; Oh et al., 2017; Skeikh, 2019; Yuan et al., 2019). Research that includes these different variables into the regression might lead to new insights in the association between equity-based compensation and corporate social responsibility.

Another suggestion for future research might be the influence of culture, because other papers measure the association between equity-based compensation and CSR in other countries (Claassen & Ricci, 2015; Joubert, 2019; Mahoney & Thorne, 2005; Oh et al., 2011; Park et al., 2019; Park et al., 2017; Pucheta-Martínez & Chiva-Ortells, 2018). The equity-based compensation could also be separated into different compensation types, which would give insight in the specific compensation types that influence CSR. The data of the KLD-score is available till 2014, but it would be interesting to include recent years when more data is available. More research into other measurements of CSR or the weights of the different variables of the KLD-score would also be beneficial for the results of this paper.

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Appendix

Figure 1 Research Design with Libby Boxes

