

**Disentangling the Relationship between  
CSR and Executive Compensation:  
Evidence of S&P500 listed companies**



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## **Abstract**

This research investigates the relationship between Corporate Social Responsibility (CSR) performance and executive compensation in the context of environmental, social, and governance (ESG) scores. Using regression analysis on a sample of S&P 500 firms over the period 2012-2022, the study examines the effect of ESG scores on total, cash-based, and equity-based compensation for executives. The paper's findings reveal that higher ESG scores are associated with lower executive compensation, particularly in cash-based compensation. The negative impact of ESG scores on executive pay is driven by the environmental pillar score, suggesting that efforts to improve environmental performance may significantly influence compensation schemes. However, the study finds no significant relationship between governance pillar scores and executive compensation. Additionally, the moderating effect of financial performance on the relationship between CSR performance and executive compensation is explored, revealing that return on assets (ROA) positively moderates the impact of ESG scores on cash-based compensation.

### **1. Introduction**

While the topic of corporate social responsibility (CSR) has been around for several years, companies still struggle with finding the most efficient way to embed CSR into their corporate policies. The challenge as argued by Dahlsrud (2008), is to understand the social structure of CSR, in specific contexts, and then applying this knowledge into the development of a firm's business strategy. Nonetheless, CSR refers to a company's social behaviour that reaches beyond its legal obligations and internal interests as a firm (McWilliams and Siegel, 2001). Thus, the idea of CSR encompasses any actions made by corporations in the context of harm or benefit added to social welfare. Environmental, social and/or governance (ESG) activities are frequently coined as the extension of CSR, whereby companies incorporate issues falling under the three facets into their business model (Gillan et al., 2021) providing socially responsible behaviour with a tangible measure.

Discussions regarding CSR/ESG have gained ground for governments, shareholders, and investors alike, with the integration of ESG goals into corporate strategy becoming a way to measure a company's long-term sustainability and resilience (European Commission, 2019; KPMG, 2020). The increase in awareness of climate change and responsibility beyond the boardroom is creating a transition away from traditional financial earnings towards more sustainable practices within firms (De Lucia et al., 2020). This convergence towards sustainability and rise in ESG goals is already apparent to investors and their subsequent socially responsible investments, yet the strategic importance to corporations is often overlooked in addition to a lack of understanding of how these goals influence the incentives and decision-making of managers (Russo and Fouts, 1997; Margolis and Walsh, 2003).

Existing literature points out the value-enhancing capabilities of social and environmental engagement as well as the novel part such activities play in a firm's competitive strategy (Galbreath, 2013; Malik, 2015). Jian and Lee (2015), indicate that investments made by a firm in CSR can be either value-creating or value-destructing, complementary to Di Giuli and

Kostovetsky (2014), which argue that the benefits to stakeholders because of social responsibility will be at the expense of firm value (albeit this argument should be taken with caution). This shows the relevance and importance of linking CSR into corporate policies, within reason, due to the value-enhancing (destructing) capabilities associated with such behaviours.

In practice, a firm's main goal of its business activity is not its CSR performance, which raises the question as to why CEOs partake in CSR activity. The attention paid to ESG factors by investors and stakeholders may influence the incentives and decision-making of executives. Companies with a strong focus on ESG performance are likely to face greater scrutiny from investors and other stakeholders, and therefore may be more likely to prioritize ESG issues in their strategic decision-making (Khan, Serafeim, and Yoon, 2016). Research has shown that companies with better ESG performance tend to have lower costs of capital, higher stock returns, and better financial performance compared to their peers with weaker ESG performance (Eccles and Serafeim, 2013). Moreover, executives may be incentivized to improve ESG performance in order to improve the company's financial performance and enhance their reputation.

A Cones (2017) study shows that 78% of the world believes that companies should be responsible for improving current social justice issues. As previously mentioned, appropriate measure must be implemented to guide managers in their CSR related decision-making which may help ameliorate these issues. With rising pressure, CSR activities are increasingly often interwoven into firm business strategies, which has led to the inclusion of ESG targets in executive compensation schemes. 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. In 2021, c. 97% of S&P 500 companies had included ESG performance metrics in their incentives and only 12% had added ESG measures as part of their executives' long-term plan (Spierings, 2022). Linking compensation plans to environmental, social and governance performance ('ESG related compensation') is becoming more common, especially when the inclusion of ESG targets in compensation schemes can lead better long-term performance through motivating managers to increase CSR investments (Strandberg, 2009).

The presence of a relationship between ESG goals and executive compensation as well as corporate financial performance (CFP) is clear – however the effect of these factors on each other is not as obvious. Hence, this thesis aims to investigate how does CSR performance, namely ESG scores, affect executive compensation and subsequently a firm's corporate financial performance. Research on this topic has shown some conflicting results (Malik, 2015), where some have found a negative relationship between social performance and compensation (Jian and Lee, 2015; Cai et al., 2011), others state with higher CSR performance comes an increase in executive rewards (Berrone and Gomez-Mija, 2009; Mahoney and Thorne, 2006). Consequently, this leads to the following research question which will be explored in this paper:

*What is the effect of CSR performance, measured by ESG scores, on executive compensation?*

Due to the growing popularity of CSR and ESG, this study is highly relevant for businesses and their practices. When performing highly in CSR, the image and reputation of a firm often also improves, which may even lead to financial benefits. Furthermore, this paper can also provide insights into whether CEOs and managers consider CSR investments due to altruistic reasons or do they have other strategic motives. Additionally, this paper contributes to existing literature by investigating how specific pillars of CSR performance influence compensation as well as how the CSR performance-executive compensation relationship affects financial performance.

The remainder of the paper is structured as follows: Chapter 2 provides an overview of existing research and literature on CSR/ESG, pertinent theories, compensation and financial performance as well as hypothesis formation. Chapter 3 explains the methodology and data. Lastly, Chapter 4 provides the empirical model of the paper as well as the data analysis. Chapter 5 continues with insights into the results and Chapter 6 closes off with a discussion and conclusion of the paper, respectively.

## **2. Theoretical Background and Hypotheses**

### **2.1 Stakeholder, Shareholder and Agency Theory**

The importance of CSR/ESG in the corporate arena is dichotomous. In an ideal world, CEO and shareholder interests would perfectly align and every decision a CEO makes would maximize shareholder value, however this is not the case.

One view, namely stakeholder theory, considers that investment in CSR can be potentially value-enhancing. Stakeholder theory implies that ESG can and should affect financial performance, arguing that companies should look beyond just their shareholders, but also include other constituents (both internal and external stakeholders) such as employees, the government and society among others (Freeman, 2010). Under this view, managers should focus on primary stakeholders to facilitate sustainable success and design incentive plans that align CEO incentives with the concerns of primary stakeholders (Clarkson, 1995). Stakeholder theory examined by Barnett and Salomon (2012), shows that through increasing social spending (and thus strengthening stakeholder relations), corporations can experience higher financial performance via lower transaction costs and greater market opportunities.

In contrast, shareholder theory, represented by Friedman (2007), would argue that CSR should not affect financial performance. Friedman's 'hardcore' economic argument implies that 'the business of business is business', and thus shareholder theory centres around the idea that the sole purpose of a business is to increase shareholder value. According to Kocmanova and Docekalova (2012), investment managers exhibit a preference for integrated ESG due to its suspected creation of sustained shareholder value. If shareholder value is created over time, then a CEO's compensation should align with a firm's long-term growth and returns (Hewitt and Bowie, 2011).

To conclude, both theories are similar in the sense that CSR performance can influence executive compensation and thus manage their decision-making processes. The difference,

however, is that shareholder theory advocates for maximising shareholder wealth as the reason to perform well socially, while stakeholder theory argues that the goal of good social performance is to bring value to all stakeholders which over time will also maximise shareholder value.

Similar to the theories mentioned above, managers often must solve their own maximization problem with the goal of increasing their own utility; known as the agency problem (Jensen and Meckling, 1976 ; Fama 1980). Corporate governance policies aim to ensure that managers act in a manner consistent with shareholder value maximization, and part of this goal is achieved through compensation policy (Jensen and Meckling, 1976 ; Fama 1980). The agency cost view states that CEOs receive non-monetary benefits when corporations spend on CSR/ESG activities, with these rewards being in fact at the expense of shareholders. Under shareholder theory, an ideal compensation would involve executive decision-making that maximises shareholder value – done by exposing the CEO to different risk/reward incentives (Guay, 1999). A study done by Li et al. (2019) suggests that an effective way of mitigating the agency problem is to relate compensation based on CSR performance. The implication of this involves executives who are responsible for the appropriate strategic implementation of CSR/ESG activity and thus may be influenced by any incentives advocating integration into corporate policies, be it for personal gain or for the firm.

## **2.2 Compensation and ESG**

Prior literature has widely examined the relationship between CSR and compensation, yet the results remain divergent and inconclusive. These inconsistencies can be attributed to the differences in variable measurements or misspecifications of econometric models.

CEO compensation can be divided into three components: total, equity-based, and cash-based compensation. Total compensation can be seen as the sum of equity-based (long-term) and cash-based (short-term) compensation, which consists of salary, bonus, other annual pay, restricted stock granted, stock option granted, long-term incentive pay-outs, and all other total compensation granted to a CEO. More specifically, under equity-based compensation fall restricted stocks and stock options granted (Karim et al., 2018), with salary and bonuses making up cash-based compensation. Karim et al. (2018) argue that the proportions of these components are also important to note, with the proportion of equity-based compensation, compared to total compensation, is higher than that of cash-based compensation. A higher proportion of equity-based compensation signals that more stocks remain within the firm as opposed to cash extracted from the firm to fulfil pay-outs. In other words, when stocks remain within the firm, firm value increases or remains the same while a cash outflow will decrease firm value.

How corporations benefit or harm social welfare is a growing concern among stakeholders, policymakers and consumers alike. Thus, CSR seeks to increase a firm's responsibility (outside the firm) and shareholder value simultaneously. CSR in itself is a concept, whereas ESG serves as one of the more commonly used measures of CSR, which are easily obtained through various databases. ESG then refers to how corporations "integrate environmental, social and

governance concerns into their business model” (Gillan et al., 2021 p. 2). As such, ESG acts as a tangible measure of socially responsible behaviour. More specifically, ESG indicators reflect changes within firms in terms of their (sustainable) development over a specific period. Since ESG will be one of the main components of this study, it is worth explaining the factors that compose ESG. As stated by Ioannou and Serafeim (2012), the individual components of ESG cover a broad range of data points. The ‘Environmental’ component covers factors such as CO2 emissions, pollution controversies, water and energy use. The ‘Social’ pillar covers employee turnover, health, accidents and safety. Lastly, the ‘Governance’ pillar covers board issues, corporate conduct and corruption among others (Kotabe et al., 2002).

The relation between the two aforementioned variables is often hard to determine due to their nature and not being directly observable through financial data. Understanding the motivation behind executive decision-making to engage in CSR can provide a better picture of the relationship at hand. Engagement in CSR activity can be either internally or externally motivated. If a CEO is externally motivated, then CSR will be implemented as an instrument for the firm, whereby investments in CSR are made if they are deemed to maximise shareholder wealth which will in turn increase CEO compensation (Graafland et al., 2010). If a CEO is internally motivated, then increased CSR activity stems from the individual's own interest characterised by the idea of ‘doing the right thing’ and thus not seeking additional compensation when engaging in CSR (Rekker, Bensen and Faff, 2014).

### **2.3 (CSR/ESG) Performance and (CEO) Compensation**

Research has shown that CSR activity can serve as a mechanism to provide value-maximising benefits, with executives playing a key role in CSR implementation in business strategies. Hence CEOs are often incentivised to include CSR in corporate policies in such a way that satisfies both internal and external shareholders, which has created a topic that academics are interested in – the relationship between CSR performance and executive compensation.

What exactly is the relationship between these two variables and how do specific aspects of CSR influence the compensation of executives (i.e., individual ESG pillar scores)?

Mahoney and Thorn (2006) examined the impact of executive compensation on CSR engagement and found a significant positive relation between CEO salary and CSR weaknesses (weak performance), between CEO stock options and total CSR, and between CEO bonuses and CSR strengths (strong performance). Additionally, Li et al. (2016) argue that compensation linked to CSR resulted in better social performance of firms, complemented by Ott (2017) who also proposes that firms with higher performance in social aspects experience increased executive payments.

This aligns with the argument that linking compensation with external issues (i.e., social objectives) to direct executives in their decision-making towards more CSR related commitments and investments, supported by McGuire et al. (2003).

Barnea and Rubin (2010) propose the overinvestment hypothesis (based on the agency theory), where managers overinvest in CSR activity to enhance their reputation, as CSR plays a role in promoting firm performance through enhance reputation and as a competitive advantage

(Saeidi et al., 2015), from this it can be inferred that as firm performance increases, so does executive compensation.

Jian and Lee (2015) argue that CEO compensation is negatively associated with CSR investment. Their study provides evidence that with excessive investment in CSR, CEOs will receive lower compensation. However, this does not explicitly mean that if a firm performs better in CSR metrics (i.e., ESG scores), that executive compensation will also decrease. By separating CSR into abnormal and normal investments, they find that there is a positive association between normal CSR and CEO compensation. In fact, linking environmental targets with compensation improves both social and environmental performance of firms (Flammer et al., 2019).

Cai et al. (2011) proposes a negative association between CSR and remuneration, leveraging on the conflict-resolution hypothesis (based on stakeholder theory). This hypothesis states that CSR initiatives decrease firm risk due to the resolution of management-stakeholder conflicts, which lowers executive remuneration, moreover, CEOs are expected to accept lower wages than less 'social' firms due to wage disparities. Gillan et al. (2010) also find a negative relationship between CSR and executive compensation. Their paper states that as strong ESG policies are adopted by CEOs, then their unexplained salary compensation lowers compared to that of their peers.

Although current literature shares mixed views on the relationship between CSR and executive compensation, academics advocate for the use of linking CEO incentives to CSR performance (Li et al., 2016; Ott, 2017). While most literature has investigated the amount of CSR activity on executive compensation, little research has covered how measuring the performance of CSR activity (both overall scores and individual pillars) play a role in the determination of remuneration. Therefore, based on the above discussed papers the first hypothesis of this paper is as follows:

**Hypothesis 1:** *The higher the CSR performance (i.e., ESG score) of a firm, the lower the compensation received by executives.*

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. Multiple studies focus on a single pillar of ESG (i.e., Barnett and Salomon, 2012; San Ong et al., 2014), which leads us to believe that certain ESG factors may have a greater influence executive compensation. For example, Melnyk et al. (2003) state that possessing a stronger environmental score can improve firm value and attract more stakeholders. Similarly, since environmental practices involve a firm's use of natural resources and their attempts to reduce environmental emissions, through a stakeholder theory lens firms can perform better and provide motive for executives to improve their ESG scores. The stakeholder theory implies that companies should increase their environmental awareness and extend their view beyond solely shareholder responsibilities, thus by satisfying external stakeholders they can create a more favourable position for themselves – which can in turn result in increased compensation. Additionally, since ESG consists of three components, and

given that in certain contexts environmental, social and governance issues may hold different weights in terms of their importance to conform to expected behaviours, the influence these pillars have on a manager's decision-making may differ.

Ricart et al. (2005) argued that it is essential to include environmental targets in executive compensation to force managers to consider other (external) stakeholder and stimulate investments in more sustainable projects and social developments. A study by Berrone and Gomez-Meija (2009) shows that CEO pay increases with good environmental performance and governance mechanisms. Russo and Harrison (2005) showed that including environmental targets in compensation targets has a positive effect on environmental performance although the results are supported with weak evidence. On the other hand, studies also show that in firms where directors hold significant ownership, when environmental performance increases, top executives experience less rewards for such activity (Zou et al., 2014). Cordeiro and Sarkis (2008) show that there is a negative effect in the relationship between environmental performance and executive compensation, but building on Russo and Harrison (2005), Cordeiro and Sarkis' research states that executives are rewarded for environmental performance only when the environmental targets are explicitly linked to executive compensation.

**Hypothesis 2a:** *CSR performance measured by the Environmental Pillar has a negative effect on the compensation of executives.*

A substantial amount of research has been done on the associations between CSR/ESG performance and a firm's governance. The main question explored in these studies is whether CSR performance is the result of managerial decisions, that are well governed, or can it be attributed to managers behaving out of self-interest i.e., Benabou and Tirole (2010). Li, Minor and Hong (2016) go on to say that corporate governance mechanisms are crucial in determining if managers receive compensation related to CSR goals, with CSR related compensation exhibiting a positive impact on CSR initiatives. The results of their study provide evidence that CSR targets in executive compensation improve CSR activities while increasing shareholder value. Literature on ESG/CSR and executive pay also investigates the relationship with CSR as the dependent variable. For example, Ferrel et al. (2016) find that well-governed firms, that experience less agency problems, actually engage more in CSR activity. Investments made by managers in CSR are largely influenced by the interaction between whether the decision is based on intrinsic or extrinsic motivation as well as the level of corporate governance within the firm (Borghesi, Houston and Naranjo, 2014).

**Hypothesis 2b:** *CSR performance measured by the Governance Pillar has a positive effect on the compensation of executives.*

Regarding the social pillar, studies show that the inclusion of social targets in executive compensation has a positive effect on CSR performance (Maas, 2018; Flammer et al., 2019; Li et al., 2019). Bilyay-Erdogan, Danisman and Demir (2023) find that companies with higher ESG performance are more likely to pay higher dividends, which is further supported by the



three pillars of ESG. While, Bilyay-Erdogan et al. (2023) investigated the effect of ESG performance, across all pillars, on dividends – very few studies have examined the relationship between individual ESG pillars on executive compensation simultaneously and in-depth. As such, it is reasonable to assume that ESG related compensation, influences manager's in their decision-making with regards to long-term value creation and the extent that they consider external stakeholders.

**Hypothesis 2c:** *CSR performance measured by the Social Pillar has a positive effect on the compensation of executives..*

## **2.4 ESG and Financial Performance**

Existing research often focuses on the link between CSR and financial performance, yet measures of CSR and financial performance differ. Studies within finance use a wide range of measures of firm performance and ESG, besides utilising various estimation techniques to determine the relationship. Consequently, this produced contrasting results, where opinions continue to differ, within studies that concluded the same effect (i.e., negative or positive) of ESG/CSR activity on financial performance.

In alignment with Friedman's view, increased focus on CSR and subsequent investments are sometimes considered a trade-off between potential shareholder benefits and the costs associated with the CSR investment e.g., efficiency costs, loss of goal focus, lower competitiveness in the long run (Słoński et al., 2014). Additionally, Di Giuli and Kostovetsky (2014) also seem to find a negative relationship between CSR (measured by KLD scores) and financial performance (e.g., ROA). This relationship was found to be significant, yet the interpretation that any added benefits experienced by stakeholders due to social responsibility is the result of a direct expense of firm value should be taken with caution.

Nonetheless, most studies conclude a positive relationship between CSR and financial performance. Regarding ESG, Friede et al. (2015) discovered a positive relationship 90% of the time from a meta-analysis of approximately 2200 studies, where ESG was tested on financial performance. Eccles et al. (2014) showed with the aid of ESG metrics (specifically, sustainability), that firms ranked as more sustainable outperformed lower-ranked firms in the long run, using accounting-based performance measures.

Notably, Friede et al. (2015) found that the positive effect of ESG on financial performance seems to be stable in the long-term and that ESG outperformance possibilities are available in emerging markets. However, through their meta-analysis, they identified a gap in our understanding of the interaction of ESG factors but also the relevance of certain ESG factors in financial performance specifically.

If ESG/CSR based behaviour can provide firms with a legitimate position within their external environment alongside possible competitive advantages, then they may also experience better financial performance. This raises the following question: *How does the relationship between*

*CSR performance and executive compensation experience the impact (if any) of the financial performance of a firm?*

Within companies, as stakeholders become more interested in sustainable strategies, ESG-centric approaches will create a favourable business climate, thus fostering financial growth. Companies that exhibit relatively strong ESG performance also possess a good knowledge of the long-term strategic issues within their industries. This implies, given awareness of ESG data, company managers should be able to effectively reflect this knowledge in their ability to meet earnings estimates (Greenwald, 2010). By tapping into ESG metrics, firms can exploit outperformance opportunities which can be translated into better market returns and can be utilised in improving current investment strategies. Data shows that US companies with higher ESG scores consistently beat firms with lower ESG scores in terms of earnings estimates. As a firm performs better, be it due to ESG outperformance or natural growth, it can be assumed that the compensation of CEOs also grows. Godfrey et al. (2009) show that firms that perform better in ESG go on to obtain higher earnings, due to their ESG activities which lead to better relationships with stakeholders, efficient management and even improved competitive advantages. This is complemented by Ferrel et al. (2016) who found a positive relation between CSR and firm value, whereby CSR reduces the negative relation between managerial entrenchment and firm value. Studies have already shown that there is a relationship between CSR performance and executive compensation, but research on whether this is also influenced by financial performance is sparse. Based on this information, the next hypothesis of this thesis is as follows:

**Hypothesis 3:** *The relationship between CSR performance and executive compensation is positively influenced by a firm's financial performance.*

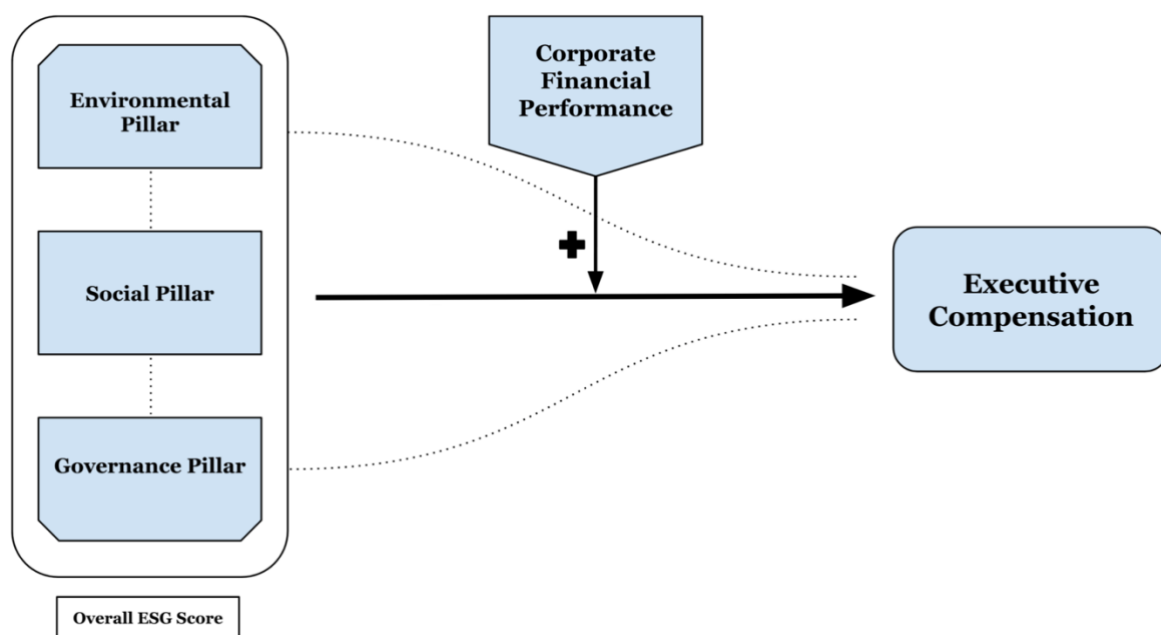


Figure 1: Conceptual Model

### **3. Data and Methodology**

Chapter 3 is structured as follows. In Section I the sample selection and databases used is described, followed by Section II with a description of the main variables as well as control variables. Section III provides the descriptive statistics overview of the aforementioned variables. Lastly, Section IV covers the methodology employed in this study.

#### **3.1 Sample Selection and Databases**

Before this study proceeds to describe the relationship between CSR/ESG performance and CEO compensation, providing a brief summary of the institutional setting can prove useful to provide a better perspective on the topic at hand. This study is based on the company data of firms that are listed on the S&P 500. The S&P 500 is better known as a stock market index which tracks the stock performance of the 500 largest companies that are listed on the US stock exchange. The period of data used for analysis in this thesis spans from 2012 to 2022 inclusive. The reasoning behind this specific period is due to the very impactful events that took place from 2006 onwards which have had a considerable influence on the financial performance of companies. Events that are seen as relevant are the following; the sub-prime housing crisis and housing bubble of 2007 and 2008, the collapse of Wall Street and the global recession (2007-2009), Barack Obama's presidency, and lastly the strongest job growth in the US (c.2012 onwards).

The data subject to analysis was obtained from various databases which were then merged into one dataset. The databases used include Wharton Research Data Service (WRDS) and Thomson Reuters Refinitiv. The Thomson Reuters Refinitiv database includes Datastream with Worldscope as well as the Thomson Reuters ASSET4 database for ESG metrics. WRDS is the award-winning research platform providing data for multiple disciplines such as accounting, banking, economics and finance. Information on ESG (individual pillars and total score) comes from the ASSET4 database within Refinitiv, firm-level financial data (i.e., Return on Assets) was compiled from the Refinitiv database, and lastly data regarding executive compensation was extracted from ExecuComp extracted from WRDS.

The initial sample of 500 firms was filtered based on industry. For financial firms, high accounting measures may be considered as normal, however for non-financial firms, such (high) measures may not have the same meaning and may in fact signal financial distress (Fama and French, 1992). Hence, firms operating in the financial industry have been excluded from the sample. The dataset was further filtered with regards to missing data, by screening for data availability and reliability. In the end, a final working sample of 318 firms was reached with the largest amount of firms operating in the Industrials industry, closely followed by Health Care (more details available in Table 1 below).

### Table 1: Country and Industry Descriptives

Table 1 presents the frequency and distribution of the industry types in which the firms that are included in this study find themselves in. Industry group names follow the Global Industry Classification Standard (GICS) conventions.

<b>Panel A: Country (Headquarter Base)</b>	<b>Freq.</b>	<b>Percent</b>	<b>N</b>
United States	3180	100	318
<b>Panel B: Industry (GICS Name)</b>	<b>Freq.</b>	<b>Percent</b>	<b>N</b>
Communication Services	150	4.72	15
Consumer Discretionary	390	12.26	39
Consumer Staples	280	8.81	28
Energy	190	5.97	19
Health Care	470	14.78	47
Industrials	530	16.67	53
Information Technology	400	12.58	40
Materials	220	6.92	22
Real Estate	260	8.18	26
Utilities	290	9.12	29
<b>Total (10 Industry types)</b>	<b>3180</b>	<b>100.00</b>	<b>318</b>

Note: N = Number of firms in country/industry

## 3.2 Variable Measures

### 3.2.1 Dependent and Independent variable(s)

The first main variable is CSR performance. The independent variable ESG was measured by ratings sourced from Thomson Reuters ASSET4 database. ASSET4 ESG ratings are often used to quantify CSR in empirical studies as seen in Chapter 2. This study's independent variables are the total ESG score and the individual environmental, social and governance pillars. When ESG score is 100%, this consists of 34%, 35.5% and 30.5% for the environmental, social and governance pillars respectively. ESG scores are also rated on a 0-100 scale, with 0 being the lowest possible score and 100 the highest score.

Furthermore, the second main variable is executive compensation. The data for this variable is collected from ExecuComp. This dataset includes different components of CEO compensation, such as salary, bonus, stocks and other annual compensation. ExecuComp defines the main variables of executive compensation as follows. Firstly, total compensation includes salary, bonus, other annual pay, restricted stock granted, stock options granted, long-term incentive pay-outs, and all other total compensation. Secondly, equity-based compensation includes restricted stocks and stock options granted. Lastly, cash-based compensation includes salary and bonus..

### 3.2.2 Control and Moderator Variable(s)

For this study, controls were used at the firm level. Multiple control variables are selected, based on prior research concerning CSR performance and CEO compensation (Core and Larcker, 1999; Ioannou and Serafeim, 2012; Garcia et al., 2017; Velte, 2017; Karim et al., 2018). Among these control variables are the following firm-specific characteristics; *firm size*, *Tobin's Q*, *leverage*, *stock return*, *revenue growth*, *board size*, *market capitalisation* and *year fixed effects*.

*Firm size:* According to Wade et al. (2006), there is a positive relation between CEO compensation and sales. When the sales of a firm increases, the performance of the firm is considered as positive which results in an increase in the CEO compensation. Firm size, is then measured by the value of the firms' assets, which increase with sales. Prior studies argue that there is a positive relation between firm size and CEO compensation (Argarwal, 1981; Cai et al., 2011; Mehran, 1995). A larger firm has the resources to employ a 'superior' CEO, who is then to demand higher compensation based on their past performance. This leads to the expectation that firm size will have a positive relationship with the dependent variable.

*Stock return:* is the company's average stock return in the previous year and a proxy for its market performance. Several studies have documented that CEO compensation is directly affected by firms' stock prices (Murphy, 1985; Boschen et al., 2003; Nourayi and Daroca, 2008). Leone, Wu and Zimmerman (2006) found that compensation reacts more sensitively to negative stock returns as opposed to positive stock returns, and as shareholders tend to lean towards profit maximisation – a negative stock return is expected to have a negative relationship with executive compensation.

*Tobin's Q:* provides information pertaining to growth possibilities (Tobin, 1958). This control variable is calculated by dividing the market value of assets by the book value of assets of a specific firm. If the firm has better growth possibilities, it is more likely to attract a superior CEO who in turn can demand a higher compensation. As such, this control variables is expected to have a positive relationship.

*Leverage:* is the act of using borrowed money for an investment. This variable is calculated by dividing a firm's total debt by its total assets. According to Barnea and Rubin (2010), a CEO tends to invest more in CSR activities, expecting to receive increased compensation, when a firm has low leverage. For this reason, the relationship is expected to be positive.

*Revenue growth:* The growth opportunities available to a firm can also influence the compensations awarded to executives. Investment opportunities, by means of additional revenues, may affect CEO performance measures, which in turn results in higher variable compensation (i.e. cash bonuses) (Smith and Watts, 1992). Thus to measure the effect of growth on executive compensation, revenue growth is added and a positive relationship is expected.

*Market capitalisation:* is used by investors to understand the relative size of firms, as well as serving as a reflection of what investors are willing to pay for a share of said company's stock. Good prospects often lead to a favourable market perception and thus potential to increased investments or share buys. Hence a positive relationship is expected.

*Board size:* Boards and corporate governance continue to stay relevant as a board of directors play a key role in implementing mechanisms that protect shareholder interests (Upadhyah, 2015). In other words, they oversee managerial activities and at times may encourage managers

into more risky behaviours that can lead to compensation schemes that are beneficial for stockholders. As the board size increases, opinions and values also change within the board – meaning that the beliefs shared may become more socially responsible oriented, which in turn can lead to increased scrutiny with regards to executive compensation policies and schemes (both positive or negative). Therefore a negative relationship is expected.

*Year fixed effects:* are used to control for the differing economic factors that may impact executive compensation. By including year fixed effects, biases are removed from unobservables that vary across time, but are constants among entities (i.e., firms).

Financial performance is also investigated, which itself can be measured by two main categories: accounting and market variables, as a moderator in this research. Since accounting returns are vital in the deliberation of executive compensation, return on assets will be employed as the proxy to measure financial performance. This measure is included to create a new interaction variable as it is suspected to have potential links to executive compensation and CSR performance i.e., McGuire et al., (2003). The magnitude of the independent variables effect on the dependent variable can be influenced by a third variable, namely a moderator variable. Hence, financial performance measured by return on assets will be included in the regression model to explore any possible relation between these variables. As the financial performance of a firm grows, it can be assumed that the compensation received by executives will also increase, which leads to the hypothesis that financial performance will strengthen the positive relationship between CSR and compensation.

Table 2 below provides an overview of this study's variables of interest (independent, dependent, control and moderator).

**Table 2: Variable Definitions**

Table 2 provides an overview of all the variables included in the empirical models. Below the variable names, definitions and source are provided.

<b>Variable</b>	<b>Definition</b>	
Return on Assets	Profitability ratio calculated by dividing a company's net income prior to financing costs by total assets.	<i>Data: Refinitiv</i>
Total Compensation	Sum of; Salary, Bonus, Other Annual, Total Value of Restricted Stock Granted, Total Value of Stock Options Granted (using Black-Scholes), Long-Term Incentive Payouts, and All Other Total.	<i>Data: WRDS</i>
Cash Compensation	Current compensation, or (Salary + Bonus)	<i>Data: WRDS</i>
Equity Compensation	Sum of; Total Value of Restricted Stock Granted and Total Value of Stock Options Granted	<i>Data: WRDS</i>
ESG Score	ESG Score is an overall company score based on the self-reported information in the environmental, social, and corporate governance pillars.	<i>Data: ASSET4</i>
E Score	The weighted average relative rating of a company based on the reported environmental information and the resulting three environmental category scores.	<i>Data: ASSET4</i>
S Score	The weighted average relative rating of a company based on the reported social information and the resulting four social category scores.	<i>Data: ASSET4</i>
G Score	The weighted average relative rating of a company based on the reported governance information and the resulting three governance category scores.	<i>Data: ASSET4</i>
Board Size	Total number of board members at the end of the fiscal year.	<i>Data: ASSET4</i>
Market Capitalisation	The total market value of the default shares (outstanding, listed or issued) of a publicly traded company.	<i>Data: Refinitiv</i>
Tobin's Q	Market Capitalisation / Total Assets	<i>Data: Refinitiv</i>
Revenue Growth	(Previous Year Operating Income – Current Year Operating Income) / Previous Year Operating Income.	<i>Data: Refinitiv</i>
Leverage	Total Liabilities / Total Assets	<i>Data: Refinitiv</i>
Size	The Natural Log of Total Assets of the company in US\$	<i>Data: Refinitiv</i>
52 Week Total Return	Total Returns Index which incorporates the price change and any relevant dividends for the last 52 weeks	<i>Data: Refinitiv</i>
ESGxROA	Moderator Variable measured by Return on Assets * ESG Score	<i>Data: Refinitiv/ ASSET4/ Self-Constructed</i>
ExROA	Moderator Variable measured by Return on Assets * Environmental Score	<i>Data: Refinitiv/ ASSET4/ Self-Constructed</i>
SxROA	Moderator Variable measured by Return on Assets * Social Score	<i>Data: Refinitiv/ ASSET4/ Self-Constructed</i>
GxROA	Moderator Variable measured by Return on Assets * Governance Score	<i>Data: Refinitiv/ ASSET4/ Self-Constructed</i>

### 3.3 Descriptive Statistics

Table 3a, 3b and 4, depict the summary descriptive statistics and correlation matrix, respectively, of the variables explained above in Table 2. Table 3a presents the descriptive statistics for the dependent, independent, control and moderator variables before any actions were undertaken to deal with potential outliers or inappropriate scaling. The sample consists of 318 of the 500 firms that together are known as the S&P 500.

To preface, the variables Cash Compensation, Equity Compensation, Total Compensation, and Market Capitalisation are measured in thousands – which requires the transformation of these variables into their natural logarithmic form to allow for more understandable result inference later in this study. Furthermore, Table 3a shows that Tobin’s Q and Revenue Growth exhibit some outliers that require attention. To minimise the effect of these outliers, both Tobin’s Q and Revenue Growth have been winsorised at the 5<sup>th</sup> and 95<sup>th</sup> percentiles. The impact of these changes on the variables can be seen in Table 3b where the updated descriptive statistics are depicted.

For example, Table 3b shows a significant standard deviation in both Tobin’s Q and Return on Assets (1.23 and .07 respectively). This tells us that there are substantial differences in the financial performance of S&P 500 firms, which is also reflected in the standard deviations of the independent variables (ESG Scores), with scores deviating by up to 26.63 points. We can also see that the average board size across S&P 500 firms is ~11.

**Table 3a: Summary of Descriptive Statistics**

Table 3a presents the descriptive statistics of the main variables used in this study. The dependent variables are Cash Compensation, Equity Compensation and Total Compensation. The independent variables are ESG Score: Overall ESG score, E Score: Environmental Pillar score, S Score: Social Pillar score, G Score: Governance Pillar score and Return on Assets. The control variables are Market Capitalisation, Board Size, 52 Week Total Return, Tobin’s Q, Leverage, Revenue Growth and Size. The moderating variables are ESGxROA, ExROA, SxROA and GxROA.

Variables	N	Mean	Median	Kurtosis	Skewness	Std. Dev.	Min	Max
ESG Score	3180	59.66	63.09	2.63	-.54	18.25	1.90	93.84
E Score	3180	53.91	59.66	2.24	-.56	26.63	0	98.55
S Score	3180	61.46	63.58	2.32	-.37	20.74	1.92	99.56
G Score	3180	61.79	64.60	2.65	-.52	20.09	.70	99.62
Cash Compensation	3180	880.34	740.85	105.31	8.23	699.39	89.32	13007.15
Equity Compensation	3180	5604.71	4493.52	50.39	5.29	4890.77	0	70096.62
Total Compensation	3180	6485.06	5266.50	43.26	4.83	5125.69	190.96	70486.62
Return on Assets	3180	.082	.069	43.26	.99	.07	-.33	.52
Market Capitalisation	3180	57221.03	22310.17	134.95	9.81	146390.5	0	2901645
Board Size	3180	10.81	11	6.38	-.15	2.05	0	18
52 Week Total Return	3180	.17	.147	69.92	4.06	.34	-.65	7.20
Tobin’s Q	3164	1.97	1.34	17.94	3.13	2.10	0	22.91
Leverage	3164	.65	.64	11.14	1.29	.24	0	2.92
Revenue Growth	3093	-0.01	-.07	176.72	3.54	2.80	-40.39	66.43
Size	3164	9.93	9.84	3.04	.24	1.33	5.60	13.77
ESGxROA	3180	4.86	3.81	10.57	1.63	4.58	-19.01	46.62
ExROA	3180	4.33	3.08	10.08	1.79	4.68	-18.92	43.95
SxROA	3180	5.00	3.86	9.92	1.40	4.83	-30.40	45.61
GxROA	3180	5.06	3.91	11.33	1.84	18.25	1.90	93.84



**Table 3b: Summary of Descriptive Statistics (Winsorised and Scaled Variables)**

Table 3b presents the descriptive statistics of the main variables used in this study after Tobin's Q and Revenue Growth were winsorised and all compensation variables and Market Capitalisation were transformed into their natural logarithms. The dependent variables are LN(Cash Compensation), LN(Equity Compensation) and LN(Total Compensation). The independent variables are ESG Score: Overall ESG score, E Score: Environmental Pillar score, S Score: Social Pillar score, G Score: Governance Pillar score and Return on Assets. The control variables are LN(Market Capitalisation), Board Size, 52 Week Total Return, Tobin's Q, Leverage, Revenue Growth and Size. The moderating variables are ESGxROA, ExROA, SxROA and GxROA.

Variables	N	Mean	Median	Kurtosis	Skewness	Std. Dev.	Min	Max
ESG Score	3180	59.66	63.09	2.63	-.54	18.25	1.90	93.84
E Score	3180	53.91	59.66	2.24	-.56	26.63	0	98.55
S Score	3180	61.46	63.58	2.32	-.37	20.74	1.92	99.56
G Score	3180	61.79	64.60	2.65	-.52	20.09	.70	99.62
LN(Cash Compensation)	3180	6.65	6.61	8.53	.83	.45	4.49	9.47
LN(Equity Compensation)	3180	8.40	8.41	19.23	-1.74	.72	0	11.16
LN(Total Compensation)	3180	8.59	8.57	5.26	.02	.59	5.25	11.16
Return on Assets	3180	.082	.07	43.26	.99	.07	-.33	.52
LN(Market Capitalisation)	3145	10.18	10.03	4.06	.73	1.08	5.24	14.88
Board Size	3180	10.81	11	6.38	-.15	2.05	0	18
52 Week Total Return	3180	.17	.147	69.92	4.06	.34	-.65	7.20
Tobin's Q	3164	1.72	1.34	2.45	.84	1.23	.40	4.18
Leverage	3164	.65	.64	11.14	1.29	.24	0	2.92
Revenue Growth	3093	-.05	-.07	2.61	.13	.33	-.63	.56
Size	3164	9.93	9.84	3.04	.24	1.33	5.60	13.77
ESGxROA	3180	4.86	3.81	10.57	1.63	4.58	-19.01	46.62
ExROA	3180	4.33	3.08	10.08	1.79	4.68	-18.92	43.95
SxROA	3180	5.00	3.86	9.92	1.40	4.83	-30.40	45.61
GxROA	3180	5.06	3.91	11.33	1.84	18.25	1.90	93.84

Table 4 displays the Pearson correlation matrix of this study's variables. The correlations themselves reveal relatively expected results whereby the relationship between ESG scores and executive compensation is positive, although surprisingly low in strength.

The utilisation of a correlation matrix is helpful in the determination of whether the variables may suffer from multicollinearity (specifically between the independent variables). The issues that multicollinearity poses will affect model fitting and the subsequent interpretation of results. The general rule of thumb regarding multicollinearity, that in the presence of a correlation coefficient greater than  $|0.7|$ , the independent variables in question suffer from multicollinearity. In Table 4 we can see that the variables serving as a measure for CSR (ESG scores), do in fact exceed the benchmark value of  $|0.7|$ . However, this is not a cause for concern as these variables will not be included together in the same regressions, thus ruling out the high correlation coefficients as an indicator for multicollinearity issues.

**Table 4: Correlation Matrix**

Table 4 presents the results of a correlation matrix between the main variables used in this study. The dependent variables are Cash Compensation, Equity Compensation and Total Compensation. The independent variables are ESG Score: Overall ESG score, E Score: Environmental Pillar score, S Score: Social Pillar score, G Score: Governance Pillar score and Return on Assets. The control variables are Market Capitalisation, Board Size, 52 Week Total Return, Tobin's Q, Leverage, Revenue Growth and Size. Any variables that are used together in a model, have a correlation below the standard benchmark value of  $|0.7|$ . The matrix shows no statistical evidence for multicollinearity issues between the independent variables.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) ESG Score	1.000														
(2) E Score	0.870*	1.000													
(3) S Score	0.881*	0.713*	1.000												
(4) G Score	0.661*	0.406*	0.355*	1.000											
(5) Cash Compensation	0.054*	0.089*	0.069*	0.050*	1.000										
(6) Equity Compensation	0.007	0.035*	0.051*	0.091*	0.273*	1.000									
(7) Total Compensation	0.014	0.046*	0.058*	0.094*	0.396*	0.991*	1.000								
(8) Return on Assets	-0.011	-0.037*	-0.012	0.013	-0.014	0.024	0.021	1.000							
(9) Board Size	0.288*	0.348*	0.251*	0.102*	0.130*	0.041*	0.057*	-0.069*	1.000						
(10) Market Capitalisation	0.001	0.021	-0.012	0.004	0.044*	0.371*	0.360*	0.167*	0.056*	1.000					
(11) 52 Week Total Return	0.036*	0.022	0.031	0.036*	-0.049*	0.006	-0.001	0.101*	-0.043*	0.075*	1.000				
(12) Tobin's Q	0.005	-0.015	0.028	-0.019	-0.072*	0.044*	0.032	0.710*	-0.095*	0.201*	0.221*	1.000			
(13) Leverage	-0.065*	-0.051*	-0.051*	-0.055*	0.032	0.020	0.023	-0.163*	0.056*	-0.015	-0.024	-0.174*	1.000		
(14) Revenue Growth	-0.017	-0.014	-0.006	-0.032	0.027	-0.017	-0.012	-0.237*	0.013	-0.060*	-0.163*	-0.169*	0.056*	1.000	
(15) Size	0.004	0.056*	-0.015	-0.016	0.134*	0.260*	0.266*	-0.342*	0.135*	0.393*	-0.107*	-0.488*	0.266*	0.075*	1.000

An asterisk (\*) indicates correlation coefficients that are significant at the 5% level or better

### 3.4 Empirical Model

As the aim of this study, a number of models are proposed in the attempt to determine the structure and significance of the relationship between the CSR performance of S&P 500 companies and the compensation of their executives, by use of multiple OLS regressions. All statistical tests on the strongly balanced panel data set are carried out using the software STATA. The dependent variable, executive compensation will be tested in three different forms, namely total compensation, cash-based compensation, and equity-based compensation. The independent variable CSR performance will be measured by four variables; the total ESG score of a firm as well as the individual scores of the Environmental, Social and Governance pillars. Moreover, a moderating variable is included to address the potential interaction effects that financial performance may have on the relationship between the dependent and independent variables. More specifically, the moderating variable is the accounting measure return on assets, which used for a proxy for a firm's financial performance.

Equation 1 seen below is the empirical model that is used to test Hypothesis 1 of this study: “*The higher the CSR performance of a firm, the lower the executive compensation*”. This model will regress CSR performance measured by a firms overall ESG score on all three measures of executive compensation (separately).

$$\text{(Eq. 1)} \quad \text{CEO Compensation (Total, Cash, Equity)}_{i,t} = \alpha \beta_1 \text{CSR Performance (Total ESG Score)}_{i,t-1} + \beta_2 \text{Financial Performance (ROA)}_{i,t-1} + \beta_3 \text{Leverage}_{i,t} + \beta_4 \text{Size}_{i,t} + \beta_5 \text{Tobin's } Q_{i,t} + \beta_6 \text{Stock Return}_{i,t} + \beta_7 \text{Revenue Growth}_{i,t} + \beta_8 \text{Board Size}_{i,t} + \beta_9 \text{Market Capitalisation}_{i,t} + \theta_{i,t} + \lambda_{i,t} + \varepsilon_{i,t}$$

Building upon the above empirical model, Equation 2 tests Hypothesis 2a, 2b and 2c, to gain insight on how do the individual ESG pillars effect executive compensation and what is the strength and nature of this relationship. In other words, each individual ESG pillar score (Environmental, Social and Governance), will be regressed on each measure of executive compensation (once again separately).

$$\text{(Eq. 2)} \quad \text{CEO Compensation (Total, Cash, Equity)}_{i,t} = \alpha \beta_1 \text{CSR Performance (Environmental, Social, Governance Score)}_{i,t-1} + \beta_2 \text{Leverage}_{i,t} + \beta_3 \text{Size}_{i,t} + \beta_4 \text{Tobin's } Q_{i,t} + \beta_5 \text{Stock Return}_{i,t} + \beta_6 \text{Revenue Growth}_{i,t} + \beta_7 \text{Board Size}_{i,t} + \beta_8 \text{Market Capitalisation}_{i,t} + \theta_{i,t} + \lambda_{i,t} + \varepsilon_{i,t}$$

Lastly, Equation 3 tests Hypothesis 3: “*The relationship between CSR performance and executive compensation is positively influenced by a firm's financial performance*”. The regressions that employ Equation 3, will test what is the magnitude and direction of the effect of financial performance on the relationship previously explored between CSR performance and executive compensation in Equation 1 and Equation 2.

$$\text{(Eq. 3)} \quad \text{CEO Compensation (Total, Cash, Equity)}_{i,t} = \alpha \beta_1 \text{CSR Performance (Total, Environmental, Social, Governance Score)}_{i,t-1} * \text{Financial Performance (ROA)}_{i,t-1} + \beta_2 \text{Financial Performance (ROA)}_{i,t-1} + \beta_3 \text{Leverage}_{i,t} + \beta_4 \text{Size}_{i,t} + \beta_5 \text{Tobin's } Q_{i,t} + \beta_6 \text{Stock Return}_{i,t} + \beta_7 \text{Revenue Growth}_{i,t} + \beta_8 \text{Board Size}_{i,t} + \beta_9 \text{Market Capitalisation}_{i,t} + \theta_{i,t} + \lambda_{i,t} + \varepsilon_{i,t}$$

(Note:  $\theta$  = year fixed-effects and  $\lambda$  = firm fixed-effects)

Similar to multicollinearity, the data used in this study may also be at risk to the issue of heteroskedasticity. The alternative, homoskedasticity (homogeneity of variances) is the assumption of equal variances within the different groups that are compared during a regression analysis. Heteroskedasticity is the violation of said assumption, which may be cause for biased test results. To adjust for the presence of heteroskedasticity, robust standard errors are used when carrying empirical model regressions which ensures unbiased standard errors.

Another area worth considering regarding the empirical model is the issue of endogeneity. One of the forms of endogeneity is known as omitted variable bias, which is when variables that have an influence on the explained variable are not included in the empirical model and regression analyses. Thus, in order to help with possible omitted variable bias, firm fixed effects are added to all models. The results of adding firm fixed effects can be seen in Table 5, Table 6b and Table 7b – the data shown is the result of a re-estimation of the empirical models including the firm fixed effects.

## 4. Results

### 4.1 Main Regression Results

#### 4.1.1 The Effect of CSR Performance (Total ESG Score) on Executive Compensation

In Table 5, the results of the regression models for Hypothesis 1 are presented, with the dependent variables being LN(Total Compensation), LN(Cash Compensation) and LN(Equity Compensation) and the independent variable ESG Score over the period 2012-2022. Models 1a through 3b are the so-called base model, where all controls have been added and both year and firm fixed effects are included in Model 1b, 2b and 3b. The explanatory power of the models can be seen by the R-squared values, whereby the inclusion of firm fixed effects has significantly increased the R-squared values of the models. Additionally, by including firm fixed effects, the coefficients of ESG score negatively affect LN(Total Compensation) (-0.00263) and LN(Equity Compensation) (-0.00275) at the 5% and 10% significance level respectively. The coefficients suggest that as ESG increases by one unit then Total Compensation decreases by 0.263%, and Equity Compensation decreases by 0.275%. Thus, the results suggest that higher ESG scores negatively effects equity-based compensation, which in turn negatively effects total compensation – a result that proves the Hypothesis 1: “*The higher the CSR performance of a firm, the lower the executive compensation*”. When looking at some of the control variables, the effect of board size is significantly negative on Total Compensation which is in line with previous expectations. The 52 Week Total Return is the only other control variable to have a significant effect on compensation albeit in Model 2a.

#### 4.1.2 The Effect of CSR Performance (Individual Pillar Score) on Executive Compensation

Table 6a and 6b present the results of the regressions on the association between individual ESG pillar scores and executive compensation as mentioned in Hypotheses 2a, 2b and 2c. Similar to Table 5, all control variables have been added to the regressions shown in Table 6a and 6b, with Table 6b presenting the results including both year and firm fixed effects.

Once again, the inclusion of firm fixed effects significantly increases the explanatory power the models as shown by the R-squared values in Table 6b. In Table 6a, we see that only the social pillar score is statistically significant with respect to cash-based compensation. However, in Table 6b the score of the environmental pillar is statistically significant across all types of executive compensation, the social pillar score is significant in equity-based compensation and surprisingly the governance pillar score appears to have no statistical significance in the influence of executive compensation. Once again, all coefficients that are statistically significant negatively affect LN(Total Compensation), LN(Cash Compensation) and LN(Equity Compensation). As the environmental pillar score increases by 1 unit, then total compensation decreases by 0.221%, cash-based compensation decreases by 0.101% and equity-based compensation decreases by 0.222%, significant at the 1%, 10% and 5% level respectively. The social pillar score when increased by 1 unit decreases equity-based compensation by 0.217% (significant at a 10% level), similar in magnitude to the environmental pillar. The negative effect of the environmental pillar score confirms Hypothesis 2a, in which it was hypothesized that performing better on environmental goals decreases compensation, in line with previous literature. Hypothesis 2b is not supported in any of the

models as the governance pillar score is not statistically significant, although the results imply that the relationship would be negative, contrary to the hypothesis.

The results of these regressions imply that the decrease in executive compensation as seen in Table 5, is mostly attributed to changes in the environmental pillar score as it is significant across all measures of executive compensation. Table 6b also tells us that the environmental pillar score has the strongest influence on executive compensation across all individual pillars. An interesting note is that an increase in the social pillar score has a positive effect on cash-based compensation, in contrast to total compensation and equity-based compensation, however, which would support Hypothesis 2c, however this effect is considerably small and also not statistically significant. In terms of control variables, board size is once again significantly (5% level) negative on the total compensation of executives. The 52 Week Total Return index is also significantly (10% level) negative on the cash-based compensation measure, as expected and also reflected in the correlation matrix with the highest (significant) correlation across the compensation measures.

#### *4.1.3 The Moderating Effect of Financial Performance*

Table 7a and 7b depict the regression results of the empirical models that attempt to investigate the moderating effect of financial performance, measured by return on assets, on the relationship between CSR performance, measured by ESG scores (total and individual), on executive compensation, measured by total, cash-based and equity-based compensation. The models depicted in Table 7a and 7b also include the interaction terms of the moderating variable and independent variables, which is done by the multiplication of the independent and moderating variable (i.e.,  $ESG \times ROA = ESG \text{ Score} * \text{Return on Assets}$ ). All control variables are included in the models, and year fixed effects included in Table 7a while both year and firm fixed effects included in Table 7b. As seen in the previous models, the inclusion of firm fixed effects strongly increases the explanatory power of the models (e.g., Model 17a (R-squared = 0.0566) to Model 17b (R-squared = 0.8003)). When comparing the coefficients of the independent variables in Table 7b with Table 5 and Table 6b, we can see that the independent variable coefficients have become stronger (in general).

Looking at Table 7b, the coefficients for ESG Score are statistically significant on the 10% level for both LN(Total Compensation) and LN(Cash Compensation) with values of -0.00315 and -0.00175 respectively. This indicates a -0.315% change in total compensation and cash-based compensation decreases by 0.175% when ESG Score increases by 1 unit, which provides evidence for the opposite of Hypothesis 1. The moderating variable (ROA) coefficient is not statistically significant across all models in Table 7b, however the interaction term ( $ESG \times ROA$ ), is positively statistically significant at the 10% level for LN(Cash Compensation). Thus, there is evidence that ROA positively moderates the effect of ESG score on LN(Cash Compensation).

When E Score (i.e., Environmental Pillar Score) is examined, we see that the coefficients in Model 14b and 18b are both statistically significant at the 5% and 1% level respectively. In addition, the interaction term ( $ExROA$ ), is statistically significant at the 5% level, indicating

that ROA again positively moderate the effect of CSR performance (measured by Environmental Pillar score) on executive compensation.

The coefficient of G Score seems to have become statistically significant with the inclusion of ROA, different to the results seen in Model 6b (Table 6b), however neither ROA or the interaction term are statistically significant.

To summarise, the results of Table 7b show that ESG Score has a negative (statistically significant) relationship with LN(Total Compensation) and LN(Cash Compensation), the latter of which is strengthened by return on assets. E Score also shows a negative (statistically significant) relationship with LN(Total Compensation) and LN(Cash Compensation), with the latter once again positively moderating the relationship between the environmental pillar score and executive compensation. Consequently, Hypothesis 1 has not been accepted, yet the opposite relation has been discovered between the independent variable (ESG Score) and dependent variable(s) (Total Compensation and Cash Compensation). Hypothesis 2a is once again supported due to the statistically significant negative coefficient of E Score when regressed in Model 14b and 18b.

#### **4.2 Robustness Check – Simultaneity/Endogeneity**

As previously mentioned, endogeneity is an area of concern across empirical models. One such form of endogeneity is known as simultaneity, which occurs when the dependent variable can also affect the independent variable as opposed to only the independent variable having an effect on the dependent variable. With a growing trend towards environmental, social and governance issue awareness, corporate boards continue to discuss and incorporate ESG performance measures into incentive and compensation plans (Spierings M., 2022). Furthermore, 73% of S&P 500 firms have tied executive compensation to some form of ESG performance, be it diversity, equity and inclusion goals or emission reduction goals. Thus, considering that this study examines the effect of ESG scores on executive compensation, it is also possible that there is a bidirectional relationship present, whereby executive members have increased their compensation by striving towards increasing their ESG scores and reaping the rewards.

One method typically used for detecting endogeneity due to simultaneity is by conducting a Granger causality test. The Granger causality test investigates whether the previous values of  $x$  exhibit a meaningful predictive relationship with the present value of  $y$  and vice versa. The main assumption tested in the Granger causality test is that  $x$  does not exert any causal influence on  $y$ . In the event that the null hypothesis is rejected (no causal influence of  $x$  on  $y$ ), there is evidence of causality of  $x$  on  $y$ . For the null hypothesis to be rejected, thus evidence of Granger causality, the p-value must be smaller than 0.05. Table 8 in Appendix A provides an overview of the Granger causality tests carried out on the dependent and independent variables used in this study. Table 8 provides no evidence to reject the null hypothesis, which means that there is no Granger causality in the variables used. As such, it is unlikely that there is endogeneity present between the dependent variables and independent variables.

**Table 5: Hypothesis 1 – Regression Results (Total ESG Score and Executive Compensation)**

Variables	LN(Total Compensation)		LN(Cash Compensation)		LN(Equity Compensation)	
Model Specification	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)
ESG Score	-0.000392 (0.000959)	-0.00263** (0.00119)	0.000188 (0.000657)	-0.000778 (0.000770)	0.000883 (0.00123)	-0.00275* (0.00154)
LN(Market Capitalisation)	0.0466 (0.0517)	0.0620 (0.0640)	0.0632 (0.0441)	0.0759 (0.0523)	-0.0137 (0.0720)	-0.00927 (0.104)
Leverage	0.0635 (0.0749)	0.104 (0.101)	0.0302 (0.0427)	0.0142 (0.0496)	0.0919 (0.104)	0.176 (0.161)
Revenue Growth	-0.00379 (0.0219)	-0.00363 (0.0225)	-0.000648 (0.0116)	-0.000102 (0.0123)	-0.00294 (0.0320)	-0.00507 (0.0318)
52 Week Total Return	0.0252 (0.0610)	0.0318 (0.0692)	-0.0252** (0.0128)	-0.0279* (0.0145)	0.0732 (0.0914)	0.0949 (0.111)
Tobin's Q	0.0235 (0.0267)	0.00402 (0.0301)	-0.0189 (0.0206)	-0.0186 (0.0227)	0.0449 (0.0300)	0.00896 (0.0345)
Size	0.0919** (0.0418)	0.0618 (0.0547)	-0.00970 (0.0387)	-0.0445 (0.0489)	0.140*** (0.0490)	0.106 (0.0709)
Board Size	-0.00491 (0.00538)	-0.0127** (0.00630)	-0.00192 (0.00590)	-0.00802 (0.00699)	0.00149 (0.00757)	-0.00864 (0.00887)
Constant	7.032*** (0.228)	7.522*** (0.402)	6.065*** (0.214)	6.441*** (0.307)	6.702*** (0.290)	7.571*** (0.584)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects		Yes		Yes		Yes
Observations	3,076	3,076	3,076	3,076	3,076	3,076
Number of Firms	310	310	310	310	310	310
R-squared	0.1178	0.6974	0.0457	0.7993	0.1022	0.5920

Robust standard errors in parentheses (\*\*\*) p<0.01, \*\* p<0.05, \* p<0.1)



**Table 6a: Hypothesis 2a, 2b, 2c – Regression Results (Individual ESG Pillars and Executive Compensation) with Year Fixed Effects**

Variables	LN(Total Compensation)			LN(Cash Compensation)			LN(Equity Compensation)		
	(4a)	(5a)	(6a)	(7a)	(8a)	(9a)	(10a)	(11a)	(12a)
E Score	-0.000527 (0.000672)			-0.000176 (0.000454)			0.000332 (0.000813)		
S Score		0.000442 (0.000825)			0.000956* (0.000544)			0.00120 (0.000977)	
G Score			-0.000576 (0.000590)			-0.000280 (0.000425)			-0.000143 (0.000854)
LN(Market Capitalisation)	0.0473 (0.0519)	0.0442 (0.0512)	0.0469 (0.0517)	0.0642 (0.0445)	0.0616 (0.0441)	0.0643 (0.0443)	-0.0123 (0.0720)	-0.0147 (0.0707)	-0.0109 (0.0724)
Leverage	0.0632 (0.0755)	0.0602 (0.0744)	0.0652 (0.0754)	0.0308 (0.0426)	0.0269 (0.0427)	0.0314 (0.0429)	0.0942 (0.105)	0.0886 (0.103)	0.0968 (0.105)
Revenue Growth	-0.00379 (0.0219)	-0.00388 (0.0219)	-0.00400 (0.0219)	-0.000673 (0.0116)	-0.000865 (0.0117)	-0.000758 (0.0116)	-0.00297 (0.0320)	-0.00333 (0.0320)	-0.00308 (0.0320)
52 Week Total Return	0.0251 (0.0611)	0.0250 (0.0610)	0.0255 (0.0611)	-0.0253** (0.0127)	-0.0256** (0.0128)	-0.0252** (0.0128)	0.0734 (0.0915)	0.0727 (0.0911)	0.0739 (0.0917)
Tobin's Q	0.0228 (0.0268)	0.0245 (0.0267)	0.0232 (0.0266)	-0.0194 (0.0208)	-0.0183 (0.0206)	-0.0190 (0.0206)	0.0444 (0.0301)	0.0458 (0.0301)	0.0429 (0.0299)
Size	0.0911** (0.0420)	0.0940** (0.0414)	0.0918** (0.0418)	-0.0107 (0.0391)	-0.00775 (0.0386)	-0.0107 (0.0390)	0.139*** (0.0491)	0.141*** (0.0483)	0.137*** (0.0489)
Board Size	-0.00468 (0.00533)	-0.00527 (0.00542)	-0.00551 (0.00545)	-0.00173 (0.00587)	-0.00237 (0.00595)	-0.00207 (0.00597)	0.00157 (0.00757)	0.00125 (0.00776)	0.00165 (0.00773)
Constant	7.039*** (0.228)	6.979*** (0.227)	7.049*** (0.230)	6.089*** (0.208)	6.012*** (0.208)	6.098*** (0.212)	6.737*** (0.299)	6.678*** (0.299)	6.769*** (0.290)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,076	3,076	3,076	3,076	3,076	3,076	3,076	3,076	3,076
Number of Firms	310	310	310	310	310	310	310	310	310
R-squared	0.1139	0.1272	0.1208	0.0382	0.0587	0.0411	0.0990	0.1073	0.0951

Robust standard errors in parentheses (\*\*\*) p<0.01, \*\* p<0.05, \* p<0.1)

**Table 6b: Hypothesis 2a, 2b, 2c – Regression Results (Individual ESG Pillars and Executive Compensation) with Year and Firm Fixed Effects**

Variables	LN(Total Compensation)			LN(Cash Compensation)			LN(Equity Compensation)		
	(4b)	(5b)	(6b)	(7b)	(8b)	(9b)	(10b)	(11b)	(12b)
E Score	-0.00221*** (0.000853)			-0.00101* (0.000548)			-0.00222** (0.00107)		
S Score		-0.00148 (0.00101)			0.000309 (0.000633)			-0.00217* (0.00129)	
G Score			-0.000692 (0.000656)			-0.000388 (0.000448)			-0.000340 (0.000946)
LN(Market Capitalisation)	0.0627 (0.0636)	0.0585 (0.0633)	0.0572 (0.0634)	0.0772 (0.0524)	0.0736 (0.0524)	0.0748 (0.0525)	-0.00872 (0.103)	-0.0118 (0.102)	-0.0149 (0.103)
Leverage	0.0947 (0.102)	0.103 (0.101)	0.100 (0.1000)	0.0109 (0.0486)	0.0111 (0.0497)	0.0139 (0.0501)	0.166 (0.163)	0.177 (0.163)	0.171 (0.160)
Revenue Growth	-0.00368 (0.0226)	-0.00322 (0.0225)	-0.00367 (0.0225)	-0.000152 (0.0122)	-0.000100 (0.0124)	-0.000171 (0.0123)	-0.00511 (0.0319)	-0.00454 (0.0318)	-0.00499 (0.0318)
52 Week Total Return	0.0311 (0.0692)	0.0323 (0.0693)	0.0315 (0.0694)	-0.0282* (0.0144)	-0.0281* (0.0146)	-0.0280* (0.0146)	0.0942 (0.111)	0.0958 (0.111)	0.0947 (0.111)
Tobin's Q	0.00116 (0.0300)	0.00473 (0.0303)	0.00628 (0.0301)	-0.0203 (0.0230)	-0.0178 (0.0228)	-0.0179 (0.0228)	0.00616 (0.0344)	0.00918 (0.0349)	0.0111 (0.0347)
Size	0.0564 (0.0546)	0.0663 (0.0543)	0.0707 (0.0543)	-0.0484 (0.0497)	-0.0408 (0.0489)	-0.0419 (0.0494)	0.101 (0.0712)	0.108 (0.0697)	0.115 (0.0700)
Board Size	-0.0126** (0.00623)	-0.0124** (0.00627)	-0.0133** (0.00636)	-0.00794 (0.00696)	-0.00819 (0.00703)	-0.00826 (0.00706)	-0.00855 (0.00882)	-0.00808 (0.00893)	-0.00902 (0.00899)
Constant	7.539*** (0.390)	7.407*** (0.402)	7.289*** (0.396)	6.495*** (0.299)	6.320*** (0.294)	6.385*** (0.299)	7.577*** (0.578)	7.523*** (0.624)	7.298*** (0.564)
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,076	3,076	3,076	3,076	3,076	3,076	3,076	3,076	3,076
Number of Firms	310	310	310	310	310	310	310	310	310
R-squared	0.6980	0.6968	0.6965	0.7997	0.7992	0.7993	0.5923	0.5919	0.5912

Robust standard errors in parentheses (\*\*\*) p<0.01, \*\* p<0.05, \* p<0.1)

**Table 7a: Hypothesis 3 - Regression Results (Moderating Effect of Financial Performance on ESG Scores and Executive Compensation) with Year Fixed Effects**

Variables	LN(Total Compensation)				LN(Cash Compensation)				LN(Equity Compensation)			
	(13a)	(14a)	(15a)	(16a)	(17a)	(18a)	(19a)	(20a)	(21a)	(22a)	(23a)	(24a)
ESGxROA	0.00830 (0.0114)				0.0139** (0.00619)				0.0122 (0.0197)			
ESG Score	-0.00108 (0.00143)				-0.000922 (0.000820)				-0.000158 (0.00192)			
ExROA		0.00158 (0.00542)				0.0105** (0.00429)				-0.00237 (0.00679)		
E Score		-0.000667 (0.000890)				-0.00104* (0.000570)				0.000515 (0.00107)		
SxROA			0.00136 (0.0109)					0.00746 (0.00488)			0.00632 (0.0183)	
S Score			0.000319 (0.00144)					0.000366 (0.000640)			0.000614 (0.00204)	
GxROA				0.0160 (0.0106)				0.00817* (0.00453)				0.0244 (0.0193)
G Score				-0.00189* (0.000972)				-0.000961* (0.000581)				-0.00214 (0.00143)
Return on Assets	-0.465 (0.739)	-0.0858 (0.376)	-0.0764 (0.701)	-0.903 (0.709)	-0.489 (0.332)	-0.231 (0.208)	-0.153 (0.272)	-0.185 (0.267)	-0.777 (1.275)	0.0117 (0.512)	-0.466 (1.247)	-1.495 (1.270)
LN(Market Capitalisation)	0.0476 (0.0513)	0.0479 (0.0519)	0.0446 (0.0501)	0.0453 (0.0511)	0.0537 (0.0446)	0.0552 (0.0449)	0.0533 (0.0445)	0.0528 (0.0450)	-0.00896 (0.0675)	-0.00906 (0.0690)	-0.00924 (0.0638)	-0.00913 (0.0691)
Leverage	0.0688 (0.0748)	0.0652 (0.0742)	0.0617 (0.0751)	0.0670 (0.0729)	0.0508 (0.0428)	0.0568 (0.0443)	0.0450 (0.0432)	0.0424 (0.0423)	0.0961 (0.106)	0.0889 (0.103)	0.0916 (0.108)	0.0962 (0.101)
Revenue Growth	-0.00538 (0.0201)	-0.00430 (0.0206)	-0.00402 (0.0202)	-0.00626 (0.0200)	0.00336 (0.0119)	0.00386 (0.0119)	0.00450 (0.0121)	0.00446 (0.0120)	-0.00752 (0.0277)	-0.00493 (0.0291)	-0.00657 (0.0278)	-0.00926 (0.0277)
52 Week Total Return	0.0266 (0.0610)	0.0252 (0.0603)	0.0253 (0.0611)	0.0283 (0.0606)	-0.0196 (0.0127)	-0.0205 (0.0126)	-0.0210* (0.0128)	-0.0205 (0.0129)	0.0741 (0.0919)	0.0720 (0.0903)	0.0728 (0.0916)	0.0769 (0.0915)
Tobin's Q	0.0221 (0.0269)	0.0226 (0.0268)	0.0241 (0.0271)	0.0216 (0.0267)	-0.0255 (0.0205)	-0.0259 (0.0207)	-0.0245 (0.0205)	-0.0239 (0.0205)	0.0444 (0.0305)	0.0467 (0.0302)	0.0457 (0.0308)	0.0421 (0.0302)
Size	0.0924** (0.0429)	0.0907** (0.0431)	0.0939** (0.0420)	0.0969** (0.0426)	0.00197 (0.0390)	-0.000793 (0.0392)	0.00122 (0.0388)	0.00203 (0.0397)	0.137*** (0.0484)	0.136*** (0.0489)	0.137*** (0.0468)	0.140*** (0.0490)
Board Size	-0.00516 (0.00534)	-0.00478 (0.00535)	-0.00533 (0.00538)	-0.00548 (0.00545)	-0.00232 (0.00592)	-0.00227 (0.00591)	-0.00260 (0.00596)	-0.00205 (0.00595)	0.00111 (0.00733)	0.00169 (0.00755)	0.00104 (0.00753)	0.00164 (0.00772)
Constant	7.059*** (0.233)	7.045*** (0.228)	6.985*** (0.233)	7.091*** (0.235)	6.089*** (0.214)	6.103*** (0.207)	6.022*** (0.207)	6.108*** (0.212)	6.751*** (0.329)	6.732*** (0.307)	6.707*** (0.342)	6.848*** (0.321)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,076	3,076	3,076	3,076	3,076	3,076	3,076	3,076	3,076	3,076	3,076	3,076
Number of Firms	310	310	310	310	310	310	310	310	310	310	310	310
R-squared	0.1195	0.1141	0.1273	0.1250	0.0566	0.0484	0.0666	0.0477	0.1036	0.0984	0.1072	0.0997

Robust standard errors in parentheses (\*\*p < 0.01, \*\* p < 0.05, \* p < 0.1)

**Table 7b: Hypothesis 3 - Regression Results (Moderating Effect of Financial Performance on ESG Scores and Executive Compensation) with Year and Firm Fixed Effects**

Variables	LN(Total Compensation)				LN(Cash Compensation)				LN(Equity Compensation)			
	(13b)	(14b)	(15b)	(16b)	(17b)	(18b)	(19b)	(20b)	(21b)	(22b)	(23b)	(24b)
ESGxROA	0.00629 (0.0132)				0.0122* (0.00673)				0.00946 (0.0232)			
ESG Score	-0.00315* (0.00170)				-0.00175* (0.000959)				-0.00356 (0.00243)			
ExROA		0.00009 (0.00620)				0.00962** (0.00465)				-0.00523 (0.00791)		
E Score		-0.00222** (0.00107)				-0.00179*** (0.000675)				-0.00181 (0.00131)		
SxROA			0.000772 (0.0124)					0.00635 (0.00520)			0.00643 (0.0219)	
S Score			-0.00155 (0.00173)					-0.000193 (0.000747)			-0.00278 (0.00277)	
GxROA				0.0145 (0.0117)				0.00700 (0.00488)				0.0224 (0.0213)
G Score				-0.00190* (0.00109)				-0.000974 (0.000629)				-0.00219 (0.00166)
Return on Assets	-0.358 (0.854)	-0.0284 (0.430)	-0.0584 (0.807)	-0.801 (0.789)	-0.428 (0.365)	-0.223 (0.230)	-0.123 (0.302)	-0.142 (0.289)	-0.663 (1.519)	0.0941 (0.603)	-0.535 (1.524)	-1.370 (1.425)
LN(Market Capitalisation)	0.0628 (0.0632)	0.0638 (0.0633)	0.0594 (0.0614)	0.0542 (0.0628)	0.0663 (0.0531)	0.0687 (0.0531)	0.0654 (0.0532)	0.0632 (0.0538)	-0.00275 (0.0957)	-0.00291 (0.0966)	-0.00281 (0.0897)	-0.0137 (0.0978)
Leverage	0.111 (0.103)	0.0939 (0.101)	0.104 (0.104)	0.106 (0.0967)	0.0381 (0.0504)	0.0398 (0.0516)	0.0309 (0.0509)	0.0270 (0.0492)	0.181 (0.169)	0.149 (0.158)	0.181 (0.175)	0.174 (0.154)
Revenue Growth	-0.00489 (0.0206)	-0.00424 (0.0211)	-0.00363 (0.0206)	-0.00517 (0.0207)	0.00353 (0.0124)	0.00376 (0.0125)	0.00466 (0.0127)	0.00467 (0.0126)	-0.00980 (0.0276)	-0.00785 (0.0289)	-0.00906 (0.0277)	-0.0104 (0.0279)
52 Week Total Return	0.0328 (0.0693)	0.0308 (0.0683)	0.0323 (0.0695)	0.0346 (0.0689)	-0.0227 (0.0144)	-0.0239* (0.0142)	-0.0240* (0.0145)	-0.0236 (0.0147)	0.0950 (0.112)	0.0915 (0.110)	0.0951 (0.112)	0.0977 (0.111)
Tobin's Q	0.00335 (0.0301)	0.00146 (0.0299)	0.00473 (0.0304)	0.00530 (0.0302)	-0.0235 (0.0225)	-0.0251 (0.0227)	-0.0226 (0.0226)	-0.0217 (0.0226)	0.00962 (0.0347)	0.00917 (0.0344)	0.00981 (0.0353)	0.0115 (0.0350)
Size	0.0635 (0.0572)	0.0555 (0.0557)	0.0658 (0.0554)	0.0805 (0.0570)	-0.0305 (0.0500)	-0.0367 (0.0502)	-0.0306 (0.0497)	-0.0277 (0.0511)	0.103 (0.0718)	0.0931 (0.0685)	0.102 (0.0673)	0.125* (0.0739)
Board Size	-0.0129** (0.00626)	-0.0126** (0.00625)	-0.0124** (0.00623)	-0.0131** (0.00639)	-0.00833 (0.00701)	-0.00836 (0.00699)	-0.00837 (0.00704)	-0.00820 (0.00704)	-0.00889 (0.00862)	-0.00832 (0.00878)	-0.00824 (0.00868)	-0.00884 (0.00908)
Constant	7.513*** (0.409)	7.541*** (0.396)	7.407*** (0.406)	7.265*** (0.405)	6.401*** (0.305)	6.452*** (0.297)	6.290*** (0.292)	6.360*** (0.296)	7.567*** (0.585)	7.603*** (0.589)	7.528*** (0.627)	7.270*** (0.567)
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,076	3,076	3,076	3,076	3,076	3,076	3,076	3,076	3,076	3,076	3,076	3,076
Number of Firms	310	310	310	310	310	310	310	310	310	310	310	310
R-squared	0.6975	0.6980	0.6968	0.6973	0.8003	0.8008	0.7998	0.7999	0.5922	0.5925	0.5921	0.5925

Robust standard errors in parentheses (\*\*p<0.01, \*\* p<0.05, \* p<0.1)

## 5. Conclusion and Discussion

This study illustrates the impact of socially responsible practices, or the more commonly known term corporate social responsibility (CSR), on the compensation received by executives in firms listed on the S&P 500 index, the 500 leading publicly traded companies in the United States. More specifically the research question explored in this paper is as follows: “*What is the effect of CSR performance, measured by ESG scores, on executive compensation?*”. The question was further explored by introducing a moderating variable, namely the financial performance of a firm, to investigate whether the inclusion of financial performance influences the relationship between CSR performance and executive compensation. The sample used in this study is comprised of 3180 firm-year observations of S&P 500 companies across the period 2012-2022. Data on executive compensation, the dependent variable of this study, was extracted from the Wharton Research Data Services, and further broken down into three components on which the analyses were carried out. As such executive compensation was split into Total Compensation, Cash-based Compensation and Equity-Based compensation of which the latter two together form a large deal of Total Compensation. Data regarding CSR, was obtained from Thomson Reuters Refinitiv database, where CSR performance is a proxy measured by overall ESG company scores, as well as the deconstructed individual Environmental, Social and Governance pillar scores that make up the overall ESG score. The moderator variable included, financial performance, measured by an accounting-based proxy, return on assets (ROA), was also obtained via Thomson Reuters Refinitiv database. The distinction of this study from others, is the use of overall ESG and individual pillar scores on all three measures of executive compensation in an attempt to assess what is the effect of the individual scores on compensation, in addition to identifying which aspects of ESG drive the relationship the most and on what parts of executive compensation is this seen.

The main regression results reveal significant negative effects of ESG scores on executive compensation, supporting Hypothesis 1, which states that higher CSR performance leads to lower executive compensation. This negative impact is particularly pronounced for cash-based compensation and total compensation.

When examining the effect of individual ESG pillar scores on executive compensation, the study finds that the environmental pillar score has the strongest and consistently negative influence across all types of executive compensation. This result supports Hypothesis 2a, which suggests that better performance on environmental goals decreases compensation. However, Hypothesis 2b, which posits a negative relationship between governance pillar scores and executive compensation, is not supported as the governance pillar score shows no statistical significance. Additionally, Hypothesis 2c, which predicts a positive effect of social pillar scores on cash-based compensation, receives limited support with a small and insignificant effect. An increase in the environmental pillar score leading to a decrease in executive compensation may be attributed to the differences across short-term and long-term interests of shareholders and executives. Since compensation packages are generally created with the idea to align the interests of both executives and shareholders, opinions about short-term financial gains vs long-term environmental benefits may arise. Improving environmental issues and

reaching targets, may mean committing to larger (cash) investments for the firm as whole. Investors may prioritise the short-term financial performance of the firm ahead of the long-term benefits, and react negatively to the possibility of losing value. In theory, if financial targets are not met, executives could stand to see their compensation packages cut, in order to mitigate losses (which is partially seen in the results where ESG Score and the Environmental score has a negative effect on Cash-based compensation i.e., cut bonuses).

Regarding the moderating effect of financial performance (measured by return on assets), the study finds that ROA positively moderates the relationship between ESG scores and cash-based compensation, indicating that the impact of ESG scores on cash compensation is strengthened in the presence of higher ROA. However, ROA does not significantly influence the relationship between ESG scores and total compensation.

This research does not come without its limitations and suggestions for future research. The first limitation of this research is the scope – the dataset is based on S&P 500 firms, which limits the robustness of the results to only larger American firms. Results for smaller or private companies may differ within the US as well as for larger firms outside the US. Future research could extend the sample to European firms where CSR practices are more prominent and generally better reported as is transparency about compensation schemes. Another limitation to the study, is the use of Thomson Reuters ESG scores. Perhaps the inclusion of ESG scores provided by different databases may provide better results or serve as a benchmark. Compensation metrics can also be investigated more thoroughly. Executive compensation packages are much more complex than the three variables used in this research. Similarly to how ESG was decomposed to its three pillars, future research may decide to examine compensation on a more granular level.

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## 7. Appendix

### Appendix 1

**Table 8: Granger causality test for simultaneity**

Table 8 shows the results of the Granger causality test for simultaneity (a form of endogeneity). The null hypothesis states that the given variables do not Granger cause the variable seen in the column named Variable. For the null hypothesis to be rejected, the p-value must be smaller than 0.05. The table does not provide any evidence for the rejection of the null hypothesis – hence it is unlikely that there is an endogeneity issue in the regressions seen in Table 5, Table 6b and Table 7b.

Null Hypothesis (H0)	Variable	Chi-Squared	P-value
LN(Total Compensation) does not Granger cause	ESG Score	0.012	0.914
	E Score	0.013	0.910
	S Score	0.013	0.910
	G Score	0.013	0.910
LN(Cash Compensation) does not Granger cause	ESG Score	0.066	0.797
	E Score	0.720	0.396
	S Score	0.594	0.441
	G Score	0.658	0.417
LN(Equity Compensation) does not Granger cause	ESG Score	0.064	0.800
	E Score	3.759	0.053
	S Score	2.024	0.155
	G Score	3.428	0.064
ESG Score does not Granger cause	LN(Total Compensation)	0.014	0.907
	LN(Cash Compensation)	0.419	0.517
	LN(Equity Compensation)	0.041	0.839
E Score does not Granger cause	LN(Total Compensation)	0.010	0.919
	LN(Cash Compensation)	0.220	0.639
	LN(Equity Compensation)	0.212	0.645
S Score does not Granger cause	LN(Total Compensation)	0.006	0.937
	LN(Cash Compensation)	0.242	0.622
	LN(Equity Compensation)	0.776	0.378

G Score does not Granger cause	LN(Total Compensation)	0.004	0.948
	LN(Cash Compensation)	0.269	0.604
	LN(Equity Compensation)	1.197	0.274