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Do environmental, social and governance (ESG) related compensation and long-term compensation positively influence corporate social performance (CSP)? Does the amount of firm's ESG news with a positive sentiment strengthens this positive relationship and does the amount of firm's ESG news with a negative sentiment weakens this positive relationship?

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PREFACE AND ACKNOWLEDGEMENTS

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ABSTRACT

This study examines the effect of long-term and environmental, social and governance (ESG) related compensation on corporate social performance (CSP) between the period 2009 and 2017. Furthermore, this thesis studies whether the amount of firm's ESG news with a positive sentiment strengthens this positive relationship and whether ESG news of the firm with a negative sentiment weakens this positive relationship for S&P 500 firms between the period 2015 and 2017. The study show that the CSP score improves over time and the last couple of years more companies are including ESG related compensation into their remuneration schemes. The results of the multiple ordinary least squares (OLS) regression models provide empirical evidence that long-term compensation and ESG related compensation positively influences CSP. Furthermore, the results of the regressions where the effect of firm's ESG news is incorporated, show that positive ESG news weakens the positive effect of long-term and ESG related compensation on CSP. No significant effect is found for ESG news with a negative sentiment on the positive relationship of long-term and ESG related compensation on CSP.

Keywords:

Corporate social performance, ESG related compensation, long-term compensation, ESG news with a positive sentiment, ESG news with a negative sentiment

JEL classification: P36, P28, Q01, Q28

List of abbreviations

ESG	Environmental, social and governance
CSP	Corporate social performance
CSR	Corporate social responsibility
ROA	Return on assets
OLS	ordinary least squares
VIF	Variance inflation factor
IV	Instrumental variable
LTIP	long-term incentive plans
DJSI	Dow Jones Sustainability Index
KLD	Kinder Lydenburg Domini Analytics Social Ratings Data
SIC	Standard industrial classification

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1 Introduction

"Creating a strong business and building a better world are not conflicting goals, but are essential ingredients for long-term success" – William Ford

The consequences of global warming made investors and managers of firms aware of the negative environmental and social impact of their daily business activities, which led to an increase in corporate social responsibility (CSR). CSR is the behaviour or strategy of a firm towards more socially responsible activities, and corporate social performance (CSP) is the outcome of this behaviour (Wood, 2010). Furthermore, environmental and social disasters, such as Deepwater horizon oil spill of BP in 2010 and the Rana Plaza collapse in Bangladesh in 2013, caused modern investors and managers to re-evaluate the traditional investment approaches. Consequently, the pressure on firms to engage with dependent stakeholders and to take actions with respect to local communities and the environment has increased over the years. Globally, the expectations of companies, politicians, investors and society as a whole have increased towards CSR and environmental, social and governance (ESG) factors are being integrated into various aspects of their decisions. Hence, corporations are investing in building a better world, which will lead to long-term success and a strong business.

According to a study of Cones in 2017, 78% of the world population want companies to improve social justice issues. Appropriate incentives to managers are required to steer management decision-making into CSR activities, which could improve these social justice issues. The increased pressure to include CSR activities in the business strategy of firms, resulted in board of directors more often including ESG targets in compensation schemes. The Report of Principles for Responsible Investment (2016) shows that 83% of S&P 1200 companies incorporated some kind of ESG factor into their incentive schemes. ESG related compensation is the compensation linked to social, environmental and governance performance. It is likely that firms that include ESG targets in their compensation scheme motivate managers to invest more in CSR activities and this could lead to an improved long-term (social and environmental) performance (Strandberg, 2009). Being able to understand the effect of compensation on CSP is essential for corporations. Therefore, this study looks at a broader incentive scheme that considers ESG aspects in executive compensation, in addition to the more traditional financial long-term compensation contracts. Hence, this thesis studies the effect of ESG related compensation and long-term compensation on CSP.

The importance of CSP has risen as the public did not pay as much attention towards CSP a couple of years ago, as it does now (Mögele and Tropp, 2010). Increased media attention around this topic could be a reason for the increased popularity of CSP. Previous research shows that media attention can

influence companies to engage in more CSR activities (Zyglidopoulos et al., 2011). Furthermore, the number of news stories can have a significant effect on the financial and social performance and the public opinion about a firm. As media attention around CSP has increased, this study looks at the additional effect of the amount of ESG news of the firm with positive or negative sentiment, on the positive relationship of long-term and ESG related compensation on CSP. Due to the gap in existing research and increased public attention towards CSP, the following research questions are investigated:

Do environmental, social and governance (ESG) related compensation and long-term compensation positively influence corporate social performance (CSP)? Does the amount of firm's ESG news with a positive sentiment strengthens this positive relationship and does the amount of firm's ESG news with a negative sentiment weakens this positive relationship?

This study expects a positive relationship of long-term and ESG related compensation on CSP. Furthermore, a positive effect of firm's ESG news with positive sentiment and a negative effect of firm's ESG news with a negative sentiment, is expected on the relationship of long-term and ESG related compensation on CSP. In line with the expectations, the results of this study show that ESG related compensation and long-term compensation positively influence CSP. Contrary to the expectations, this study finds a negative effect for the amount of ESG news of the firm with a positive sentiment on the positive relationship of ESG related compensation and long-term compensation on CSP. This indicates that when a firm has both compensation policies in place and also experiences positive news attention, CSP decreases. The findings of this study indicate that positive ESG news weakens the positive effect of long-term and ESG related compensation on CSP. Furthermore, the results show no significant negative effect for firm's ESG news with a negative sentiment, on the positive relationship of ESG related compensation and long-term compensation on CSP.

This study is relevant due to recent global changes towards CSP. Optimizing CSP is important, because an improved CSP can prevent reputational damage and can lead to financial and social benefits to the firm. This research provides guidance on how to effectively design compensation schemes, because this study proves that ESG related compensation and long-term compensation improve CSP. In this way, this study makes several contributions to the existing literature regarding CSP. Prior research focused on the relationship between CSR and financial performance (Waddock and Graves, 1997). While the effect of executive compensation on financial performance is often researched, there is less research in which social and environmental targets are incorporated in the compensation contracts. Multiple papers solely focus on environmental targets in executive compensation and environmental performance (Cordeiro and Sarkis, 2008; Russo and Harrison, 2005). This study focusses on the effect of ESG related compensation and long-term compensation on CSP. I aim to contribute to the CSR practices and the broader non-financial stakeholder view by using a more recent data sample and more adequate database.

In the context of CSP, the impact of the amount of ESG news of the firm with a positive or negative sentiment, where more traditional media platforms as well as digital media sources are included, is not previously examined. In this manner, this study aims to increase the awareness of companies about the mechanisms and impact of ESG news about the firm. The aspect of ESG news has not yet received much academic attention, as the main focus within most research is on general corporate communication.

The remainder of this thesis is organised as follows. Chapter 2 describes the theoretical construction, where the definitions of the variables of interest are given and the stakeholder and the shareholder theories are explained. Chapter 3 provides an overview of the existing literature and the hypotheses. Chapter 4 describes the data. The methodology to test the hypotheses is shown in chapter 5. In chapter 6 the regression results and the answers to the main research questions are shown. In chapter 7 the robustness checks are presented, where the results on strong and weak CSP are shown as well as the results of the reversed causality tests between the dependent and independent variables. Chapter 8 concludes the findings, gives recommendations, explains the limitations of this research and gives suggestions for further research.

2 Theoretical construction

CSP and long-term executive compensation are largely discussed in other research, but there are different explanations on how these concepts are interrelated. ESG related compensation and the amount of ESG news sentiment is less researched. Therefore, this chapter will introduce the four main concepts used in this study. The following section (section 2.1) will discuss the shareholder and the stakeholder theories as these theories are the basis of CSP. The general meaning, background and developments of the following concepts will be discussed: CSP (section 2.2), long-term compensation (section 2.3), ESG related compensation (section 2.4) and the amount of firm's ESG news sentiment (section 2.5).

2.1 The shareholder and stakeholder theories

This section discusses the shareholder, agency and stakeholder theories as these theories are important in determining which stakeholders should be considered when making a business decision. The stakeholder theory is at the heart of CSP, because this theory incorporates the community as a whole and all other stakeholders that have an interest in the organization.

The shareholder theory claims that corporate managers should serve the interest of their shareholders and that managers have a duty to maximize shareholder returns, since shareholders are the owners and the capital providers of the company. In line with the shareholder theory, Friedman (1962) argued that managers have no moral obligation besides increasing profits for shareholders. Hewitt and Bowie (2011) state that firms' sustainable growth and returns in the long-run have to align with CEO's compensation, which is fulfilled if value for shareholders is created over time. The shareholder and agency theories are often discussed to outline the interest of the shareholders. The agency theory describes the deviations in incentives between the principal (shareholders) and the agent (management). This theory explains the principal-agent problem, where conflicts of interest arise between both actors, because managers want to maximize their own utility at the expense of shareholders and shareholders want what is best for the firm (Eisenhardt, 1989). The agency theory can be seen as the standard method to address the concept of executive compensation (Fama and Jensen, 1983), because the theory explains how compensation contracts align managerial interests with the interests of (primary) shareholders. Therefore, the agency theory is the core discipline in providing solutions to manage conflicts of interest between management and shareholders.

The stakeholder theory, on the other hand, notes that it is the manager's ethical duty to maximize value to both corporate shareholders and all other parties who have a stake in the organization. A stakeholder is any person who can be affected by or is affected by the performance of the firm and who has ownership rights (Freeman, 1984; Arora and Alam, 2005). Jensen (2002) argues that stakeholders can

be divided in two groups, namely primary stakeholders, with a high interdependence with the firm and secondary stakeholders, who have an insignificant influence on the long-term success. According to Arora and Alam (2005) the primary stakeholders are customers, employees, shareholders and suppliers. Secondary stakeholders are individuals that have an impact on the corporation, but are not necessary in order to survive (Clarkson, 1995). According to Clarkson (1995), managers should focus on the primary stakeholders to ensure long-term success and long-term incentive plans (LTIP) should be designed to align the interests of the CEO with the claims of primary stakeholders. The normative stakeholder theory describes how managers should be ethical and should view the purpose of the organization (Friedman, 2006). The stakeholder theory indicates that firms are active in CSR, not only for generating profits but also to be ethical and social (Carroll, 1999). Freeman (1984) stated the following: "Successful companies sustain because they manage to get the interests of the different stakeholders in the same direction.". Managers are likely to focus their attention on those stakeholders that help to meet their short-term financial targets, while other stakeholders are more interested in the long-term performance (Mitchell, Agle, and Wood, 1997). In theory, an appropriate incentive aligns the interest of management and stakeholders and can solve the principal-agent problem, where the principals are the stakeholders (Jensen and Meckling, 1976). The results of Li et al. (2019) imply that CSR related compensation is an effective tool to mitigate the principal-agent problem. According to Arora and Alam (2005), CSR related compensation increases long-term value and supports the interest of all stakeholders, which leads to an alignment of organizational CSR goals and lowers the agency problem. Therefore, in line with the stakeholder theory, this study investigates the effect of long-term compensation and ESG related compensation on CSP.

In sum, the stakeholder theory and the shareholder theory are similar in the way they view CSP related contracts as an optimal method to encourage managers to increase firm value. The dissimilarity between the two theories is that the shareholder theory argues that the goal of CSP is to maximize shareholder wealth. The stakeholder theory claims that the ultimate goal of CSP is to increase the value of all stakeholders, which eventually can lead to long-term shareholder wealth maximization.

2.2 Corporate social responsibility (CSR) and corporate social performance (CSP)

Prior literature used multiple definitions for CSR and CSP are used and still a clear definition is missing, because the meaning changes due to fluctuations in economic development and expectations of the public (Ruf et al., 2001). The study of Carroll (1991) defines CSR with the pyramid of CSR, existing of four components, which can be seen in figure 1. The first component is the economic responsibility and views the profitability argument. The second is that firms have legal responsibilities which means that they have to obey the law. The third component states that firms must be ethical, and the top of the pyramid states that firms must be good citizens. To conclude, Carroll (1991) views CSR as a concept

that takes into account the financial, the legal and the social aspect, when defining the business strategy. Later on in 2015, Carroll (2015) describes the history of CSR, including the motivations (responsibility), actions (responsiveness), and results (performance) of CSR. According to Carroll (2015), during the 20st century social movements such as civil rights, women's rights and environmentalism increased social consciousness and caused the CSR concept to grow in relevance. Thereafter, the concept of corporate social performance (CSP) was introduced, where focus was on the results achieved. The definition of the Commission of the European Communities (2001) is often used and is denoted as follows: "CSR is the voluntary contribution to a cleaner environment and a better society". Hence, CSR is the behaviour or strategy of a firm towards more socially responsible activities and CSP is the outcome of this behaviour (Wood, 2010). The concept of CSP has a broad scope which is consistent with the stakeholder theory, because it includes the firms' ethics, culture, operations and relationships with different actors. This study defines CSP as the outcome of the ESG activities, where all stakeholders are considered.

Figure 1: Carroll's pyramid

2.3 Long-term compensation

Generally, executive compensation schemes are a mix of fixed compensation (salary), short-term compensation (bonus) and long-term compensation (Frye et al., 2006). Hewitt and Bowie (2011) argued that the key elements in executive compensation packages are salary, bonus and/or non-equity incentive plan compensation, stock and option awards, annual change in pension value and all other compensations. The importance of these compensation components within the compensation packages has shifted throughout the years. Between 1936 and 1950, salaries and annual bonuses with pay-outs in cash or stocks, were the main components in the CEO compensation packages (Frydman and Jenter, 2010). The stock option boom in 1990, where 82 percent of executives received stock options, caused stock options to be an increasingly important component of executive pay (Frydman et al., 2008; Murphy, 1999). This study focusses on the long-term compensation contracts in the compensation packages. The requirements applicable for long-term compensation vary considerably, but the most important requirement is that the contract duration is more than one year. The two most important components of long-term compensation are stock options and restricted stocks. Stock options are

contracts which gives the right to buy shares at a pre-specified exercise price and restricted stocks give the right to receive a number of shares if certain restrictions are met (Murphy, 1998). Stock options are one of the key drivers in the growth of CEO pay over the last years (Frydman and Jenter, 2010). The Dodd-Frank act of 2010 states that the compensation policy for executives should be aligned with the long-term goals of corporations. Ideally, CEO pay represents their individual contribution, which is revealed in the long-term benefits of a corporation (Marangone and Lemmen, 2016). In reality, long-term incentives are needed to focus CEO's attention towards the long-term objectives of the shareholders, which could solve the principal-agent problem. Earlier research finds positive evidence for the fact that stock options align the objectives of managers with the long-term objectives of a firm (Hall and Murphy, 2003). A reason for this alignment of objectives could be that executive's wealth increases if the stock price increases, resulting in more longer-term orientated executives. Furthermore, prior research discusses that long-term incentives are required to achieve a high level of social and environmental performance (Eccles, Ioannou and Serafei, 2014; Flammer and Bansal, 2017). Therefore, this paper studies the effect of long-term compensation, measured with the ratio of the value of stock awards and option awards to total compensation, on CSP.

2.4 Environmental, social and governance (ESG) related compensation

Similar to long-term compensation, ESG related compensation is a form of an incentive plan that stimulates managers to focus on the long-term value creation. As discussed earlier, the concept of CSP has obtained increased awareness and firms, customers and authorities are focusing on improving CSP. Due to the increased popularity of CSP, more firms are incorporating social and environmental targets into their compensation contracts. Prior research mentioned the different reasons to include environmental targets in executive compensation. Firstly, including environmental targets in compensation schemes give managers the incentive to improve the social and environmental performance by for example reducing the environmental footprint or improving the relationships with the community (Flammer et al., 2019). Ricart et al. (2005) argued that it is essential to include environmental targets in executive compensation in order that managers consider other stakeholders and investments in sustainable developments. Furthermore, research has found a positive effect of environmental targets on the financial performance (Waddock and Graves, 1997). Thus, environmental targets can have financial and social benefits in the long-term. Nevertheless, prior research also mentions the hesitations about including social or environmental targets in compensation contracts, because not all studies found a positive relationship between social or environmental targets and financial performance (López et al., 2007). In addition, accessibility and controllability of CSP is complex, which makes it difficult to prove whether ESG targets are used as a way to improve CSP or as a form of window-dressing (Kolk and Perego, 2014). However, as discussed in section 3.2, most research found that these social or environmental targets in compensation contracts positively affect CSP. This study

aims to further investigate the relationship between ESG related compensation and CSP. CSR contracting is largely discussed in prior literature and can be defined as a social policy that rewards CEO's for implementing and obtaining CSR targets. CSR related compensation and ESG related compensation are similar interchangeable concepts as both focus on the broader social objectives. The difference between both concepts is that ESG related compensation also integrates the environmental and governance aspect in addition to the social objectives.

2.5 The amount of firm's ESG news with a positive or negative sentiment

In earlier times, news about the economy, politics, and the world was accessible through the printed press. During the industrial revolution, radio news and television came up. In the 1900s, people received their news trough traditional media, which includes magazines, newspapers, TV and radio. Dyck and Zingales (2002) define media as a mechanism through which information is communicated to the public. The electronic media developed quickly with the invention of cable in the 1980s and the expansion of the internet in the 2000s increased the volume and speed at which information was available. The field of media and communication is very progressive and dynamic due to the technological developments. The introduction of new (social) media, where news is accessible through the internet, completely changed how people receive news, do business and conduct research. As a result of social media people are able to consume, share and communicate news at any time. Nowadays, social media has become the main source of news with 64.5 percent obtaining news from social media platforms such as Facebook, Twitter and Instagram instead of traditional media (Forbes, 2018). The increasing amount of information available about firms and fast-paced communication environment of digital media, affects the view of the public and of the investors towards the firm (Fombrun et al., 2000). Media coverage related to brand accountability and responsibility of corporations regarding for example working conditions are necessary to achieve better outcomes for society and the environment (Dickson and Eckman, 2008). Previous research has shown that positive media attention could accelerate the benefits of CSR activities. ESG positive news stories can help firms obtain one important goal of CSR, improving the corporate reputation of the firm (Zhang and Swanson, 2006). On the other hand, negative media attention could damage the reputation, the financial and social performance of the firm (Core et al., 2008). Firms are taking steps towards CSR to avoid that negative ESG news further harms the reputations. Media is thus an important mechanism that can impact the image and the value of the firm. The rise of ESG related news articles reflected in the media increased the importance of CSP. Therefore, this study looks at the effect of the amount of firm's ESG news with a positive or negative sentiment on the relationship of long-term and ESG related compensation on CSP. In this study, the amount of firm's ESG news sentiment are considered as the news stories of the firm with a positive or negative sentiment about certain environmental, social or governance topics discussed on the traditional (TV, radio and print) and new (digital) media platforms.

3 Literature review and hypotheses development

This chapter provides a literature review and formulates hypotheses in order to give an answer to the research question. The relationship of long-term and ESG related compensation on CSP is explored through previous literature (sections 3.1 and 3.2). Finally, literature on the amount of firm's ESG news sentiment is reviewed (section 3.3).

3.1 Long-term compensation and CSP

McGuire et al. (2003) examined the relationship between different short and long-term compensation components and strong and weak CSP. Strong CSP includes firms that exceed the common expectations and weak CSP includes firms that invest in risky projects or do not meet the expectations. The authors make a distinction between strong and weak social performance as they expect that the factors associated with strong and poor social performance differ. Sanders (2001) expects a positive relationship between poor CSP and long-term incentives, because stock options encourage riskier strategies by directing the focus on potential gains instead of losses. McGuire et al. (2003) assume that long-term incentives negatively affect strong CSP, because of the financial performance pressure of long-term incentives. Using one year of U.S. based data, the results of McGuire et al. (2003) show no significant relationship between the long-term compensation and strong CSP. On the other hand, the authors found a significant positive relationship between long-term incentives and weak CSP. In conclusion, the study shows that long-term compensation is not an effective tool to increase CSP.

Similarly, Mahoney and Thorn (2005) study the relationship between long-term compensation and different forms of CSR for 90 publicly traded Canadian firms. The authors looked at the total CSR and two sub-dimensions of total CSR, total CSR product and total CSR people. These measures of total CSR are divided in weaknesses and strengths. Total CSR product is the extent to which a firm is dedicated to quality products and environmental policies. Total CSR people focus on the community, employee relations and diversity. The authors mention that long-term compensation is an important corporate governance mechanism for the board of directors to incentivize executives on social objectives. Long-term compensation aligns executives' interests with that of society, but also increases the risks for executives (Hirshleifer and Suh, 1992). Consequently, the authors expect that firms with long-term compensation take actions that are more socially responsible than firms without longer-term incentive contracts. Therefore, not in line with McGuire et al. (2003), the authors expect a positive effect of long-term compensation on CSR, thus an increase in CSR strengths or a decrease in CSR weaknesses. The result indicates that long-term compensation is marginally positive related to higher levels of total CSR and total CSR product. The authors found no significant relationship between long-term compensation and the total CSR people and CSR strengths. Mahoney et al. (2005) further find that long-term

compensation has a negative effect on CSR weakness. Concluding, long-term compensation contracts may result in executives making decisions that are more socially responsible as long-term compensation has a positive effect on total CSR and total CSR product and a negative effect on CSR weaknesses.

A year later, Mahoney and Thorn (2006) examined the effect of executive compensation (salary, bonus and stock options) on CSR (total CSR, CSR strengths and CSR weaknesses) for 77 Canadian firms. In addition, the authors used the more inclusive seven-component measure of CSR where the following dimensions of CSR are measured: community, employee relations, environment, product and business practices, diversity, international and others. Mahoney and Thorn (2006) expect that socially responsible firms benefit in the long run by investing in social and environmental objectives. A positive association between stock options and total CSR and CSR strengths is expected. Furthermore, a negative relationship between stock options and CSR weaknesses is predicted. In line with expectations, the results indicate a significant positive relationship between stock options and total CSR and CSR strengths and a marginally negative significant relationship is found between stock options and CSR weaknesses. Concluding, this study highlights the effectiveness of compensation schemes on CSR in a Canadian context. Deckop et al. (2006) found similar results as the authors provide evidence for the positive relationship between long-term CEO pay and firm's CSP and a negative relationship for short-term pay and CSP. The authors mention that there are short-term focused executives who will not engage in CSR activities and on the other hand, the more longer-term oriented executives do recognize the benefits of CSR and these executives will engage in CSR activities.

Berrone and Gomez-Mejia (2009) expect that long-term incentives will have a positive effect on environmental performance. The positive effect is because stock option compensation is positively associated with greater investments in risky long-term projects such as environmental projects, which require a long-term commitment. Therefore, stock option compensation due to the higher risk-taking and long-term focus could improve the environmental performance. The results indicate that long-term pay has a significant positive effect on the pollution prevention and thus improves environmental performance. In addition, Berrone and Gomez-Mejia (2009) look at the reversed relationship between environmental performance and executive compensation. The authors argue that when the CEO improves the environmental performance, he or she should be rewarded with a higher pay, because the CEO is increasing the firms' chances of survival. When a CEO engages in an environmental project, the risks increase and CEO compensation should increase accordingly (Bloom and Milkovich, 1998). The authors find that CEO pay increases with good environmental performance and that CEO pay increases further when there are environmental governance mechanisms in place. In sum, first Berrone and Gomez-Mejia (2009) found that in highly polluting industries long-term compensation is an important incentive for improving environmental performance, measured by the pollution prevention. Secondly,

the authors find that the reversed relationship also holds where the environmental performance increases management pay.

Cai, Jo and Pan (2011) also researched the reversed relationship between CSR and executive compensation (total and cash compensation) using US firm data from 1996 to 2010. In contrary to Berrone and Gomez-Mejia (2009), the authors predict that socially responsible firms have lower compensations for their CEOs. Cai et al. (2011) define the first conflict-resolution hypothesis based on the stakeholder theory, where firms use CSR to resolve the conflicts between managers and shareholders (Freeman, 1984). The second overinvestment hypothesis is based on the agency theory and views CSR as an inefficient investment of a CEO that is benefitting from a better reputation. The conflict-resolution hypothesis denotes a negative effect of CSR engagement on CEO compensation and the overinvestment hypothesis implies a positive impact between CSR engagement and CEO pay. The authors use an instrumental variable (IV) estimation approach, where they use the industry-median CSR as the IV, to deal with unobserved firm characteristics that drive the relationship between compensation and CSR. The authors found support for the conflict-resolution hypothesis because CSR is adversely associated with total compensation as well as cash compensation. The IV results show that an increase in CSR is followed by a decrease in total (cash) compensation in the next year. Thus, more socially responsible firms pay their CEOs less.

The literature shows diverse results, where some find a positive relationship of long-term compensation on CSP (Deckop et al., 2006), while others don't find significant relationship of long-term compensation on strong CSP (McGuire, 2003). Prior research looked at the inverse relationship, where Berrone and Gomez-Mejia (2009) found a positive inverse relationship between CEO pay and environmental performance and Cai et al. (2011) found a negative inverse relationship between CEO pay and the level of socially responsible firms. These mixed findings of the effect of long-term compensation on CSP, can be explained as on the one hand, firm's financial performance will remain the main focus point of executives and this may result in the fact that executives do not care about the social and environmental objectives (Zalewski, 2003). On the other hand, the firm benefits from investing in CSR activities when the capital markets identify the advantage of longer-term goals. Another possible explanation for the differences in the results of previous research is that they included different dimensions of CSR. Most previous research found a positive effect of long-term compensation on CSP or CSR, except McGuire (2003) found a positive effect of long-term compensation on CSP weaknesses. In addition, since CEOs focus on the longer-term value creation as a result of long-term compensation, it is likely that long-term compensation will improve CSP. Therefore, the first hypothesis is formed:

Hypothesis (1a): Long-term compensation positively influences CSP.

Table 1: Summary of prior research on the relationship between long-term compensation and CSP

Author(s) and year	Sample	Dependent & independent variable	Control variables	Methodology	Results
McGuire, Dow and Argheyd (2003)	374 Canadian firms	The independent variable is LT compensation and this represents stock options and other long-term incentives (Execucomp). The dependent variables are weak and strong CSP (KLD database).	Size, industry, ROA, leverage, Activist institutional investment and financial slack	Regression analysis	No significant relationship between long-term compensation and CSR strengths. Long-term compensation is positively significant in the social weakness performance model.
Mahoney and Thorn (2005)	69 Canadian firms from TSE 100 Index for 1992 - 1996, resulting in 393 observations	The independent variable is LT compensation which are stock options (annual proxy statements, Blue Book of Canadian Business). The dependent variables are total CSR, total CSR people and total CSR product (CSID database).	Size, firm ownership, industry	Regression analysis	No significant relationship between LT compensation and the total people CSR and total CSR strengths. A negative significant effect of stock options on total CSR weakness and a positive effect on total CSR and total CSR product is found.
Mahoney and Thorn (2006)	69 Canadian firms from TSE 100 Index from 1995 to 1996	The independent variable is LT compensation and this represents stock options (annual proxy statements and from the Blue Book of Canadian Business). The dependent variables are total CSR, CSR weaknesses and CSR strengths (CSID database).	Ownership structure, firm performance, leverage/ financial slack, firm size and industry.	Regression analysis	Significant relationship between the LT compensation and total CSR and CSR strengths and a marginal negative significant effect on CSR weakness
Deckop, Merriman and Gupta (2006)	313 US S&P 500 firms	The independent variable is long-term pay which are the restricted stocks and stock options divided by the total compensation (Compustat). The dependent variable is total CSP (KLD database).	firm size, financial performance, percentage of outside directors in the board, industry	Regression analysis	Positive relationship between long-term CEO pay and firm's CSP and a negative relationship is found for short term pay and CSP.
Berrone and Gomez-Mejia (2009)	469 US publicly traded and polluting firms for 1997–2003, resulting in 2,088 firm-year observations	The dependent variable for the reversed relationship is CEO total pay. The independent variable is environmental performance (TRI database). The independent variable is LT compensation. (Execucomp)	Log(total assets), ROE, Tobin's Q, CEO characteristics, CG variables, end-of-pipe pollution, age of assets, industry pollution position, reporting plants	Fixed effect model	Long-term compensation has a positive effect on pollution prevention. CEO pay increases with good environmental performance and environmental governance mechanisms.
Cai et al. (2011)	1,946 S&P500 firms from 1996 to 2010, with a total of 11,215 firm-year observations	The independent variable is CSR (KLD database). The dependent variable is CEO compensation which exists of cash and total compensation (ExecuComp)	Size, Tobin's Q, leverage, ROA, CEO ownership, board size, board independence	Regression analysis, 2SLS IV regression	CSR is adversely related to CEOs' total and cash compensation

3.2 ESG related compensation and CSP

Kolk and Parego (2014) study whether sustainable bonuses of AkzoNobel, DSM, Shell and TNT caused a move towards CSR or whether it is a way of window dressing to keep bonus levels high. Kolk and Parego (2014) argue that firms that use internal firm-specific criteria can better control the manager's ability to impact the sustainability performance. Firms that use an external benchmark such as the Dow

Jones Sustainability Index (DJSI) have a higher credibility of bonuses being used as a move towards CSR. On the one hand, it is likely to assume that sustainable bonuses increase the responsibilities of firms towards society and stakeholders. On the other hand, the lack of transparency can be an indication that sustainability bonuses are a way for managers to serve their own interest. The results provide little evidence that sustainable bonuses are a way of CSR or window dressing due to the developing state of sustainable bonuses. Similarly, Maas and Rosendaal (2016) studied the characteristics of sustainability targets in executive compensation and identified the differences of sustainability targets between countries and sectors. The authors researched different types of targets, where they divided sustainability targets into social, environmental and a combination of both issues. Moreover, short-term, one-year, long-term and multiple year targets are considered. Firms in most countries focused more on social or combined targets instead of environmental targets and a short time frame is more often applied than long-term targets. The results further indicate that sustainable performance is more rewarded in the short-term and firms should focus more on long-term sustainability targets to improve sustainable performance. Regarding the sector specification, Maas et al. (2016) found that the heavy emission intensive industries more often include sustainability targets in executive compensation. Thus, this study aims to motivate firms to focus on the long-term and to use more long-term sustainability targets in executive compensation.

The research mentioned above only gives insights in the use of environmental targets in executive compensation, but it does not study the effect of ESG targets in executive compensation on CSP. Russo and Harrison (2005), who focus on the environmental aspect, are the first that take the analysis further by analysing whether the inclusion of environmental targets in compensation contracts have a positive effect on the environmental performance. The authors use the congruence model for organizational design of Nadler and Tushman (1997) to look at how monetary incentives linked to environmental performance reduce plant-level toxic emissions for US electronic facilities. According to the authors, a way to stimulate the preferred behaviour towards the environment is to use environmental criteria that are measurable, available over time and available for other facilities. The results indicate a marginally significant negative effect of environmental linked targets on the environmental performance for the plant manager and no significant effect is found for the environmental manager. To conclude, the study of Russo and Harisson (2005) provide weak evidence for the fact that environmental incentive schemes influence environmental performance.

Cordeiro and Sarkis (2008) conduct a comparable research, consistent with the agency theory, where they expect that explicitly linking environmental performance to executive compensation results in a better environmental performance (the Toxic Release Inventory (TRI) emission index, the compliance index and the IRRC spill index). The authors argue that managers are willing to sacrifice some financial returns when they are compensated with environmental returns. The independent variables are the TRI

emission index, IRRC spill index and IRRC compliance index, which are reported separately in the different regressions. Cordeiro and Sarkis (2008) found evidence for the negative effect between environmental performance (spill and compliance performance) and executive compensation. Furthermore, the results indicate that managers are only rewarded for environmental performance if explicit environmental targets are included in executive compensation. When the environmental performance relative to industry environmental performance is used, the results for executive compensation on compliance and spill indices become insignificant. Concluding, the results indicate that corporate environmental performance related compensation is rather symbolic than instrumental and that executives are rewarded for environmental performance only when environmental targets are explicitly linked to executive compensation.

Li, Minor and Hong (2016) study the relationship between corporate governance and CSR related executive compensation. They argue that the effect of CSR targets on CSP depends on whether the CSR targets increase shareholder value. Furthermore, CSR targets will be more applied when good corporate governance mechanisms are in place. In order to invest in CSR, it must deliver financial returns and CSR related executive compensation contracts must lead to actual improved CSP of the firm. The findings indicate that corporate governance mechanisms are important in determining whether managers receive CSR related compensation and that CSR related compensation has a positive impact on CSR initiatives. More specifically, the results provide evidence that CSR targets in executive compensation improve CSR activities and this in turn increases shareholder value and CSP.

Equally, Li, Ikram and Minor (2019) look at the effect of corporate governance on CSP and state that with good corporate governance mechanisms in place, firms use CSR-contingent compensation to mitigate agency problems. In addition, Li et al. (2019) evaluate whether CSR-contingent executive compensation contracts (no, subjective or objective CSR contract) have a positive impact on CSP. Overall, the results indicate that firms with better governance mechanisms, low risk profiles, and a CEO that does not have a lot of power, are more likely to include objective CSR contracts instead of subjective contracts. In line with the expectations, the results of the propensity score matching (PSM) method indicate that objective CSR related compensation improves CSP, especially for firms with low volatility and currently low CSR ratings. When the outcomes of the firm are more volatile, subjective CSR related compensation is a better incentive to improve the firm's CSP. Furthermore, firms who compensate their managers with CSR targets are larger, have fewer volatile outcomes and have a stronger corporate governance. In sum, the results of the study of Li et al. (2019) indicate that both objective and subjective CSR related compensation improve CSP.

Maas (2018) investigates the effect of hard and soft CSP targets in executive compensation on CSP. Besides, the author also looks at whether CSP is a predictor or a consequence of the inclusion of CSP

targets. The results indicate that in 2008 only 32 percent of firms used CSP targets in their compensation scheme and in 2012 this increased towards 40 percent. Examining the S&P 500 firms, Maas (2018) finds that the level of CSP does not influence the use of CSP targets in executive compensation. Furthermore, the author finds that hard targets in the executive compensation reduces CSP weaknesses and the soft targets show a negative significant result on CSP. The negative and more symbolic effect of soft targets has value in the way that it could raise awareness towards CSP. Concluding, firms with both weak and strong CSP use CSP targets and in general CSP targets do not improve CSP. However, when hard quantitative CSP targets are used, the author finds a significant positive effect of CSP targets on CSP.

In line with Maas (2018), Flammer et al. (2019) argue that incentives are more effective when well-specified evaluation criteria are used, especially when linked directly to the community or the environment. The authors theoretically and empirically study how CSR contracting affects the firm's outcomes. More specifically, the authors investigate the effect of CSR criteria in executive compensation towards managers' attention for less salient stakeholders, longer-term orientation and an improved society and environment. Flammer et al. (2019) expect that managers will focus more on the long run following the adoption of environmental and social compensation contracts and that this in turn will have a positive impact on CSR initiatives and on firm value. Furthermore, they look at the potential mechanisms such as engagement for emission reduction and green innovations, which may improve CSP. The authors are among the first to address the potential endogeneity concerns by using an instrumental variable (IV) approach, where they use the enactment of state-level constituency statutes as an IV. State-level constituency statutes enables directors to take into account the stakeholders' interest. First, the authors show that CSR criteria in executive compensation is more applied in emission-intensive industries and that CSR contracting increased from 12 percent in 2004 to 37 percent in 2012. The results of Flammer et al. (2019) show that CSR contracting increases the long-term focus and CSP. Furthermore, after implementing CSR contracts a reduction in emissions and an increased development of green innovations is found. Concluding, this study provides evidence for the positive effect of CSR targets on CSP.

Prior research found a negative effect of environmental linked compensation on environmental performance (Russo and Harisson, 2005; Cordeiro and Sarkis, 2008). A series of earlier studies as well as more recent work indicates that social targets in compensation contracts positively affect CSP (Li et al., 2016; Li et al., 2019; Maas, 2018; Flammer et al., 2019) . Therefore, it is reasonable to assume that ESG related compensation, will shift managers' attention towards long-term value creation where managers consider the community and the environment. Managers will increase their CSR initiatives after the inclusion of ESG related compensation, as they are responsive to incentives and this in turn will positively affects CSP. Accordingly, the second hypothesis is constructed as follows:

Hypothesis (1b): ESG related compensation positively influences CSP.

Table 2: Summary of prior research on the relationship between ESG or CSR related compensation and CSP

Author(s) and year	Sample	Dependent & independent variables	Control variables	Method	Results
Russo and Harrison (2005)	169 US electronic firms in 1999 resulting in 113 observations	The independent variable is the pay tied to environmental performance (survey data). The dependent variable was Toxics release index (the Toxics Release Inventory database (TRI)).	Size (employees), age of plant, states' environmental regulations, management system, product and process innovation	Tobit analysis	Pay-to-environmental performance has a negative effect on toxic emission for plant manager and no significant effect is found for environmental manager.
Cordeiro and Sarkis (2008)	207 US S&P500 firms	The independent variables are the emission index, IRRC spill index and IRRC compliance index (IRRC surveys). The dependent variable is (environmental related) CEO compensation (Execucomp).	firm performance, size, CEO tenure and CEO duality, outside director ratio, institutional and block holder ownership	Regression analysis	Negative effect between environmental performance (spill-and compliance performance) and explicit executive compensation.
Li, Minor and Hong (2016)	S&P 500 firms in 2013 resulting in 2561 observations	The independent variable is executive compensation tied to CSR (manually collected from proxy statements) The dependent variable is CSR (KLD database).	Differences between the CEO role, ROA, Log(sales), leverage, R&D, advertising intensity and industry	Logistic regression model	Positive significant effect of CSR contracting on CSR.
Li, Ikram and Minor (2019)	S&P500 for 2009-2013	The dependent variable is CSR (KLD database). The independent variable is subjective and objective CSR contingent compensation (proxy statements of SEC).	Multiple CSR-contract characteristics variables, different firm fundamentals, corporate governance and industry variables	Regression model, GMM estimator, PSM method	CSR related compensation improves CSR performance for firms with low volatility and CSR ratings. The authors found a positive significant effect for both subjective and objective targets on CSP.
Maas (2018)	400 S&P500 firms for the years 2008–2012 leading to 1846 firm-year observations	The independent variable is CSR contracting (annual proxy statements). The dependent variable is CSP (MSCI ESG STATS) .	CSP committee, ROA, LN(assets), dynamic firm characteristics, within-firm AR(1) dynamics, fixed firm effects and fixed year effects	OLS specification	The level of CSP targets has no effect on CSP, but the hard, quantitative CSP targets decreases CSR weakness and thus improves CSP.
Flammer et al. (2019)	S&P500 firms for the period 2004-2013 resulting in 4533 firm-year observations	The independent variable is CSR contracting (SEC proxy statements). The relevant dependent variable is CSR (KLD database). Other dependent variables are the LT-index (textual analysis of annual reports), emission (EPA database) and green patents (NBER patent database).	Size, industry, ROA, leverage, cash holdings, vector of compensation-level characteristics	Fixed effects Regression, 2SLS regressions	CSR contracting leads to an increase in CSR.

3.3 The amount of firm's ESG news with a positive or negative sentiment and CSP

Zyglidopoulos et al. (2011) examine the effect of media attention on the strengths and weaknesses of CSR of a firm. CSR can function as a form of moral capital, which can protect the firm in case of a crisis (Zyglidopoulos et al., 2011; Peloza, 2006; Schnietz and Epsteinstate, 2005). The authors measure media attention by the yearly number of articles which includes the firm's name in four main US newspapers. Zyglidopoulos et al. (2011) expect that firms who have increased media attention improve their CSR, thus by increasing their CSR strengths and/or by reducing their CSR weaknesses. In addition, they mention that more visible firms have more diversified stakeholder demands and therefore these firms

need to focus more on CSR strengths than on CSR weaknesses. In line with the expectations, the results show significant results for the media attention on CSR strengths and no significant results are found on CSR weaknesses. In conclusion, media attention is an important driver of CSR due to its impact on CSR strengths.

Luo et al. (2012) examine the inverse relationship and state that good CSR firms are more likely to be targeted by the media (the news argument) and that the media coverage for these firms is more positive (the insurance argument). The authors focus on the oil industry and expect more positive news about oil spills for companies with a superior CSR record. By analysing U.S. newspapers and wire service reports, the authors find that the media is more likely to report accidents such as oil spills for the better performing CSR companies and for the poorest CSR companies. The best and worst performing CSR companies have a higher risk of negative media attention than firms with a moderate CSR. The results provide evidence for the fact that CSR can be a liability rather than an effective form of insurance. In sum, the research found evidence for both the news argument as for the insurance argument.

Similar, Cahan et al. (2015) study whether socially responsible firms obtain more positive media attention and if these firms use CSR to improve their reputation. Corporate socially responsible firms can obtain social and economic benefits from favourable media attention. Therefore, it is likely that managers will be more responsible towards the environment and society after receiving positive media attention. Furthermore, the authors recognize that the endogeneity and particularly the omitted variables and the reversed causality is something to take into account. The ideological leaning of the state of the company is used as an instrumental variable (IV) for the CSR scores in order to account for the endogeneity issues. The results of the IV method indicate that socially responsible firms obtain an increased amount of favourable media attention. The authors also found that managers actively manage their CSR activities in order to increase the positive media image, especially for corporations in sin industries and with negative investor's sentiment. In line with above research, Lee, Oh and Kim (2013) investigate the relationship between CSR and a positive media coverage on Twitter. The authors state that social media is a favourable communication tool for CSR firms, because it increases the benefits of CSR activities. Furthermore, the authors argue that the better performing CSR firms use social media such as Twitter more easily as a communication tool. A reason for this earlier adoption of social media is because positive CSR rating can absorb the risks associated with the use of social media. The study of Lee, Oh and Kim (2013) finds that a higher CSR score results in more followers, retweets and a higher responsiveness to the firm's identity.

To conclude, Zyglidopoulos et al. (2011) found that media attention is an important driver of CSR and other researchers found that the inverse relationship, where more socially responsible firms obtain more positive media coverage, also holds (Luo et al., 2012; Cahan et al., 2015; Lee et al., 2013). This study

aims to further investigate the effect of the amount of firm's ESG news with a positive or negative sentiment on the positive relationship of the long-term and the ESG related compensation on CSP. To the best of our knowledge, no previous research has explored this positive relationship. The firm's ESG news with a positive or negative sentiment is included separately in the regression models, because Krüger (2015) shows that investors respond heavily to negative events and weakly negative to positive events. In addition, Endrikat (2016) found that the positive market reactions increased after a positive event and a stronger decrease in stock value is found after a negative event. As prior research found that the stock market is asymmetric in responding to positive and negative events, it can be expected that negative events reflected in the news will not have the same impact on CSP as positive news stories. Therefore, this study separately researches the effect of firm's ESG news with a positive and negative sentiment on the positive relationship of long-term and ESG related compensation on CSP. This led to the following two hypotheses for ESG news with a positive and negative sentiment:

Hypothesis (2a): The amount of firm's *ESG news with a positive sentiment strengthens the positive relationship of the long-term and the ESG related compensation on CSP.*

Hypothesis (2b): The amount of firm's *ESG news with a negative sentiment weakens the positive relationship of the long-term and the ESG related compensation on CSP.*

Table 3: Summary of prior research on the relationship between firm's ESG news/media attention and CSP

Author(s) and year	Sample	Dependent & independent variables	Control variables	Method	Results
Zyglidopoulos et al. (2011)	S&P500 for 200-2004 resulted in 1835 data-points	The dependent variables are CSR strengths and weaknesses (KLD database). The independent variable is media attention (Lexis-Nexis and ABI-inform database).	CSR weaknesses at (t−1), firm revenue, Tobin's Q, long-term risk.	OLS estimation	Media attention has a positive significant effect on CSR strengths and no significant effect on CSR weaknesses.
Luo et al. (2012)	Twenty largest US oil companies in 2011-2007	The independent variable is CSP (KLD database) and the dependent variable is media coverage (LexisNexis Academic U.S. News and Wire database).	Crude oil production, total assets, employees, fire, spill number, past spill accidents in the state, past non-spill news articles in firm, firm and year fixed effects.	logistic regression model	The media is more likely to report accidents such as oil spills for better performing CSR companies and for companies with the poorest environmental performance
Cahan et al. (2015)	12,749 firm-year observations. during the period 2003–2011	The independent variable is CSP (KLD database). The dependent variable is media sentiment (TRNA database).	Firm's fundamentals, stock performance, risk, visibility, ROA, BP ratio, size, leverage, idiosyncratic risk, stock performance, advertising expenditure, KLD's rating of the firm's corporate governance and year and industry fixed effects.	2SLS regression analysis, propensity score matching, quasi-natural experiment	Socially responsible firms receive a more favourable media image. Managers actively manage their CSR activities in order to increase the positive media image.
Lee, Oh, Kim (2013)	US Fortune 500	The independent variable is CSP (KLD database). The dependent variable is Twitter media coverage (open-API provided by Twitter.com.)	Company age, firm size, return on assets (ROA), organizational slack, debt ratio, board independence, board size, advertising intensity, firm reputation, and industry effects	Probit regression, OLS regression analyses	A high CSR rating results in an earlier adoption of social media.

4 Data

This chapter explains the definitions of the variables used (section 4.1) and the data sample and data sources (section 4.2). Table 1 in Appendix A defines all the descriptions of the variables of interest. In order for linear regression analyses to be used, several assumptions need to be tested. Therefore, this chapter will eliminate the extreme outliers by analysing the histograms (section 4.3) and a correlation matrix and a VIF test is used to check for multicollinearity (section 4.4). Section 4.5 tests for heteroscedasticity and autocorrelation. Furthermore, the descriptive statistics are presented (section 4.6). Section 4.7 describes the trends over time and across different industries of ESG related compensation and CSP.

4.1 Variables definitions

4.1.1 Dependent variable

As described in section 2.2, the dependent variable, corporate social performance (CSP), is the outcome of the ESG activities of corporations towards society by considering all actors such as employees, customers and local communities. The CSP data, obtained from the ASSET4 ESG database, allocates a score from 0 -100 to a firm based on environmental, social and governance pillars. These pillars consist of the following ten categories: resources, emissions, innovation, management, shareholders, CSR strategy, workforce, human rights, community and product responsibility. The aggregated CSP score is measured by multiplying the different weights with the ESG scores of the subcategories.

4.1.2 Independent variables

The first independent variable used in this study is the natural logarithm of long-term compensation (LTcomp) and consists of the firm-year value of stock awards and the value of option awards. The value of stock awards such as restricted stock are the rewards that do not have option-like features and the value of option awards are all the instruments with option-like features. In this study, long-term compensation is the natural logarithm of the ratio of the value of stock awards and option awards to total compensation. Total compensation comprises out of the following: salary, bonus, total value of restricted stock granted and stock options granted, long-term incentives, and other total compensation. This ratio is used, because it is a commonly used indicator of the CEO's incentive for long-term value creation. Another way to align CEOs' focus more on the long-term (environmental and social) performance is by paying him or her with ESG compensation. Therefore, this study also looks at the effect of ESG related compensation on CSP. The ESG related compensation (ESGcomp) is a dummy variable indicating whether a firm has an ESG related compensation policy yes or no.

4.1.3 Moderating variables

A moderating variable could change the direction of the effect between the independent variable and the dependent variable. The moderating variables are included in the model as it is expected that the amount of firm's ESG news with a positive (negative) sentiment will have a positive (negative) significant influence on the positive relationship of long-term and ESG related compensation on CSP. The data for the moderating variables, the amount of firm's ESG news with a positive or negative sentiment, is the comprehensive coverage of environmental and social issues on Bloomberg and on the following media platforms: digital, print, TV, and radio. Bloomberg provides two separate databases for ESG news of the firm with a positive sentiment and for ESG news per firm with a negative sentiment. The firm's ESG news with a positive sentiment (sentpos) is the natural logarithm of the amount of ESG news stories of the firm predicted to have a positive sentiment. The firm's ESG news with a negative sentiment variable (sentneg) is the natural logarithm of the amount of ESG news stories of the firm predicted to have a negative sentiment. The ESG news sentiment data was retrieved daily and was transformed to yearly data as the other variables were only available on a yearly basis.

4.1.4 Control variables

In addition to the amount of firm's ESG news with a positive or negative sentiment and long-term and ESG related compensation, there are other variables affecting CSP. Control variables are included in the regression model because these variables, other than the independent variables, influence the dependent variable. The sample size of this research is not large, so caution with including control variables is needed. Therefore, return on assets (ROA), natural logarithm of total assets, leverage, industry and year fixed effects are added to the regression model to account for omitted variables that drive the results.

Prior research states that companies that are more profitable or bigger in size have more resources available and therefore have more opportunities to use those resources for CSR activities (Galbreath, 2016; Chintrakarn et al., 2016). Furthermore, larger firms with a global presence tend to have more media and stakeholder attention and will therefore feel more pressure to invest in CSR activities (Burke et al., 1986). Prior literature has extensively studied the effect of firm's financial performance on CSP, with the accounting-based measurement ROA (Waddock and Graves, 1997; Simpson and Kohres, 2002). The results of prior literature indicate that there is a positive significant effect of financial performance on CSP. For the abovementioned reasons, the natural logarithm of total assets as a proxy for firm size and ROA as a measure for financial performance are included in the regression model. ROA is the ratio of net income divided by total asset. The third control variable is leverage because McCarthy et al. (2017) state that leverage has a positive effect on CSR due to the hedging of risk. According to McWilliams and Siegel (2000), CSP can be affected by the available free cash flow and

financial slack. Therefore, firm's leverage (LEV) is added to the regressions and is measured by dividing the value of total debt with the value of total assets.

Furthermore, this study adds an industry-fixed effect variable to the regressions, due to the clear differences among industries with regards to engagements in CSP and in stakeholders' interest for CSP (Waddock and Graves, 1997). The four-digit Standard Industrial Classification (SIC) code is included in the empirical model to control for industry-specific effects. The SIC code is obtained from the official OHSA SIC categories (OHSA, 2017). The industry-fixed effects variables exist out of the following industries: mining (1000-1499), construction (1500-1799), manufacturing (2000-3999), transportation, electric, gas and sanitary services (4000-4999), wholesale trade (5000-5199), retail trade (5200-5999), services (7000-8999) and public administration (9100-9999).[1] Lastly, a year-fixed effect is included in the regression model because this control variable account for economy-wide factors that impact the variables of interest.

4.2 Data sample and collection of data

More recent data is used as the importance of CSP increased rapidly over the last years. A not too narrow time frame is chosen in order to obtain sufficient observations and simultaneously a not too wide time frame is chosen, in order to give the most actual results. Therefore, a time frame of eight years was chosen from 2009 until 2017. ESG is a fairly new concept with only limited data available on the amount of firm's ESG related news articles. Therefore, data on the amount of firm's ESG news with a positive or negative sentiment, was only available at Bloomberg since 2015. In order to perform the analysis, S&P 500 firms were selected and financial firms in this list were left out, since they possess a unique financial structure and are heavily regulated. The total dataset contains 500 firms with 3510 firm-year observations over the period 2009 to 2017. After the elimination of variables with missing values, the dataset which includes both long-term and ESG related compensation ranges between 2878 and 2950 observations. Due to ESG news data constraints, the sample size drops significantly when the natural logarithm of ESG news was added to the regression model, ranging from 541 to 462 observations. The total sample size of the main regression models can be seen in table 6.1 and table 6.2 in section 6.1.

Different databases are used to gather data for the sample, namely Compustat, Execucomp, Datastream and Bloomberg. Datasets like Compustat and Execucomp are often used in literature on executive compensation. The S&P's Execucomp database consists of in-depth information on executive compensation such as salary, bonuses, options, stocks and other compensation items. Therefore, this dataset is used to measure long-term compensation. For the other independent variable, ESG related

compensation, the ASSET4 ESG database available through Datastream is used. The dependent variable, CSP, obtained different concepts, definitions and perceptions over the years. Prior literature used different methods to measure CSP such as surveys and indices. According to Turker (2009), the most commonly used methods to measure CSP were the ASSET4 ESG database, the MSCI database, the Dow Jones Sustainability index (DJSI) and the Fortune Index. Nowadays, Sustainalytics is a standard database for the measurement of CSP, but due to the high subscription fee this dataset is not used. The MSCI database, formerly known as Kinder Lydenburg Domini Analytics Social Ratings Data (KLD), is not used in this research as this database only covers CSP data until the year 2013. Instead, we follow Keleş' and Çetin's measure for CSP, by using firm-level yearly data from the ASSET4 ESG dataset of Thomson Reuters, accessible through Datastream (Keleş and Çetin, 2018). The ASSET4 database is a comprehensive ESG database covering more than 6,000 firms across more than 400 company-level ESG measures. The firm characteristics variables are retrieved from Compustat which is available through WRDS. Lastly, the above data is combined with the amount of ESG news per firm with a positive or negative sentiment, retrieved from Bloomberg. With more than 170 ESG-specific codes, Bloomberg provides a comprehensive coverage of critical environmental and social issues. The firm's ESG news data is not available on the Bloomberg terminal as the terminal only provides real-time data and no historical data. Therefore, a specific Bloomberg code, available in table 1 in Appendix A, is used to retrieve historical yearly data on ESG news per firm with a positive or negative sentiment.

4.3 Outliers

The histograms, included in Appendix B, show that the variables obtained from the abovementioned databases do not all have a normal distribution. The long-term compensation, ESG news, leverage, total assets and ROA contain outliers which makes the distribution skewed. An outlier deviates a lot from the other observations and affects the distribution of the data. After analysing the original histograms and the dataset, four observations are deleted from the dataset because these observations could obtain an error. The first observation that is eliminated is the outlier in long-term compensation because this observation is almost 5 times the size of the following highest long-term compensation observation. In addition, two outliers for firm's ESG news with a negative sentiment and one observation for firm's ESG news with a positive sentiment are eliminated as they show unrealistic results. To minimize the effect of outliers, the data can be winsorized, where extreme values are replaced. In this study, as explained in section 5.1, an ordinary least squares (OLS) regression is used. This method is sensitive to outliers and therefore the winsorizing process is not the most preferred method to deal with outliers. Therefore, the truncating method is used, where the outliers are deleted from the dataset. In line with other research, the data is truncated at the 1% level and the 99% level. After the truncation process the total data sample dropped from 3563 to 3510 observations. Table 2 in appendix A shows how many variables are deleted per variable. Most of the variables show a less skewed distribution after the

elimination of the outliers, but still long-term compensation, firm's ESG news sentiment and total assets have a skewed distribution. Therefore, these variables are transformed into natural logarithms. The variables do not show a perfect normal distribution, but according to Ghasemi and Zahediasl (2012), when the sample size consists of more than 30 observations, the non-normal distribution should not have a significant impact on the outcomes.

4.4 Multicollinearity

A correlation matrix is used to look at the correlations between the dependent, independent, control and moderating variables at the 5% significance level. A coefficient of one means a perfect multicollinearity between the variables and a coefficient of zero shows no correlation. In table 4 below, it can be seen that there are no unusual high correlations between the variables of interest, meaning that there is no multicollinearity. The highest significant correlations are found between total assets and CSP (0.5338), and the natural logarithm of firm's ESG news with a negative and positive sentiment (0.3918). In line with hypothesis (1a), a positive significant correlation is found between long-term compensation and CSP (0.1254), indicating that when long-term compensation increases, CSP slightly increases. The positive significant correlation between ESG related compensation and CSP (0.3404), leans towards a confirmation of hypothesis (1b). As explained in section 5.1 the ESG news variable is combined with long-term and ESG related compensation in an interaction term, in order to test the effect of ESG news on the relationship of long-term and ESG related compensation on CSP. According to Baron and Kenny (1986), no noisy interaction term is desired, meaning that firm's ESG news cannot be highly correlated with the independent variables and the dependent variable. The ESG news of the firm with a negative or positive sentiment shows a moderately significant correlation with CSP (0.1429 and 0.1013). Therefore, it is unlikely that this moderate significant correlation between ESG news and CSP will have a substantial effect on the outcome. Firm's ESG news with a positive and negative sentiment is not correlated with ESG related compensation. ESG news with a negative sentiment is moderately significant correlated with long-term compensation and ESG news with a positive sentiment is not significantly correlated with long-term compensation. Therefore, it doesn't seem like there is noisy interaction term. In addition, a variance-inflation-factor (VIF) test is done to test for multicollinearity. Evidence for multicollinearity is found when VIF is bigger than ten (Hair, Black, Babin and Anderson, 2009). There is no variable included in the different regressions that shows a VIF larger than ten. Concluding, the correlation matrix and the VIF show that there are no multicollinearity problems.

Table 4: Correlation matrix

	ESGcomp	LTcomp	CSP	ln(sentpos)	ln(sentneg)	LEV	ln(assets)	ROA
ESGcomp	1							
LTcomp	0.0248	1						
CSP	0.3404*	0.1254*	1					
ln(sentpos)	-0.0129	-0.0229	0.1013*	1				
ln(sentneg)	0.0181	0.0926*	0.1429*	0.3918*	1			
LEV	0.0703*	-0.0169	0.0282	0.0091	0.0329	1		
ln(assets)	0.3367*	0.0974*	0.5338*	0.3046*	0.3431*	0.1459*	1	
ROA	-0.1296*	-0.0328	0.003	-0.0269	-0.0295	-0.2210*	-0.1861*	1

Table 4 presents the correlations from the variables defined in table 1 in Appendix A. A correlation of one means a perfect multicollinearity between the variables and the asterisk indicate the 5% significance level of the coefficients.

4.5 Heteroscedasticity and autocorrelation

Homoscedasticity, meaning that the error terms have a constant variance, and no correlation between the residuals, is required when performing an OLS regression. If the assumption of homoscedasticity is not confirmed and there is heteroscedasticity, the standard errors of the coefficients can be biased. Therefore, the Breusch-Pagan test is done to control for heteroscedasticity and the Breusch-Godfrey test is used to control for autocorrelation within the error term. All regressions have heteroscedasticity as the p-value is smaller than 5%. The outcomes of the Breusch-Godfrey test show for all regressions a chi2 of 0.000, meaning there is a serial correlation between the residuals in the regression models. The issues of heteroscedasticity and autocorrelation are solved by including clustered robust standard errors, which will result in unbiased and efficient outcomes. Clustered standard errors are robust standard errors that account for heteroscedasticity across clusters of observations, thus groups that are affected in a similar way by an individual trait or event.

4.6 Descriptive statistics

Table 5 provides the summary statistics for the dependent, independent, control and moderating variables after eliminating the outliers, but before the logarithm is taken. This table shows the number of observations, the mean, standard deviation, minimum, 25^{th} percentile, median, 75^{th} percentile and maximum value of the variables of interest. The mean of CSP is 60.09 out of 100, with a lowest CSP score of 8.60 out of 100 and a highest CSP score of 97.66 out of 100. Thus, on average the S&P 500 firms obtain a high CSP score of 60 out of 100. The mean of ESG related compensation is 0.40, meaning that about 40% of the S&P 500 companies use ESG criteria in executive compensation schemes. A more extensive summary of the CSP and ESG related compensation statistics over time and per industry can be found in the section below. Long-term compensation has a mean of 0.63, indicating that 63% of the total compensation of the S&P 500 firms consists of long-term compensation. The amount of ESG news of the firm with a positive sentiment and the amount of ESG news of the firm with a negative sentiment, have a mean of 8.39 and a mean of 18.25, which indicates that the S&P 500 firms on average have 8

positive and 18 negative ESG news articles per year. The finding that on average there are more negative news articles than positive ESG related news stories per year is not remarkable, because Luo et al. (2012) argued that the media is more likely to report negative events such as oil spill accidents.

Table 5: Summary statistics

Variables	N	Mean	Std. dev.	Min	P25	Median	P75	Max
CSP	3288	60.09	17.73	8.60	46.37	63.13	74.13	97.66
ESGcomp	3288	0.40	0.49	0	0	0	1	1
LTcomp	3344	0.63	0.42	0	0.49	0.60	0.71	8.92
Sentpos	843	8.39	17.43	0	0.00	2.00	7.00	130
Sentneg	868	18.25	39.18	0	0.00	3.00	16.00	293
LEV	3118	0.26	0.17	0	0.14	0.24	0.35	1.03
ROA	3392	0.07	0.07	-0.38	0.03	0.07	0.10	0.36
Assets	3393	25,915.42	41,368.39	172.52	5105.30	12102	29497.27	440,000

Table 5 presents the number of observations, mean, standard deviation, the minimum observation value, 25th percentile, median, 75th percentile and the maximum value of the observation from the variables defined in table 1 in Appendix A.

4.7 CSP and ESG related compensation across industries and over time

Table 3 in Appendix A provides a summary of the average CSP score per industry and over time. This table shows that CSP differs per industry. The industry with the lowest average CSP score of 43 out of 100, is the construction industry. The highest CSP scores are shown in the public administration and retail trade industry, with an average CSP score of 71 out of 100 and an average CSP score of 65 out of 100, respectively. Firms in the public administration and retail trade industries have a direct connection with the end-consumers and therefore invest in CSR activities to improve their reputation. Hence, table 3 in Appendix A demonstrates the importance of controlling for industry. Furthermore, the results show that CSP is improving over time, because individuals, firms and authorities are focussing on improving CSP. While the average CSP score is 57% in 2009, this ratio increased to 67% in 2017.

Due to the increased awareness of CSP, firms could adopt for example ESG related compensation in order to improve CSP. In line with previous research of Flammer et al. (2019), table 4 in Appendix A shows that ESG related compensation contracts are mostly used in emission intensive industries such as the mining industry (76%) and the transportation, electric, gas & sanitary services industry (60%). Furthermore, the findings show a 100% adoption of ESG related compensation in the public administration industry. In the construction industry these types of ESG related compensation contracts are the least adopted (7%). That firms focus more on CSP, by for example adopting ESG related compensation, is confirmed, because firms include more ESG related compensation the last years. In 2009 only 33% had adopted an ESG related compensation and in 2017 this percentage increased towards 43%. Table 4 in Appendix A shows that 43% of firms include ESG related compensation already in 2012. This amount is close to 40% of CSP targets in executive compensation in 2012 reported by Maas (2018).

5 Research design

In this chapter, the research design to test the hypotheses formulated in chapter 3, is discussed.

5.1 Statistical model with multiple regression equations

Multiple regression analyses are used to investigate the relationship of long-term and ESG related compensation on CSP, while controlling for multiple control variables. This study further takes into account the moderating effect of ESG news on the relationship of long-term and ESG related compensation on CSP. The moderating effect is the interacting effect of a variable on the relationship between the independent and the dependent variables. The commonly used framework of Baron and Kenny (1986) is used to examine the moderating effect. The hypotheses are structured based upon the conceptual model, which is shown in figure 2. Figure 3 shows how the variables are combined in the moderating model of Baron and Kenny (1986).

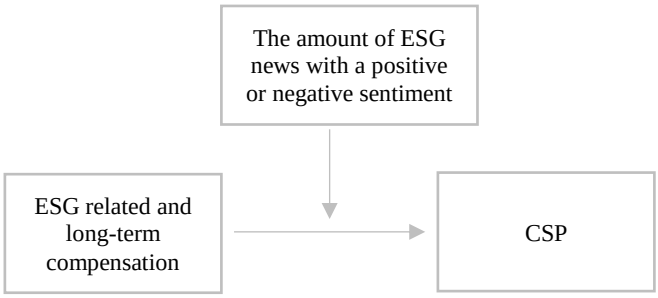

Figure 2: The Conceptual Model

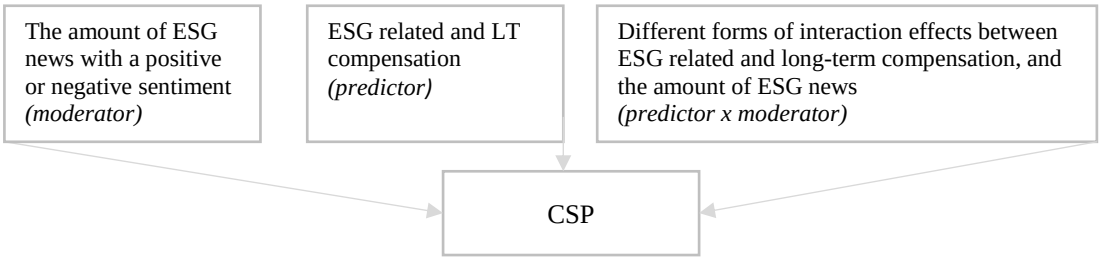

Figure 3: The Moderating Model

To test the hypotheses, multiple ordinary least squares (OLS) regressions are used. The first two regression equations test hypotheses (1a) and (1b), whether long-term compensation and ESG related compensation positively influence the level of CSP. The third regression model (1c) integrates long-term and ESG related compensation and the interaction term between long-term compensation and ESG compensation, to test if the compensation variables together have a significant effect on CSP. The interaction term between ESG related compensation and long-term compensation should be interpreted

together with the main effect of long-term and ESG related compensation, to find the total combined effect of long-term compensation and ESG related compensation on CSP. In the regression equations below, i indexes firm, t indexes year and $\varepsilon_{i,t}$ are the firm and time clustered robust standard errors.

For hypothesis (1a), "Long-term compensation positively influences corporate social performance", the empirical model is formulated as follows:

$$(1a)\ CSP_{i,t} = \alpha_0 + \beta_1\, ln(LTcomp_{i,t}) + \beta_2 \ln(assets_{i,t}) + \beta_3\, ROA_{i,t} + \beta_4\, LEV_{i,t} + \beta_5\, d\_industry_i + \beta_6\, d\_year_t + \varepsilon_{i,t}$$

For hypothesis (1b), "ESG related compensation positively influences corporate social performance", the empirical model is formulated as follows:

$$(1b)\ CSP_{i,t} = \alpha_0 + \beta_1\, ESGcomp_{i,t} + \beta_2 \ln(assets_{i,t}) + \beta_3\, ROA_{i,t} + \beta_4\, LEV_{i,t} + \beta_5\, d\_industry_i + \beta_6\, d\_year_t + \varepsilon_{i,t}$$

An additional regression (1c) is constructed to see if the compensation variables have a combined effect on CSP:

$$(1c)\ CSP_{i,t} = \alpha_0 + \beta_1\, ESGcomp_{i,t} + \beta_2\, ln(LTcomp_{i,t}) + \beta_3\, (ESGcomp_{i,t} * \ln(LTcomp_{i,t})) + \beta_4 \ln(assets_{i,t}) + \beta_5\, ROA_{i,t} + \beta_6\, LEV_{i,t} + \beta_7\, d\_industry_i + \beta_8\, d\_year_t + \varepsilon_{i,t}$$

To test hypothesis (2a), "The amount of ESG news of the firm with a positive sentiment strengthens the positive relationship of long-term and ESG related compensation on CSP", empirical model (2.2a) is formed. This regression model includes the independent variables and the interaction terms between long-term and ESG related compensation and ESG news. Hypotheses (2a) and (2b) are accepted when a significant interaction term between long-term and ESG related compensation and firm's ESG news is found. In addition, the individual effect of the ESG news of the firm with a positive sentiment on CSP, without including long-term and ESG related compensation, is tested in regression (2.1a).

$$(2.1a)\ CSP_{i,t} = \alpha_0 + \beta_1\, ln(sentpos_{i,t}) + \beta_2\, ln(assets_{i,t}) + \beta_3\, ROA_{i,t} + \beta_4\, LEV_{i,t} + \beta_5\, d\_industry_i + \beta_6\, d\_year_t + \varepsilon_{i,t}$$

$$(2.2a)\ CSP_{i,t} = \alpha_0 + \beta_1 ESGcomp_{i,t} + \beta_2\, ln(LTcomp_{i,t}) + \beta_3 (ESGcomp_{i,t} * ln(LTcomp_{i,t})) + \beta_4\, ln(sentpos_{i,t}) + \beta_5\, (\ln(sentpos_{i,t}) * ESGcomp_{i,t}) + \beta_6\, (ln(sentpos_{i,t}) * ln(LTcomp_{i,t})) + \beta_7\, (ln(sentpos_{i,t}) * ln(LTcomp_{i,t}) * ESGcomp_{i,t}) + \beta_8\, ln(assets_{i,t}) + \beta_9\, ROA_{i,t} + \beta_{10}\, LEV_{i,t} + \beta_{11}\, d\_industry_i + \beta_{12}\, d\_year_t + \varepsilon_{i,t}$$

For hypothesis (2b), "The amount of ESG news of the firm with a negative sentiment weakens the positive relationship of long-term and ESG related compensation on CSP", the empirical model has been

formulated in regression (2.2b). Regression model (2.1b) studies the effect of firm's ESG news with a negative sentiment on CSP, without including long-term and ESG related compensation.

$$(2.1b)\ CSP_{i,t} = \alpha_0 + \beta_1\ ln(sentneg_{i,t}) + \beta_2\ ln\left(assets_{i,t}\right) + \beta_3\ ROA_{i,t} + \beta_4\ LEV_{i,t} + \beta_5\ d\_industry_i + \beta_6\ d\_year_t + \varepsilon_{i,t}$$

$$(2.2b)\ CSP_{i,t} = \alpha_0 + \beta_1\ ESGcomp_{i,t} + \beta_2\ ln(LTcomp_{i,t}) + \beta_3\ \left(ESGcomp_{i,t} * ln(LTcomp_{i,t})\right) + \beta_4\ ln(sentneg_{i,t}) + \beta_5\ (ln(sentneg_{i,t}) * ESGcomp_{i,t}) + \beta_6\ (ln(sentneg_{i,t}) * ln(LTcomp_{i,t})) + \beta_7\ (ln(sentneg_{i,t}) * ln(LTcomp_{i,t}) * ESGcomp_{i,t}) + \beta_8\ ln\left(assets_{i,t}\right) + \beta_9\ ROA_{i,t} + \beta_{10}\ LEV_{i,t} + \beta_{11}\ d\_industry_i + \beta_{12}\ d\_year_t + \varepsilon_{i,t}$$

Lastly, all variables and their interaction terms are included in one regression equation. Regression model (2.2c) includes long-term and ESG related compensation and also contains both the ESG news with a positive and with a negative sentiment and all the interaction terms between the variables.

$$(2.2c)\ CSP_{i,t} = \alpha_0 + \beta_1\ ESGcomp_{i,t} + \beta_2\ ln(LTcomp_{i,t}) + \beta_3\ \left(ESGcomp_{i,t} * ln(LTcomp_{i,t})\right) + \beta_4\ ln(sentpos_{i,t}) + \beta_5\ (\ln(sentpos_{i,t}) * ESGcomp_{i,t}) + \beta_6\ (\ln(sentpos_{i,t}) * ln(LTcomp_{i,t})) + \beta_7\ (\ln(sentpos_{i,t}) * ln(LTcomp_{i,t}) * ESGcomp_{i,t}) + \beta_8\ ln(sentneg_{i,t}) + \beta_9\ (ln(sentneg_{i,t}) * ESGcomp_{i,t}) + \beta_{10}\ (ln(sentneg_{i,t}) * ln(LTcomp_{i,t})) + \beta_{11}\ (ln(sentneg_{i,t}) * ln(LTcomp_{i,t}) * ESGcomp_{i,t}) + \beta_{12}\ ln\left(assets_{i,t}\right) + \beta_{13}\ ROA_{i,t} + \beta_{14}\ LEV_{i,t} + \beta_{15}\ d\_industry_i + \beta_{16}\ d\_year_t + \varepsilon_{i,t}$$

6 Results

In this chapter the results obtained through the analysis of the regressions mentioned in the previous section will be discussed (section 6.1). Furthermore, the results of the additional analysis of the regressions with one-year lag are presented (section 6.2).

6.1 Main regression results

Table 6.1 shows the results of the regression equations (1a) to (1c) and table 6.2 shows the regression equations (2.1a) to (2.2c). The results on hypothesis (1a) are shown in regression model (1a) and the results of hypothesis (1b) are shown in regression model (1b). The results of hypotheses (2a) and (2b) can be found in regression model (2.2a) and (2.2b). The control variables and the year and industry fixed effects are included in all the models. It can be seen from tables 6.1 and 6.2, that the adjusted R-squared vary between 0.206 and 0.413. The adjusted R-squared compares the descriptive power of the different regression models. The highest explanatory power is found in model (1c), where both the compensation variables and their interaction term are included in the model. When the ESG news variables are included in the model, in addition to the compensation variables and the control variables, the adjusted R-squared is 0.251 in model (2.2a), 0.327 in model (2.2b) and 0.226 in model (2.2c). These results mean that when there is ESG news with a positive sentiment, the model explains 25% of the variation in CSP and when there is ESG news with a negative sentiment, the model explains 33% of the variation in CSP. If the regression model includes both ESG news with a positive and with a negative sentiment, the model explains 23% of the variation in CSP.

The first regression model (1a) in table 6.1 investigates whether long-term compensation positively influences CSP. Similar results as Mahoney and Thorn (2006) and Deckop et al. (2006) are found, because the natural logarithm of long-term compensation has a positive significant effect on CSP. This positive result supports hypothesis (1a), as the results show that the natural logarithm of long-term compensation positively influences CSP at the 1% significance level. The beta of the natural logarithm of long-term compensation is 1.789, meaning that when long-term compensation increases with 1%, CSP increases with 1.789. Therefore, hypothesis (1a) is accepted. The control variables, the natural logarithm of total assets and ROA, show a positive and significant impact on CSP in almost all regressions, at the 1% significance level. In line with the expectations, model (1a) shows that an increase of 1% in ROA increases CSP with 22.28 and an increase of 1% of the natural logarithm of total assets, increases CSP with 8.510. The increase in CSP due to an increase in ROA shows that the financial performance of a firm is an important determinant of CSP. Leverage (LEV) is significant at the 5% significance level and the result shows that an increase of 1% in leverage decreases CSP with 4.775. Model (1b) in table 6.1 tests hypothesis (1b), whether ESG related compensation positively influences

CSP. The ESG related compensation variable shows a positive significant coefficient of 7.461 at the 1% significance level, meaning that when a firm has an ESG related compensation policy in place, CSP increases with 7.461. In line with earlier research of Li et al. (2016), Li, et al. (2019) and Flammer et al. (2019), the results show a positive significant effect of ESG related compensation on CSP. Hence, hypothesis (1b) can be confirmed. Regression model (1c) combines models (1a) and (1b), where the effect of the natural logarithm of long-term compensation and ESG related compensation is combined in one regression by including both compensation variables and their interaction term. Model (1c) shows that the significant coefficient of ESG related compensation increases towards a coefficient of 8.301 with a significance level of 1%. The natural logarithm of long-term compensation is positively significant at the 5% level and has a beta of 1.358. The interaction term is not significant, meaning that when a firm has an ESG related compensation policy in place, an increase in long-term compensation has no additional effect on CSP. Hence, it can be concluded that long-term compensation and ESG related compensation have an independent effect on CSP. The control variables ROA and the natural logarithm of total assets show a positive significant effect at the 1% significance and leverage has a negative significant beta at the 1% significance level in both models (1b and 1c).

Table 6.1: Main regression results of long-term and ESG related compensation on CSP

Variables	(1a)	(1b) CSP	(1c)
ESGcomp		7.461***	8.301***
		(0.576)	(0.960)
Ln(LTcomp)	1.789***		1.358**
	(0.634)		(0.671)
ESGcomp			1.460
* ln(LTcomp)			(1.507)
LEV	-4.775**	-7.154***	-5.820***
	(1.877)	(1.770)	(1.793)
Ln(assets)	8.510***	7.737***	7.657***
	(0.209)	(0.214)	(0.217)
ROA	22.28***	20.75***	21.59***
	(4.536)	(4.300)	(4.441)
Constant	-35.62***	-26.48***	-28.42***
	(2.405)	(2.447)	(2.369)
Observations	2,878	2,950	2,878
R-squared	0.381	0.410	0.417
Adjusted R-squared	0.377	0.407	0.413
Industry FE	YES	YES	YES
Year FE	YES	YES	YES

Table 6.1 shows the output of the different OLS regression models for the variables defined in table 1 in Appendix A. The dependent variable is corporate social performance (CSP). The independent variables are the logarithm of long-term compensation (ln(LTcomp)) and the dummy variable ESG related compensation (ESGcomp) and their interaction term. Leverage (LEV), log total assets (ln(assets) and return on assets (ROA) are added to the empirical model to account for omitted variables. In all columns, the regression models include industry and year fixed effects as well as clustered standard errors in parentheses. The asterisks indicate the significance levels of the coefficients: *** p<0.01, ** p<0.05, * p<0.1.

The models (2.1a) and (2.1b) in table 6.2 investigate the effect of firm's ESG news with a positive or negative sentiment, on CSP, without including long-term and ESG related compensation. The results show for both the natural logarithm of positive and negative ESG news, an insignificant negative effect on CSP. These results are not in line with the theoretical predictions, because the results indicate that the amount of firm's ESG news does not significantly influence the level of CSP. This negative insignificant effect is not confirmed by Zyglidopoulos et al. (2011) as their results indicate that media attention positively affects CSR strenghts. A possible explanation for the different outcome could be because Zyglidopoulos et al. (2011) measure CSR with CSR strengths and CSR weaknesses. Furthermore, leverage becomes positively insignificant, meaning that the level of debt to assets does not significantly influence the level of CSP. The other control variables, ROA and the natural logarithm of total assets do show significant positive coefficients in models (2.1a) and (2.1b).

The results of models (2.2a) and (2.2b) in table 6.2 give an answer on the second main research question, whether the amount of firm's ESG news with a positive (negative) sentiment strengthens (weakens) the positive relationship of long-term compensation and ESG related compensation on CSP (hypotheses 2a and 2b). Model (2.2a) includes the positive moderating variable and model (2.2b) contains the negative moderating variable. The moderating variables and their interaction terms are combined in model (2.2c) to test the effect of firm's ESG news with a positive and negative sentiment on the positive relationship of long-term compensation and ESG related compensation on CSP. The results of model (2.2a) show that ESG related compensation has a main positive significant coefficient of 10.11 at the 1% significance level. The main sign of the natural logarithm of long-term compensation becomes negative with a beta of -6.188 at the 10% significance level. However, the interaction term between ESG related compensation and the natural logarithm of long-term compensation should be interpreted together with the main effect of the individual long-term and ESG related compensation to find the total combined effect of the compensation variables on CSP. As the interaction term between the natural logarithm of long-term compensation and ESG related compensation is significantly positive at the 10% significance level and has a coefficient of 9.238, the total combined effect of the natural logarithm of long-term compensation on CSP is positive. The other interaction terms between the natural logarithm of firm's ESG news with a positive sentiment and the natural logarithm of long-term compensation, and between the positive moderating variable and ESG related compensation, show insignificant results. When the variable of the natural logarithm of long-term and ESG related compensation and the natural logarithm of ESG positive news sentiment, are combined in a total interaction term, the results become significant with a coefficient of -4.484. These findings suggest that when the firm has only one compensation policy in place and experiences an amount of ESG news with a positive sentiment, it does not impact CSP, but when the firm has both compensation policies in place and also experiences ESG news with a positive sentiment, CSP decreases with 4.484. This decreasing effect is not consistent with the expectations, as hypothesis (2a) states that ESG news with a positive sentiment strengthens the positive relationship of

long-term compensation and ESG related compensation on CSP. Therefore, hypothesis (2a) is rejected. Cahan et al. (2015) found that managers actively manage their CSR activities in order to increase the positive media image. It can be argued that when firms obtain positive news attention, managers care less about the reputation of the firm and will less active manage the CSR activities, which could decrease CSP. Furthermore, the inverse relation between CSP and ESG news is confirmed in section 7.2, where it is shown that CSP influences ESG news with a positive sentiment. In model (2.2a), the natural logarithm of total assets is the only control variable that shows significant results at the 1% significance level.

In model (2.2b), firm's ESG news with a negative sentiment is included instead of the positive moderating variable. The model shows for all variables, except for ESG related compensation, ROA and the natural logarithm of total assets, insignificant results. Negative media attention could damage the reputation and financial and social performance of the firm. Therefore, on the one hand, when the firm experiences some negative news, the company could focus on improving their CSP and reputation. A possible way to improve CSP is by investing in CSR activities or implementing ESG related compensation contracts. Hence, this could be a possible explanation why ESG related compensation is significant. On the other hand, the company could focus more on improving the financial performance and therefore the firm could pay their executives more on the short-term instead of the long-term. This could be a possible explanation for the insignificant long-term compensation variable and the positive significant results of ROA in model (2.2b). ESG related compensation shows a positive significant coefficient of 8.377 and the control variables ROA and the natural logarithm of total assets are also positively significant at the 1% significance level. The sign of the natural logarithm of long-term compensation shows a positive but insignificant coefficient. The natural logarithm of the ESG news with a negative sentiment shows a similar insignificant negative beta as in model (2.1a). The interaction term between long-term and ESG related compensation and firm's ESG news with a negative sentiment, shows an insignificant negative result. This result indicates that CSP does not significantly change when firms have both long-term compensation and ESG related compensation policies in place and also experience negative news attention. Therefore, no evidence is found for hypothesis (2b) and the hypothesis is rejected. All variables show insignificant results except the natural logarithm of total assets in model (2.2c). Lastly, in table 1 in Appendix C, the results for the different regression models are shown, including the year and industry coefficients. This table shows, in line with the findings of section 4.7, that CSP increases over the years, because for most regression models the last three years show a significant higher CSP compared to 2009.

Concluding, evidence is found for hypotheses (1a) and (1b), because ESG related compensation and long-term compensation positively influence CSP. An opposite result is found for hypothesis (2a), because the amount of firm's ESG news with a positive sentiment weakens the positive relationship of

ESG related and long-term compensation on CSP. This negative effect is not in line with the theoretical expectations as a positive effect was expected. No significant effect is found for firm's ESG news with a negative sentiment on the positive relationship of long-term compensation and ESG compensation on CSP.

Table 6.2: Main regression results of the moderating variables on the positive relationship of long-term and ESG related compensation on CSP

Variables	(2.1a)	(2.1b)	(2.2a)	(2.2b)	(2.2c)
			CSP		
ESGcomp			10.11***	8.377***	4.445
			(3.152)	(2.940)	(4.945)
ln(LTcomp)			-6.188*	3.150	3.115
			(3.239)	(2.246)	(5.631)
ln(sentpos)	-0.449		0.960		-0.617
	(0.486)		(0.933)		(1.102)
ESGcomp*ln(LTcomp)			9.238*	1.832	-0.159
			(5.035)	(4.574)	(7.764)
ESGcomp*ln(sentpos)			-2.166		0.658
			(1.409)		(1.471)
Ln(LTcomp)*ln(sentpos)			2.069		-0.679
			(1.562)		(1.942)
			-4.484**		-0.793
ESGcomp*ln(LTcomp)* ln(sentpos)			(2.276)		(2.552)
ln(sentneg)		-0.474		-0.493	-0.341
		(0.406)		(0.652)	(0.842)
				-0.783	-0.356
ESGcomp*ln(sentneg)				(0.913)	(1.120)
ln(LTcomp)*ln(sentneg)				-0.992	-0.0375
				(0.964)	(1.193)
ln(LTcomp)*ESGcomp*				-1.145	-0.510
ln(sentneg)				(1.490)	(1.683)
LEV	2.845	-5.549	0.620	-5.812	-0.445
	(4.371)	(4.195)	(4.277)	(4.080)	(5.150)
Ln(assets)	5.225***	6.578***	4.859***	6.114***	4.734***
	(0.622)	(0.580)	(0.598)	(0.565)	(0.757)
ROA	22.94**	29.79***	16.17	26.63***	17.56
	(10.47)	(10.12)	(10.77)	(10.15)	(12.06)
Constant	4.172	-10.31	-9.409	-6.723	21.51**
	(9.976)	(6.794)	(6.028)	(6.485)	(8.383)
Observations	471	541	462	532	352
R-squared	0.228	0.292	0.282	0.351	0.274
Adjusted R-squared	0.206	0.275	0.251	0.327	0.226
Industry FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES

Table 6.2 shows the output of the different OLS regression models for the variables defined in table 1 in Appendix A. The dependent variable is corporate social performance (CSP). The independent variables are the logarithm of long-term compensation (ln(LTcomp)) and the dummy variable ESG related compensation (ESGcomp). The moderating variables, logarithm of firm's ESG news with a positive sentiment (ln(sentpos)) and logarithm of ESG news with a negative sentiment (ln(sentneg)) and their interaction terms with long-term and ESG related compensation are also included in the regression models. Leverage (LEV), log total assets (ln(assets) and return on assets (ROA) are added to the empirical model to account for omitted variables. In all columns, the regression models include industry and year fixed effects as well as clustered standard errors in parentheses. The asterisks indicate the significance levels of the coefficients: *** p<0.01, ** p<0.05, * p<0.1.

6.2 Results additional analysis with one-year lagged independent variables

The previous results show no evidence for a positive (negative) effect of firm's ESG news with a positive (negative) sentiment on the positive relationship of long-term and ESG related compensation on CSP. In line with other research such as Maas (2018) and Flammer et al. (2019), an additional analysis with one-year lagged independent variables, is included in this study. This one-year lag is incorporated in order to test the effect of the independent and control variables in previous year on the level of CSP in current year. This method accounts for within-firm effects and for the time effect, where the variables could have more significant effect in the next year (Maas, 2018).

The adjusted R-squared decreases for most models compared with tables 6.1 and 6.2, except for the models (2.1a) and (2.2a). In tables 7.1 and 7.2, it can be seen that still model (1c) has the highest explanatory power. The results for the lagged variables do not change significantly in comparison with the non-lagged variables for the models (1) to (2.1). The coefficients show a small increase in the beta and most variables show similar signs and significance levels compared to previous models shown in tables 6.1 and 6.2. Models (1a) to (1c) in table 7.1, indicate that the long-term and ESG related compensation of previous year positively influences the level of CSP of current year at the 5% and 1% significance levels. The interaction term between long-term compensation and ESG related compensation is insignificant. Models (2.2a) and (2.2b) in table 7.2, where the compensation and moderating variables of previous year are combined, show different significance levels and signs than the previous results shown in table 6.2. The coefficient of ESG related compensation of previous year becomes insignificant in models (2.2a) and (2.2b), meaning that whether the company had an ESG related compensation policy previous year does not significantly influences the level of current CSP. The same reasoning applies for the natural logarithm of long-term compensation variable as it shows an insignificant coefficient. The interaction term between long-term and ESG related compensation also becomes insignificant. The natural logarithm of ESG news of the firm with a positive sentiment shows a positive significant result at the 10% significance level, indicating that the amount of ESG positive news articles of last year increases the CSP of current year with 1.818. Therefore, it can be concluded that it takes time before the firm feels the benefits of positive ESG media attention. The natural logarithm of firm's ESG news with a negative sentiment shows an insignificant positive beta of 0.789 in model (2.2b). The interaction terms between long-term and ESG related compensation and the firm's ESG news show no significant results in the models (2.2a) and (2.2b), hence no significant effect is found for firm's ESG news with a negative and positive sentiment of previous year on the positive relationship of long-term and ESG related compensation on current CSP. All variables show insignificant results except the lagged natural logarithm of total assets in model (2.2c). The control variable ROA and leverage of previous year becomes insignificant from model (2.1a) onwards, meaning that the financial performance and leverage of previous year does not significantly influence the level of CSP of current year.

Concluding, this study found evidence for the fact that long-term compensation and ESG related compensation of previous year positively influence CSP of current year. The interaction term between the one-year lagged long-term and ESG related compensation and ESG news with a positive or negative sentiment is insignificant. Therefore, no evidence is found for the positive (negative) effect of firm's ESG news with a positive (negative) sentiment of previous year on the positive relationship of long-term and ESG related compensation on current CSP. The lagged variable firm's ESG news with a positive sentiment shows in model (2.2a) a positive significant effect on CSP, meaning that firm's ESG news with a positive sentiment of previous year improves the current level of CSP.

Table 7.1: Additional regression results of one-year lagged compensation variables on current CSP

Variables	(1a)	(1b) CSP	(1c)
Lag(ESGcomp)		5.585***	5.431***
		(0.599)	(1.083)
Lag(ln(LTcomp))	1.547**		1.320*
	(0.669)		(0.771)
Lag(ESGcomp			-0.290
* ln(LTcomp))			(1.657)
Lag(LEV)	-4.633**	-6.764***	-5.432***
	(1.911)	(1.915)	(1.931)
Lag(ln(assets))	7.509***	6.864***	6.829***
	(0.231)	(0.241)	(0.243)
Lag(ROA)	19.00***	17.03***	18.26***
	(4.704)	(4.561)	(4.706)
Constant	-30.73***	-22.60***	-25.49***
	(2.776)	(2.878)	(2.826)
Observations	2,863	2,887	2,816
R-squared	0.325	0.337	0.340
Adjusted R-squared	0.321	0.333	0.336
Industry FE	YES	YES	YES
Year FE	YES	YES	YES

Table 7.1 shows the output of the different OLS regression models for the lagged variables defined in table 1 in Appendix A. The dependent variable is current corporate social performance (CSP). A one-year lag of the independent variables and control variables is incorporated into every regression. The independent variables are the logarithm of long-term compensation of previous year (lagln(LTcomp)) and the dummy variable ESG related compensation of previous year (lagESGcomp) and their one-year lagged interaction terms. Leverage of previous year (lagLEV), log assets of previous year (lagln(assets)) and return on assets of previous year (lagROA) are added to the empirical model to account for omitted variables. In all columns, the regression models include industry and year fixed effects as well as clustered standard errors in parentheses. The asterisks indicate the significance levels of the coefficients: *** p<0.01, ** p<0.05, * p<0.1.

Table 7.2: Additional regression results of the lagged moderating variables on the positive relationship between the lagged compensation variables and current CSP

Variables	(2.1a)	(2.1b)	(2.2a)	(2.2b)	(2.2c)
			CSP		
Lag(ESGcomp)			4.225	7.625	1.636
			(3.699)	(3.958)	(6.316)
Lag(ln(LTcomp))			-3.493	-3.010	0.122
			(4.346)	(3.536)	(8.295)
Lag(ln(sentpos))	0.279		1.818*		0.829
	(0.536)		(1.088)		(1.398)
Lag(ESGcomp* ln(LTcomp))			-2.756	-0.949	-9.187
			(6.242)	(6.206)	(11.159)
Lag(ESGcomp*ln(sentpos))			-1.849		-0.585
			(1.767)		(2.166)
Lag(ln(sentpos)*ln(LTcomp))			1.841		-0.482
			(1.899)		(2.479)
Lag(ln(LTcomp*ESGcomp* ln(sentpos))			-2.333		-1.201
			(2.902)		(3.602)
Lag(ln(sentneg))		-0.177		0.789	-0.0153
		(0.476)		(0.922)	(1.145)
Lag(ESGcomp* ln(sentneg))				-1.156	0.216
				(1.375)	(1.991)
Lag(ln(LTcomp)*ln(sentneg))				1.000	1.280
				(1.557)	(1.816)
Lag(ln(LTcomp)*ESGcomp* ln(sentneg))				-0.397	1.462
				(2.403)	(3.365)
Lag(LEV)	4.633	-0.696	3.048	-1.544	0.430
	(4.903)	(4.651)	(4.700)	(4.631)	(5.694)
Lag(ln(assets))	3.526***	4.236***	3.405***	3.672***	2.788***
	(0.714)	(0.683)	(0.730)	(0.685)	(0.847)
Lag(ROA)	13.49	13.05	10.03	9.308	12.86
	(10.20)	(10.54)	(10.60)	(10.40)	(11.19)
	(6.898)	(8.352)	(7.237)	(7.565)	(10.21)
Observations	445	513	435	503	333
R-squared	0.273	0.236	0.313	0.269	0.295
Adjusted R-squared	0.249	0.215	0.280	0.238	0.243
Industry FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES

Table 7.2 shows the output of the different OLS regression models for the lagged variables defined in table 1 in Appendix A. The dependent variable is current corporate social performance (CSP). A one-year lag of the independent variables and control variables is incorporated into every regression. The independent variables are the logarithm of long-term compensation of previous year (lagln(LTcomp)) and the dummy variable ESG related compensation of previous year (lagESGcomp). The moderating variables, logarithm of firm's ESG news with a positive sentiment of previous year (lagln(sentpos)) and logarithm of ESG news with a negative sentiment of previous year (lagln(sentneg)) and their one-year lagged interaction terms with the compensation variables are also included in the regression models. Leverage of previous year (lagLEV), log assets of previous year (lagln(assets)) and return on assets of previous year (lagROA) are added to the empirical model to account for omitted variables. In all columns, the regression models include industry and year fixed effects as well as clustered standard errors in parentheses. The asterisks indicate the significance levels of the coefficients: *** p<0.01, ** p<0.05, * p<0.1.

7 Robustness checks

This chapter discusses the robustness checks, where section 7.1 shows the results of the additional analysis on strong and weak CSP and section 7.2 tests the reversed causality with a Granger causality test.

7.1 Results on strong and weak CSP

Prior research of Li, Ikram and Minor (2019) found that objective CSR related compensation improves CSP, especially for firms with currently low CSR ratings. Therefore, this section studies whether the effect of long-term and ESG related compensation weakens (strengthens) when the starting situation of a firm's CSP score is already high (low). To test this, the dataset on CSP is divided into strong and weak CSP. Strong CSP is defined as the group of firms that have a CSP score higher than the CSP median of 60.09 and weak CSP is defined as a score lower than the CSP median. The same line of reasoning can be applied for firm's ESG news, where the positive (negative) effect of ESG news with a positive (negative) sentiment on the relation of long-term and ESG related compensation on CSP, is expected to be less positive (more negative) for firms with a strong CSP score and more positive (less negative) for firms with a weak CSP score.

The output of the regression models on strong CSP can be found in table 2 in Appendix C and the results on weak CSP are presented in table 3 in Appendix C. The adjusted R-squared decreases in all models compared to results of tables 6.1 and 6.2, ranging from 0.134 to 0.182 in table 2 and between 0.096 and 0.307 in table 3. The highest adjusted R-squared is found in table 3 for model (2.2a) and the lowest for model (2.2b), meaning that the amount of ESG news with a positive sentiment explains the variation in weak CSP better than when the ESG news with a negative sentiment is included in the regression model. Model (1a) in table 2, shows an insignificant positive result for the long-term compensation variable, indicating that long-term compensation does not significantly positively influence strong CSP. Table 3, on the other hand, shows a positive significant effect of long-term compensation on weak CSP at the 5% significance level. Hence, when long-term compensation increases with 1%, strong CSP does not change and weak CSP increases with 1.612. For both weak and strong CSP, a positive significant result is found for ESG related compensation in model (1b). The coefficient for ESG related compensation on strong CSP shows a beta of 2.931 and the beta on weak CSP is 4.105, meaning that when a firm has an ESG related compensation policy, strong CSP increases with 2.931 and weak CSP increases with 4.105. In model (1c) in table 2, ESG related compensation and the interaction term between ESG compensation and long-term compensation show a positive significant result on strong CSP, but the long-term compensation on its own does not show a significant coefficient. This positive interaction term shows that when a firm has both ESG related compensation and long-term compensation in place, strong CSP increases with 2.183. The regression results in table 3 show a positive significant effect of ESG

compensation and long-term compensation on weak CSP, but their interaction term is insignificant. The effect of the ESG news with a positive or negative sentiment shows insignificant results in models (2.1a) and (2.1b) on both weak and strong CSP. The last two columns in table 2 in Appendix C only show a significant effect of ESG related compensation and the natural logarithm of total assets on strong CSP, all other variables are insignificant. In table 3 in model (2.2a), all the variables, except the control variables, show insignificant results on weak CSP.

Concluding, in line with expectations, a stronger positive effect of long-term and ESG related compensation is found for firms with a weak CSP score compared to firms with a strong CSP score. Not in line with the expectations, the results of this study indicate no significant effect of firm's ESG news with a negative or positive sentiment on both strong and weak CSP. These results indicate that the positive (negative) effect of ESG news with a positive (negative) sentiment on the relation of long-term and ESG related compensation on CSP, is not significantly less positive (more negative) for firms with a strong CSP score than for firms with a weak CSP score.

7.2 Reversed causality

A positive significant effect of ESG related compensation and long-term compensation on CSP is found in section 6.1. However, endogeneity in terms of reversed causality, is a common issue in the context of CSP. Reversed causality is found when the dependent variable affects the independent variable (Granger, 1969). This study identifies the causal relation between CSP and the compensation variables and the moderating variables. It could be the case that better socially responsible corporations use more ESG related and long-term compensation contracts. Prior literature of Luo et al. (2012) states that good performing CSP firms are more likely to be targeted by the media. Hence, it could be that CSP influence ESG news. Therefore, a Granger causality test is performed, which explores if a variable is explained by the one-year lag of another value. The null hypothesis is that there is no Granger causality and the alternative hypothesis suggests Granger causality (Granger, 1969). The outcomes of the causality test on CSP and ESG related compensation, can be found in table 1 in Appendix D. The results indicate that ESG related compensation of previous year significantly affect CSP because it shows a p-value smaller than 5%. No evidence is found that there is a causal relation in the opposite direction, thus CSP of previous year does not significantly affect the ESG related compensation. The outcomes of the causality test on CSP and on the natural logarithm of long-term compensation, can be found in table 2 in Appendix D. The results indicate that the natural logarithm of long-term compensation of previous year significantly affects CSP as it shows a p-value of 0.005. A causal relation in the opposite direction is found, thus CSP of previous year significantly affects the natural logarithm of long-term compensation. This indicates that there are some endogeneity concerns in the regression model between CSP and long-term compensation. Furthermore, the causality test shows that firm's ESG news with a positive

sentiment of previous year does not significantly affect CSP. A causal relation in the opposite direction is found, because CSP of previous year does affect firm's ESG news with a positive sentiment. Therefore, there could be some endogeneity issues in the model (2.2a). The Granger causality test indicates that there is no effect of firm's ESG news with negative sentiment on CSP as well as the other way around. The results of the Granger causality test of the moderating variables can be found in table 3 and 4 in Appendix D. Endogeneity concerns can be solved by using an Instrumental Variable (IV). Nevertheless, finding a good IV is often impossible and this research also did not find a perfect IV for long-term compensation and firm's ESG news with a positive or negative sentiment.

8 Conclusion

This chapter concludes the findings, gives recommendations, explains the limitations of this research and gives suggestions for further research.

8.1 Conclusion of the findings

The last couple of years corporations became more aware of the consequences of their business activities on the environment and the surrounding communities. An increasing popular method for corporations to create a better world for the environment and society as a whole, is to improve the CSP. The importance of CSP increased due to the public attention towards CSP. As a consequence of the increased awareness of CSP, this study looks at the impact of long-term incentives and ESG related compensation on CSP. Additionally, the effect of firm's ESG news with a positive or negative sentiment on the positive relationship of long-term and ESG related compensation on CSP is researched. The main research questions of this thesis are as follows: "Do ESG related compensation and long-term compensation positively influence CSP? Does the amount of ESG news of the firm with a positive sentiment strengthens this positive relationship and does the amount of firm's ESG news with a negative sentiment weakens this positive relationship?".

The first findings of this study confirm that firms are focussing more on improving their CSP score. The results indicate that the average CSP score is improving over time, because the average CSP score of 57 out of 100 in 2009 increased to 67 out of 100 in 2017. Furthermore, firms adopt more ESG related compensation over time, where in 2009 only 33% of S&P 500 firms had adopted an ESG related compensation policy and in 2017 this percentage increased towards 43%. The literature shows diverse results on the relationship between long-term compensation and CSP, where some find a positive relationship (Deckop et al., 2006; Mahoney and Thorne, 2006; Berrone and Gomez-Mejia, 2009) and others find no significant relationship (McGuire, 2003; Mahoney and Thorn, 2005). The results of this research show that when long-term compensation increases with 1%, CSP increases with 1.789. This study further investigates the effect of ESG related compensation on CSP. A positive effect of ESG related compensation on CSP is expected, because Li et al. (2016) found a positive relationship between CSR related compensation and CSP. Prior research often investigated the environmental targets in executive compensation (Russo et al., 2005; Cordeiro and Sarkis, 2008). This study researches a broader scope where the environmental, social and governance (ESG) factors are part of the compensation scheme. The results of this study indicate that when a firm obtains ESG related compensation, CSP score increases with 7.461. Furthermore, this study shows that when a firm has an ESG related compensation policy in place, an increase in long-term compensation has no additional effect.

A possible explanation for the increased CSP focus could be due to the increased media attention for this topic. Lee et al. (2013) stated that positive media attention could accelerate the benefits of CSR activities. On the other hand, negative media attention could damage the reputation, the financial and social performance of the firm (Core et al., 2008). Therefore, this research studies the effect of ESG news of the firm with a positive or negative sentiment on the positive relationship of long-term and ESG related compensation on CSP. It is expected that the amount of firm's ESG news with a positive (negative) sentiment strengthens (weakens) this positive relationship. Contrary to the expectations, a negative significant effect is found for firm's ESG news with a positive sentiment on the positive relationship of long-term and ESG related compensation on CSP. These results indicate that when the firm has both compensation policies in place and also experiences ESG news with a positive sentiment, CSP decreases with 4.484. Furthermore, no significant effect of firm's ESG news with a negative sentiment on the positive relationship of long-term and ESG related compensation on CSP is found. In addition, ESG news with a positive and with a negative sentiment shows no significant effect on CSP, when the compensation variables and their interaction terms are not included into the regression model. Concluding, a positive significant effect of long-term compensation and ESG related compensation on CSP is found for the period 2009 until 2017 for the S&P 500 firms. The amount of ESG news of the firm with a positive sentiment weakens this positive relationship and no moderating effect for firm's ESG news with a negative sentiment is found on the relationship of long-term and ESG related compensation on CSP for the S&P 500 firms for the years 2015 to 2017.

The additional regression equations with lagged variables show that ESG related compensation and long-term compensation of previous year positively influence current CSP. In addition, firm's ESG news with a positive sentiment of previous year shows a positive significant effect on the current level of CSP. Lastly, no significant effect is found for firm's ESG news with a positive or negative sentiment of previous year on the positive relationship of long-term and ESG related compensation on current CSP. Furthermore, the effect of long-term and ESG related compensation on weak and strong CSP are tested. The effect of ESG news with a positive and negative sentiment on this relationship is researched. The results show a stronger positive effect of long-term and ESG related compensation for firms with a weak CSP score compared to firms with a strong CSP score. Not in line with the expectations, the results of this study indicate no significant effect of firm's ESG news with a negative or positive sentiment on both strong and weak CSP. Therefore, ESG news with a positive or negative sentiment on the relation of long-term and ESG related compensation on CSP, is not significantly different for firm with a strong CSP score than for firm with a weak CSP score.

8.2 Recommendations

It can be argued that when a firm is not socially responsible it is hard to stay in business because different stakeholders such as customers, suppliers, shareholders and the government, demand for an improved CSP. In addition, a good CSP score can have multiple benefits such as social, economic and reputational benefits. Therefore, increasing the CSP can be interesting for the board of directors and the shareholders. The results of this study show that long-term compensation and ESG related compensation increases CSP, but that when a firm has an ESG related compensation policy in place, an increase in long-term compensation has no additional effect. Therefore, this research can be useful for board of directors in how to optimally design remuneration schemes. Furthermore, ESG related compensation policies could reduce the externalities on the communities and firms are more likely to achieve their environmental and social goals. Hence, policy makers should also focus on improving the CSP of corporations by for example making the regulatory (tax) framework of long-term compensation and ESG related compensation contracts more attractive for corporations. The findings of this study further indicate that ESG news of the firm with a positive sentiment decreases the positive effect of the long-term and ESG related compensation on CSP. A possible explanation for this negative effect could be that positive news about the firm can cause the firm to become complacent and not manage their ESG activities. Therefore, it is important, even after some positive news, that firms make efforts to improve CSP.

8.3 Limitations and suggestions for further research

This study has the following limitations and suggestions for further research. First, the independent variable indicates if the company has an ESG related compensation policy or not. A limitation of this variable is that it does not show the distribution of the incentive scheme. It would be interesting to know how much of the total pay exists of ESG related compensation, because this ratio would likely give a better indication of the incentives of the firm towards ESG. Furthermore, the ESG related compensation variable does not show whether the firm uses a hard quantitative or soft qualitative target. Maas (2018) did not find an effect of soft targets but did find a significant effect of hard CSP targets on CSP. Hence, the way the target is defined can influence the impact of ESG related compensation on CSP. Therefore, next steps for other research could be to gather more detailed data on the ratio of ESG related compensation to total compensation and whether ESG related compensation is defined as a hard or soft target. The dependent variable, CSP is a subjective measure with multiple measurements and different institutions using other proxies for CSP. Therefore, further research could use a multiple CSP measurement to test if the results change when a different CSP proxies are used. In this study, CSP is the score from 0 to 100 based on the ESG pillars, as explained in section 4.1.1. In line with this, a suggestion for further research is to study the effect of long-term and ESG related compensation on the social, environmental and governance category separately. Another limitation of this study is that although a regression model with one-year lagged independent variables is used, endogeneity can still

be an issue. The Granger causality test shows that there is some reversed causality in the relationship between long-term compensation and CSP and between firm's ESG news with a positive sentiment and CSP. Therefore, further research could use an instrumental variable to solve the endogeneity concerns. In addition, the sample for the firm's ESG news variable only contains S&P 500 firms from 2015 to 2017, because of data limitation of the Bloomberg database. This resulted in a narrow sample with observations ranging from 462 to 541 observations, when firm's ESG news variable is added to the empirical model. An additional limitation of this data provided by Bloomberg, is that it gives no insights in the content of the news stories, meaning that it is not clear what the news message is and how negative or positive this news is. Furthermore, Bloomberg broadly specifies which media platforms are used, but no specific platform is mentioned. An interesting further examination could be to study the effect of social media, such as Twitter or Facebook, on CSP, because Twitter is a powerful platform and widely used by corporations to communicate about topics such as CSP.

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APPENDIX A

Table 1: Variable description

	Variable	Description	Source
Dependent variable	Corporate social performance (CSP)/ CSR performance	The dependent variable is measured with the Thomson Reuters ESG score, which is an overall company score based on the reported information in the environmental, social and corporate governance pillars. The scores are assigned on a scale from 0-100.	ASSET4 ESG database
	Strong CSP	CSP strengths is defined as the CSP score higher than the CSP median of 60.09	
	Weak CSP	CSP weaknesses is defined as the score lower than the CSP median of 60.09.	
Independent variables	ESG related compensation (ESGcomp)	This variable is the dummy independent variable, indicating whether the company has an ESG related compensation policy or not.	ASSET4 ESG database
	Long-term compensation (LTcomp)	Long-term compensation is the firm-level yearly sum of the fair value of stock awards and the value of option awards divided the total compensation. This variable is denoted in thousands.	Execucomp
Moderating variable	ESG news with a positive sentiment (sentpos)	It is the natural logarithm of the amount of environmental, social and governance (ESG) news stories predicted to have a positive sentiment on a particular day.	Bloomberg
	ESG news with a negative sentiment (sentneg)	This variable is the natural logarithm of the amount of ESG news stories predicted to have a negative sentiment on a particular day.	
Control variable	Firm size (assets)	Natural logarithm of total asset.	Compustat
	Return on assets (ROA)	This variable is calculated by dividing the net income with the total asset.	
	Leverage (LEV)	Leverage is the value of debt divided by the value of total assets of an organization.	
	Industry	A dummy variable based on the 4-digit Standard Industrial Classification (SIC) code according to the official SIC categories of OHSA.	
	Year	A dummy variable for each year in the dataset between the period 2009-2017.	

*These definitions are retrieved from the ASSET4 ESG data glossary from Datastream, the Bloomberg terminal and WRDS.

* The moderating variable data is obtained through the following code: ***=BDH(B$2&"EQUITY";"ESG_NEWS_COUNT_ES_NEG";"01/01/2010";"31/12/2017";"Period";"D";"cols=2;rows=782"),*** where in row two the company tickers for all the S&P 500 firms where denoted and period D means that the data is gathered daily.

Table 2: Sample selection procedure

Total observations in the beginning		**3,563**
Truncate data at the 1% level and the 99% level	Drop if long-term compensation is smaller than the 1 percentile and bigger than the 99 percentile	-6
	Drop if ESG news with a negative sentiment is smaller than the 1 percentile and bigger than the 99 percentile	-8
	Drop if ESG news with a positive sentiment is smaller than the 1 percentile and bigger than the 99 percentile	-8
	Drop if total assets are smaller than the 1 percentile and bigger than the 99 percentile	-12
	Drop if ROA is smaller than the 1 percentile and bigger than the 99 percentile	-12
	Drop if leverage is smaller than the 1 percentile and bigger than the 99 percentile	-7
Total observations after dropping outliers and missing values		**3,510**

Table 3: CSP summary statistics per industry and over time

CSP		N	Mean	Min	Max
Industry	Construction	54	42.67	22.3	66.75
	Manufacturing	1567	62.11	8.6	97.66
	Mining	176	59.71	16.19	92.14
	Public administration	10	70.67	57.9	86.46
	Retail trade	273	64.77	10.53	97.41
	Services	513	55.52	18.62	94.04
	Transportation, electric, gas & sanitary services	532	60.84	19.67	88.06
	Wholesale trade	93	49.08	19.83	82.07
Year	2009	334	56.52	10.53	97.41
	2010	347	57.83	16.64	97.66
	2011	357	57.97	16.43	92.86
	2012	358	57.61	8.60	93.19
	2013	366	58.20	12.87	92.66
	2014	371	58.90	19.08	92.51
	2015	377	61.44	18.99	93.54
	2016	386	64.60	25.16	94.04
	2017	392	66.45	22.28	92.64

Table 4: ESG related compensation summary statistics per industry and over time

ESG related compensation		N	Mean	Min	Max
Industry	Construction	54	0.074	0	1
	Manufacturing	1576	0.405	0	1
	Mining	176	0.761	0	1
	Public administration	10	1.000	0	1
	Retail trade	273	0.227	0	1
	Services	513	0.253	0	1
	Transportation, electric, gas & sanitary services	532	0.598	0	1
	Wholesale trade	93	0.172	0	1
Year	2009	334	0.326	0	1
	2010	347	0.375	0	1
	2011	357	0.420	0	1
	2012	358	0.433	0	1
	2013	366	0.423	0	1
	2014	371	0.410	0	1
	2015	377	0.411	0	1
	2016	386	0.394	0	1
	2017	392	0.434	0	1

APPENDIX B

Figure 1: histogram CSP

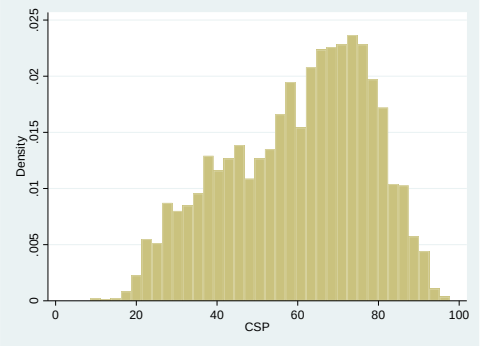


Figure 2: histogram ln(LTcomp)

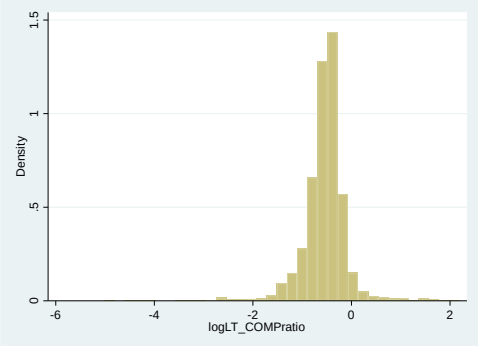


Figure 3: histogram ln(sentneg)

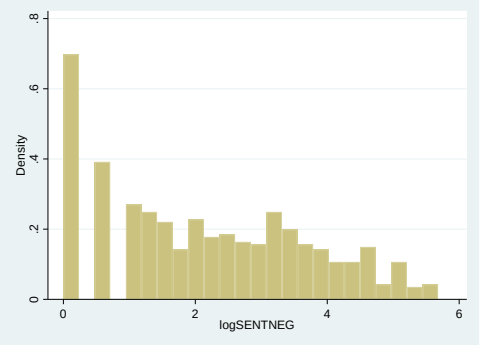


Figure 4: histogram ln(senpos)

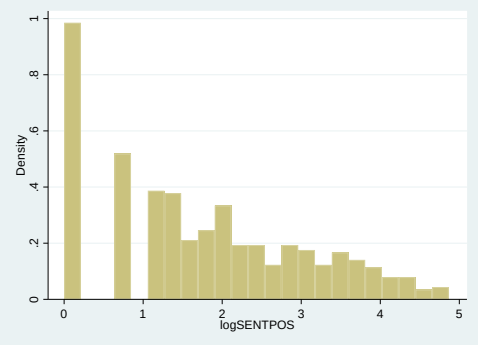


Figure 5: histogram Leverage

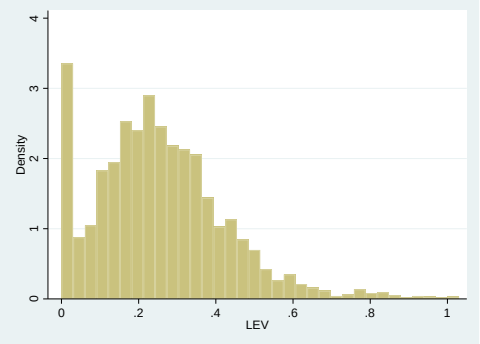


Figure 6: histogram ln(assets)

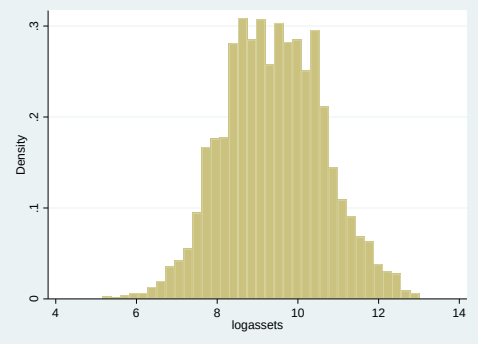
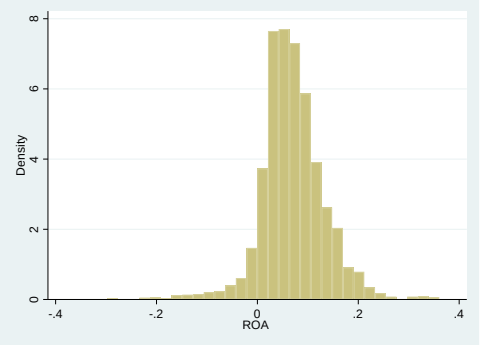


Figure 7: histogram ROA



APPENDIX C

Table 1: Regression results with industry and year coefficients

Variables	(1a)	(1b)	(1c)	(2.1a)	(2.1b)	(2.2a)	(2.2b)
				CSP			
ESG_comp		7.461***	8.301***			10.11***	8.377***
		(0.576)	(0.960)			(3.152)	(2.940)
Ln(LTcomp)	1.789***		1.358**			-6.188*	3.150
	(0.634)		(0.671)			(3.239)	(2.246)
Ln(sentpos)				-0.449		0.960	
				(0.486)		(0.933)	
ESGcomp* ln(LTcomp)			1.460			9.238*	1.832
			(1.507)			(5.035)	(4.574)
ESGcomp* ln(sentpos)						-2.166	
						(1.409)	
Ln(sentpos)* ln(LTcomp)						2.069	
						(1.562)	
Ln(LTcomp)* ln(LTcomp)* ln(sentpos)						-4.484**	
						(2.276)	
Ln(sentneg)					-0.474		-0.493
					(0.406)		(0.652)
ESGcomp* Ln(sentneg)							-0.783
							(0.913)
Ln(LTcomp)* ln(sentneg)							-0.992
							(0.964)
Ln(LTcomp)* ESGcomp* ln(sentneg)							-1.145
							(1.490)
LEV	-4.775**	-7.154***	-5.820***	2.845	-5.549	0.620	-5.812
	(1.877)	(1.770)	(1.793)	(4.371)	(4.195)	(4.277)	(4.080)
logassets	8.510***	7.737***	7.657***	5.225***	6.578***	4.859***	6.114***
	(0.209)	(0.214)	(0.217)	(0.622)	(0.580)	(0.598)	(0.565)
ROA	22.28***	20.75***	21.59***	22.94**	29.79***	16.17	26.63***
	(4.536)	(4.300)	(4.441)	(10.47)	(10.12)	(10.77)	(10.15)
Constant	-35.62***	-26.48***	-28.42***	4.172	-10.31	-9.409	-6.723
	(2.405)	(2.447)	(2.369)	(9.976)	(6.794)	(6.028)	(6.485)
2010	0.632	0.332	0.223				
2011	-0.048	-0.484	-0.631				
2012	-1.145	-1.503	-1.718				
2013	-0.875	-1.220	-1.338				
2014	-0.594	-0.491	-0.916				
2015	2.664**	2.786**	2.393**				
2016	5.308***	5.675***	5.212***	2.147	1.694***	2.921**	1.823
2017	5.567***	6.030***	5.235***	3.499**	2.124***	4.161***	2.021
Manufacturing	16.973***	11.809***	15.138***	11.983	14.040***	23.797***	12.683***
Mining	11.143***	3.716**	6.989***	12.387	17.333***	21.107***	12.871***
Public administration	12.283***	3.568	7.331***	10.182	11.899**	17.260***	6.841
	19.620***	15.511***	19.150***	14.917	17.076***	27.783***	17.163***
Retail trade	12.968***	8.820***	11.677***	9.735	10.664**	22.607***	10.667***
Services	7.811***	3.398**	6.783***	2.510	4.783	15.306***	3.825
Transportation electric, gas and sanitary services	8.083***	3.231	7.630***	6.695	9.137	18.376***	8.523
Wholesale trade							
Observations	2,878	2,950	2,878	471	541	462	532
R-squared	0.381	0.410	0.417	0.228	0.292	0.282	0.351

Table 1 shows the output of the different OLS regression models for the variables defined in table 1 in Appendix A. The dependent variable is corporate social performance (CSP). The independent variables are the logarithm of long-term compensation (ln(LTcomp)) and the dummy variable ESG related compensation (ESGcomp). The moderating variables, logarithm of ESG news with a positive sentiment (ln(sentpos)) and logarithm of ESG news with a negative sentiment (ln(sentneg)) and their interaction terms with the compensation variables are also included in the regression models. Leverage (LEV), log total assets (ln(assets) and return on assets (ROA) are added to the empirical model to account for omitted variables. This table also shows the coefficients of the year and industry fixed effects. In all columns, the regression models include industry and year fixed effects as well as clustered standard errors in parentheses. The asterisks indicate the significance levels of the coefficients: *** p<0.01, ** p<0.05, * p<0.1.

Table 2: Results on strong CSP

Variables	(1a)	(1b)	(1c)	(2.1a)	(2.1b)	(2.2a)	(2.2b)
				Strong CSP			
ESGcomp		2.931***	4.030***			5.446**	3.919*
		(0.400)	(0.697)			(2.482)	(2.008)
ln(LTcomp)	0.266		-0.798			-2.653	0.484
	(0.550)		(0.674)			(1.944)	(1.896)
ln(sentpos)				0.118		0.336	
				(0.310)		(0.554)	
ESGcomp			2.183**			5.777	2.443
* ln(LTcomp)			(1.096)			(4.384)	(3.075)
ESGcomp*						-0.315	
ln(sentpos)						(1.051)	
ln(sentpos)*						0.463	
ln(LTcomp)						(0.925)	
ln(LTcomp)*						-1.837	
ESGcomp*						(1.816)	
ln(sentpos)							
					0.0546		-0.284
ln(sentneg)					(0.262)		(0.457)
							-0.0531
ESGcomp*							(0.634)
ln(sentneg)							
							-0.911
ln(LTcomp)*							(0.708)
ln(sentneg)							
							-0.432
ln(LTcomp)*							(1.024)
ESGcomp*							
ln(sentneg)							
LEV	-1.071	-1.767	-1.780	-0.125	-1.318	-0.861	-2.034
	(1.409)	(1.370)	(1.377)	(2.748)	(2.756)	(2.775)	(2.720)
ln(assets)	2.703***	2.456***	2.468***	2.321***	2.657***	1.954***	2.515***
	(0.181)	(0.177)	(0.179)	(0.404)	(0.406)	(0.386)	(0.404)
ROA	12.65***	12.54***	13.38***	7.746	10.09	5.476	8.951
	(3.708)	(3.634)	(3.677)	(6.707)	(6.835)	(6.688)	(6.938)
Constant	47.83***	43.57***	48.19***	44.44***	47.29***	51.73***	47.22***
	(2.058)	(1.848)	(2.029)	(3.720)	(4.169)	(4.081)	(4.095)
Observations	1,585	1,616	1,585	391	414	385	409
R-squared	0.160	0.188	0.192	0.163	0.167	0.213	0.208
Adj. R-squared	0.150	0.178	0.182	0.134	0.143	0.174	0.172
Time FE	YES	YES	YES	YES	YES	YES	YES
year FE	YES	YES	YES	YES	YES	YES	YES

Table 2 shows the output of the different OLS regression models with the dependent variable strong CSP. The other variables are described in table 1 in Appendix A. In all columns, the regression models include time and year fixed effects as well as clustered standard errors in parentheses. The asterisks indicate the significance levels of the coefficients: *** p<0.01, ** p<0.05, * p<0.1.

Table 3: Results on weak CSP

Variables	(1a)	(1b)	(1c)	(2.1a)	(2.1b)	(2.2a)	(2.2b)
				Weak CSP			
ESGcomp		4.105***	5.525***			2.183	7.274
		(0.681)	(1.100)			(7.460)	(5.366)
ln(LTcomp)	1.612**		1.422**			-0.390	0.436
							(6.110)
	(0.640)		(0.683)			(4.954)	
ln(sentpos)				-0.405		-1.057	
				(0.924)		(1.346)	
ESGcomp *ln(LTcomp)			2.031			-6.740	3.593
			(1.569)			(12.62)	(7.503)
ESGcomp* ln(sentpos)						1.778	
						(2.472)	
ln(sentpos)* ln(LTcomp)						-0.955	
						(2.258)	
ln(LTcomp)* ESGcomp* ln(sentpos)						0.264	
						(3.898)	
					0.392		0.328
ln(sentneg)					(0.606)		(1.053)
							-0.737
ESGcomp* ln(sentneg)							(1.485)
							-0.570
ln(LTcomp)* ln(sentneg)							(1.755)
							-0.878
ln(LTcomp)* ESGcomp* ln(sentneg)							(2.417)
LEV	-6.760***	-8.392***	-7.130***	11.59**	-2.099	10.73**	-0.776
	(1.865)	(1.811)	(1.830)	(5.277)	(6.115)	(5.107)	(6.723)
ln(assets)	4.201***	4.027***	3.868***	4.451***	2.559**	5.044***	2.246*
	(0.291)	(0.286)	(0.292)	(1.045)	(1.029)	(1.181)	(1.277)
ROA	3.141	1.794	2.587	34.58*	14.20	40.99*	13.12
	(4.305)	(4.042)	(4.277)	(17.55)	(12.80)	(20.95)	(14.43)
Constant	3.931	4.875*	6.770**	-2.051	27.32***	-9.387	27.23**
	(2.900)	(2.793)	(2.892)	(8.389)	(9.494)	(10.64)	(12.52)
Observations	1,293	1,335	1,293	80	127	77	123
R-squared	0.170	0.196	0.194	0.374	0.211	0.462	0.230
Adj. R-squared	0.158	0.184	0.181	0.273	0.127	0.307	0.096
Industry FE	YES	YES	YES	YES	YES	YES	YES
year FE	YES	YES	YES	YES	YES	YES	YES

Table 3 shows the output of the different OLS regression models with the dependent variable weak CSP. The other variables are described in table 1 in Appendix A. In all columns, the regression models include time and year fixed effects as well as clustered standard errors in parentheses. The asterisks indicate the significance levels of the coefficients: *** p<0.01, ** p<0.05, * p<0.1.

APPENDIX D

Table 1: Granger causality test CSP and ESG related compensation

Null hypothesis	Chi2	df	Prob > Chi2
ESG related compensation does not granger cause CSP	0.015175	1	0.697
CSP does not granger cause ESG related compensation	6.0146	1	0.014

Table 2: Granger causality test CSP and long-term compensation

Null hypothesis	Chi2	df	Prob > Chi2
Log long-term compensation does not granger cause CSP	4.46893	1	0.03
CSP does not granger cause Log long-term compensation	7.96	1	0.005

Table 3: Granger causality test CSP and ESG news with a positive sentiment

Null hypothesis	Chi2	df	Prob > Chi2
Log ESG positive news sentiment does not granger cause CSP	5.6302	1	0.018
CSP does not granger cause Log ESG positive news sentiment	0.77985	1	0.377

Table 4: Granger causality test CSP and ESG news with a negative sentiment

Null hypothesis	Chi2	df	Prob > Chi2
Log ESG negative news sentiment does not granger cause CSP	0.09128	1	0.763
CSP does not granger cause Log ESG negative news sentiment	1.5734	1	0.210