ERASMUS UNIVERSITY ROTTERDAM

Erasmus School of Economics

MSc thesis program Financial Economics

Corporate Social Performance and Executive Compensation

Abstract:

This thesis investigates the relationship between corporate social performance and executive compensation. A panel dataset is constructed of 12,210 observations from 2007 through 2020 with a geographical focus on North America. Reputational risk is used as a proxy for corporate social performance. The results of ordinary least squares fixed-effects regressions show that there is no significant relationship between corporate social performance and executive compensation when several control variables are used. The results also show that there appears to be no relative performance evaluation. Executives in industries with higher average reputational risk do appear to receive less compensation. It is possible that the use of a different proxy for corporate social performance would lead to different results. Also, constructing more detailed peer groups could produce evidence in favor of relative performance evaluation.

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Date final version: 4 August 2022

TABLE OF CONTENTS

CHAPTER 1, Introduction

Agency theory suggests that executives should be incentivized to act in the best interest of shareholders. The primary goal of shareholders would be the maximization of shareholder value (Holmström, 1979). Yet, the modern day investor also seems to care about the social impact that an investment has. What research finds is that investors are willing to give up financial performance in order to invest in line with their social preferences (Maas, 2018). Agency theory then predicts that executives should be incentivized to improve the social impact of their company on behalf of shareholders.

For an increasing number of executives, compensation is at least partly dependent on environmental or social targets. An example of this is the CEO of Starbucks, for whom 10% of his annual bonus is tied to the elimination of plastic straws from stores and a reduction in farm-level methane emissions. Starbucks is not the only company implementing this type of incentive. Over 20% of Russell 3000 companies incorporated social responsibility targets into their executive compensation in 2022, up from 7% in 2018 (Temple-West, 2022).

The goal of this thesis is to examine the possible link between corporate social performance (CSP) and executive compensation. The mechanism of agency theory describes how executives should be incentivized to maximize shareholder value (Holmström, 1979). Yet, Riedl and Smeets (2017) find that at least some investors care about the societal impact of companies and are willing to sacrifice financial performance in order to invest in line with their social preferences. This would indicate that shareholders do not solely care about the financial performance but also about the social performance of a company. Agency theory then predicts that executives should also be incentivized to improve the societal impact of their company. This is also what is happening in practice with the aforementioned social responsibility targets in executive compensation. Maas (2018) even finds that these targets appear to improve CSP as long as they are specific and quantitative. Considering all this, an executive's compensation increases as the CSP of their respective company improves. The first hypothesis is as follows:

Hypothesis 1: There is a positive relationship between CSP and executive compensation.

Relative performance evaluation (RPE) theory predicts that an executive's compensation is benchmarked against that of peers. Examples of shocks that should be filtered out are changes in energy costs or an economic downturn. Jayaraman, Milbourn, Peters and Seo (2021) find that on average firms filter are able to filter out shocks to stock returns. However, Jenter and Kanaan (2015) find that CEOs are more likely to be fired after bad industry performance. This would indicate that the filtering out of shocks is not perfect. Overall, academic literature finds that most exogeneous shocks can be filtered out with accurate peer selection (Jayraraman et al, 2021). The consequence of this is that an executive's compensation is expected to be adjusted downwards for good industry performance. This leads to the second hypothesis:

Hypothesis 2: There is a negative relationship between the CSP of industry peers and executive compensation.

An important part of CSP is the environmental impact that a company may have. Berry and Junkus (2013) find that investors are particularly concerned about environmental and sustainability issues. The societal relevance of these issues appears to have increased over the last few years. Climate change is becoming more noticeable with the increased occurrence of extreme weather events. This has led to consumers urging companies to take action with regards to reducing their carbon footprint and ethically sourcing their materials. The fact that these issues have become more relevant could mean that executive compensation has also become more linked to CSP over time. It is then to be expected that there is an upward trend in the magnitude of the effect of CSP on executive compensation. The third hypothesis is as follows:

Hypothesis 3: The impact of CSP on executive compensation has increased in the last few years.

Data on reputational risk is used as a proxy for CSP. Along with data on executive compensation and financial performance, a panel dataset is constructed. A fixed effects ordinary least squares regression is used to test the relationship between executive compensation, CSP and industry CSP. An ordinary least squares regression with industry fixed effects is performed for each year available in the dataset in order to identify a possible trend.

The results of the fixed effects ordinary least squares regression show that there is no clear relationship between CSP and executive compensation in the dataset. The coefficient for CSP is significant at the 5% level in one regression but this significance disappears when all of the control variables are added. A result that is significant is that CEO compensation is adjusted downwards in industries with higher average reputational risk. This downward adjustment is incorrect as executives have little to no control over the average reputational risk in their industry. The ordinary least squares regressions with industry fixed effects shows that there is no substantial trend over time in the effect of CSP on executive compensation.

The fact that no significant relationship is found between CSP and executive compensation in this dataset does not mean that it does not exist at all. Perhaps a larger dataset or different methodology can uncover a clear relationship. Also, CSP is difficult to quantify and having a different proxy instead of reputational risk could drastically change the results.

The thesis is structured as follows. Chapter 2 gives a compact overview of executive compensation and its history. Chapter 3 focuses on providing an academic background to agency theory, socially responsible investing and corporate social performance. Chapter 4 explains the data collection process and defines the various variables. Also, the methodology is discussed. Chapter 5 presents the results of the various regressions. Lastly, chapter 6 draws conclusions from the results and gives suggestions for further research.

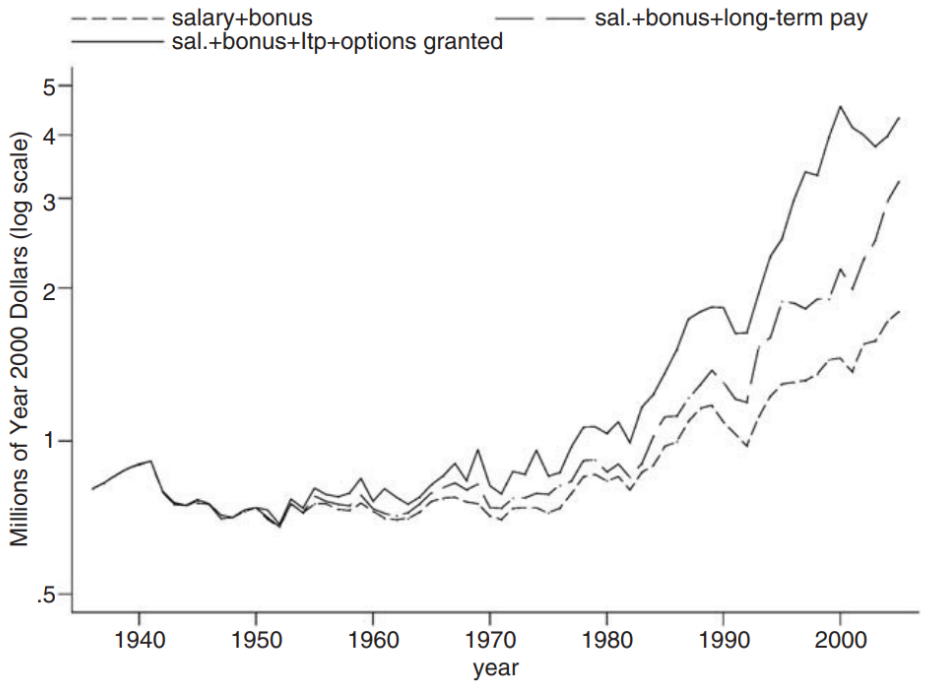
CHAPTER 2, The Evolution of Executive Compensation

CEO compensation is a complex topic. It is important to have a good overview of the various types of compensation and pay structures that exist. The following section will outline the evolution of CEO compensation and show how it got to where it is today.

2.1 The beginning of Executive Compensation

Most of the executive pay packages today contain five elements. These elements are a base salary, annual bonus, payouts from long-term incentive plans, restricted option grants and restricted stock grants. Additionally, CEOs may receive contributions to defined-benefit pension plans, various perquisites and, in case of their departure, severance payments (Frydman & Jenter, 2010). Frydman & Saks (2010) examine the relative importance of these different compensation elements from 1936 to 2005. Their results can be seen in figure 1. What the researchers find is that between 1936 and the 1950s, CEO compensation consisted mainly of salaries and annual bonuses. This is illustrated by the short dashed line not diverging much from the other lines. In the 1960s, long-term incentive plans make an introduction. These plans differ from bonuses as they are based on multi-year performance and are paid out over multiple years. The introduction of long-term pay plans can be seen by the long dashed line starting to diverge from 1960 onwards.

Figure 1: Components of annual compensation from Frydman & Saks (2010)



2.2 Stock Options

The most drastic shift in the relative importance of the different pay components occurs in the 1980s. This decade marks the start of a broader adoption of stock option compensation. This is again illustrated in figure 1 where the solid line starts to diverge at an increased pace from 1980 onwards. Stock options are a useful tool in tying CEO compensation directly to share prices, which incentivizes the creation of shareholder value. The main driver behind the popularity of stock option compensation is a 1950s tax reform that permitted certain option payoffs to be taxed at a much lower rate (Frydman & Jenter, 2010).

Stock option compensation did not catch on immediately. The biggest surge in popularity would occur during the 1980s and 1990s. Only 20% of the total salary of S&P 500 CEOs was stock options in 1992. This number rose to 49% in 2000 (Frydman & Jenter, 2010). The likely cause for this rise are tax policies that advantage performance-based pay and by accounting rules that reduce the cost of option compensation to the firm (Hall & Murphy, 2003).

2.3 Other Compensation

The forms of compensation that have not yet been touched upon are perquisites, pensions and severance pay. Academic literature is divided over the reason for the existence of these forms of payment. Bebchuk and Fried (2004) argue that these compensation elements allow executives to extract rent. Contrary to that, Fama (1980) argues that they arise as a consequence of optimal contracting when goods and services that the CEO desires can be acquired by the firm for a lower price. Similarly, these forms of pay may increase productivity and thereby increase shareholder value (Rajan & Wulf, 2006).

CHAPTER 3, Theoretical Framework

The aim of this chapter is to give an overview of the existing academic literature. Additionally, three hypotheses will be developed.

3.1 Agency Theory

It used to be common for owners of a company to also be managing the company. This was especially the case for small family businesses where ownership was handed down from generation to generation. However, at the turn of the twentieth century, many companies started to become too big to be managed by a single family and separated corporate ownership from corporate control (Frydman & Jenter, 2010). This created a principal-agent problem where the executives were not necessarily acting in the best interest of shareholders. For example, a self-interested executive might be more interested in empire building or cutting corners in his day-to-day tasks. These are actions that harm shareholder value.

This is an agency problem that can be alleviated by aligning the interests of executives with those of shareholders (Jensen & Meckling, 1979). Holmström (1979) stipulates that an agent should be incentivized to perform the action that best serves the goal of the principal. This is not practical for executive compensation as the shareholder does not know what the best action in every situation is. The next best solution is incentivizing the executive to maximize shareholder value, as this is the ultimate goal of shareholders. There are several ways in which this can be achieved. A commonly used method is equity compensation or stock option packages. Bonuses linked to financials are another way of aligning the interests of executives with those of shareholders. This could be bonusses linked to revenue targets or a certain profit margin (Frydman & Jenter, 2010).

Even though equity linked compensation and stock options are common in pay structures nowadays, an average CEO's fractional equity ownership remains low. This indicates that this principal-agent problem remains relevant (Frydman & Jenter, 2010).

3.2 Socially Responsible Investing

Standard portfolio theory states that an investor considers two variables when making an investment decision. Perceived risk and expected return (Elton, Gruber, Brown & Goetzmann,

2009). In practice however, investors also want to invest in line with their social preferences. Some individuals may not want to invest in tobacco whereas others would rather not buy shares of fossil fuel companies. Considering the societal impact of an investment is also called socially responsible investing (SRI).

It is difficult to find one specific definition for SRI, as it can mean different things to different investors. Berry and Junkus (2013) surveyed approximately 5,000 investors, of which some invest in SRI funds and others do not. What they find is that investors from both groups care most about environmental and sustainability issues. Also, investors prefer to take a holistic approach to SRI. This entails that they would rather reward firms that display positive social behavior than exclude firms on the basis of certain products or practices.

In an influential paper, Sparkes and Cowton (2004) note how they observe a "step change" in SRI. They notice in 2004 how SRI was becoming more mainstream and institutional investors are getting involved. They also observe that this SRI is translating into the adoption of corporate social responsibility (CSR) by major companies. They argue that shareholder resolutions in particular impacted how companies treated their stakeholders. Almost 20 years later, SRI has not slowed down. This is illustrated by the fact that the total amount of money invested in sustainable mutual funds and sustainability focused exchange-traded funds rose globally by 53% in 2021 to $2.7 trillion, with a net inflow of $596 billion (Kishan, 2022).

The financial performance of SRI compared to conventional investing is a highly debated topic in academic literature. According to Hamilton, Jo and Statman (1993), there are three possible scenarios. The first is that the socially responsible characteristic of a stock is not of influence, and the expected return is equal to that of conventional stocks. The second scenario is that SRI drives up stock prices for socially responsible stocks and decreases their expected stock returns. Alternatively, under the motto of "doing well while doing good", socially responsible stocks may outperform their conventional counterparts. What the researchers find is that there appears to be no statistically significant excess returns for socially responsible mutual funds compared to conventional mutual funds. Moreover, a meta-analysis of 85 studies concludes that SRI is neither a weakness nor a strength compared to conventional investing. Most of the differences in results between studies was down to differences in methodology, investment horizon, etcetera (Revelli & Viviani, 2015).

The reason for why investors engage in SRI when it does not bring excess returns is a bit of a puzzle. It could be that investors have (overly) optimistic risk-return expectations for SRI or that they simply want to invest in line with prosocial preferences. Riedl and Smeets (2017) find that both social preferences and social signaling explain SRI decisions. Financial motives come second. What is surprising is that socially responsible investors expect to earn lower returns on SRI funds, essentially forgoing financial performance in order to invest in line with their social preferences.

3.3 Corporate Social Performance Incentives

Apparently, at least some shareholders are not only looking for shareholder value but also expect companies to have a positive societal impact. According to agency theory, executives should therefore not only be incentivized to maximize shareholder value but also to improve CSP.

This is exactly what is happening in practice. CSP targets are being incorporated into executive compensation (Maas, 2018). An example that was mentioned earlier is the CEO of Starbucks, whose bonus is linked to achieving the non-monetary goals of removing plastic straws from stores and reducing methane emissions (Temple-West, 2022). Starbucks is not the only company implementing CSP targets into their executive compensation. The United Nations has even put out guidelines to help companies integrate CSP (PRI, 2012).

It is generally accepted that financial performance incentives work. An examination of different pay structures shows that performance is positively related to the percentage of equity held by managers and to the percentage of their compensation that is equity-based (Mehran, 1995). Mixed results have been found for social performance incentives. Maas (2018) looks at the integration of CSP targets in executive compensation and its effect on CSP. The results show that simply incorporating these targets does not automatically lead to better CSP results. However, using quantitative, hard CSP targets can significantly improve CSP results.

Haque and Ntim (2020) look at whether or not executive compensation in general affects carbon output. The idea is that the market can encourage carbon reduction initiatives by rewarding firms with better carbon performance with higher valuations. This in turn would imply that well-meaning corporate boards can be expected to use incentive-based mechanisms,

such as executive compensation, to motivate executive management to undertake carbon abatement projects. What they find is that executive compensation has a positive effect on process-oriented carbon performance, but has no similar effect on actual carbon performance. What this shows is that in order to have a meaningful impact, CSP targets need to be explicitly incorporated into executive compensation.

3.4 Agency Theory and Corporate Social Performance

Chapter 3.1 mentions how agency theory still plays an important role in the relationship between shareholders and executives. Shareholders want to maximize shareholder value and executives are incentivized to achieve this goal. Chapter 3.2 shows how investors are engaging in SRI, where shareholder value is not the only investment criterium. Chapter 3.3 demonstrates how companies use incentives to improve CSP and its effectiveness. Considering all this, agency theory predicts that shareholders will want to incentivize executives to improve CSP. Executive compensation would then be partly dependent on CSP. This brings us to the first hypothesis:

H_1: There is a positive relationship between CSP and executive compensation

3.5 Relative Performance Evaluation Theory

A prediction of agency theory is that an executive's performance should be evaluated relative to that of peers. This is called RPE. The idea behind RPE is that systematic components of performance measures should be filtered out because a CEO has no control over them. Examples of these systematic components are industry performance and economic shocks.

Evidence for RPE being implemented in determining compensation for executives is mixed. Jayaraman et al. (2021) find that, while using product market peers in their tests, on average firms filter out shocks to stock returns. They also find that the extent of filtering increases with the number of peers and that firms are able to completely filter out shocks in the presence of a large number of peers.

Contrary to these results, Jenter and Kanaan (2015) find that CEOs are more likely to be fired after bad industry performance. This indicates that firms are unable to fully filter out factors beyond the control of the CEO in their evaluation of CEO performance.

Thus, literature has found mixed and inconsistent evidence for RPE theory. However, Jayaraman et al. (2021) show that with accurate peer selection and a sufficient number of peers, most exogenous factors can be filtered out. Therefore, it is expected that there is a relationship between CSP relative to peers and CEO compensation.

H_2: There is a negative relationship between the CSP of industry peers and executive compensation

3.6 Climate change

As mentioned before, Berry and Junkus (2013) find that investors are particularly concerned about environmental and sustainability issues. With the effects of climate change becoming more noticeable due to the increasing frequency of extreme weather, it is entirely possible that this concern has grown over time (Stott, 2016).

The COVID-19 pandemic may have given an additional boost to this societal concern. A recent paper finds that Spanish companies that made a donation during the covid crisis outperformed those who did not make a donation. This would indicate that investors base their investment decision more on social factors in times of upheaval (Palma-Ruiz, Castillo-Apraiz & Gómez-Martínez, 2020)

Taking this into consideration, it would not be surprising if the impact of CSP on executive compensation has increased in the last few years, and in particular in 2020.

H_3: The impact of CSP on executive compensation has increased in the last few years

CHAPTER 4, Data and Methodology

This chapter will show where data was gathered and give an overview of the methodology that is used to test the hypotheses. Also, expected outcomes of the statistical tests are outlined and explained.

4.1 Corporate Social Performance Data

Finding a good proxy for CSP is quite a challenge. It is not like financial performance, which can be measured using stock returns, revenue, etcetera. Some researchers have tried using an exact measure such as Haque and Ntim (2020) who use carbon performance. A problem with this method is that it only focuses on the environmental aspect of a firm and does not look at how the firm treats its employees or other stakeholders. A widely used measure of CSP is the environment, social and governance (ESG) score. ESG scores are supposed to be an all-encompassing variable that can be used to compare the CSP of a firm against that of its peers. However, ESG metrics are not flawless.

Dorfleitner, Halbritter and Nguyen (2015) compare different rating approaches of CSP using ESG scores of three important sustainability rating providers. There appear to be differences in what the rating providers understand to be good CSP and ratings for companies differ substantially between providers.

ESG has also started to lose its credibility in society. On the 31st of May in 2022, a large German asset manager was raided by police and is currently being investigated for greenwashing. The whistleblower, a former executive of the asset manager, said: “I still believe in sustainable investing, but the bureaucrats and marketers took over ESG and now it’s been diluted to a state of meaninglessness” (Financial Times, 2022).

RepRisk takes a different approach to assessing CSP. Instead of looking at ESG-ratings, it proposes to look at ESG-risks. It analyzes information from public sources and stakeholders while excluding company self-disclosures. This results in the RepRisk Index (RRI) which dynamically captures and quantifies reputational risk exposure related to ESG issues. These ESG issues include human rights, labour standards, corruption and environmental issues (RepRisk, 2022).

4.2 Peer Grouping

In order to test RPE theory, the right peer groups need to be formed. There are many ways in which peer groups can be formed. Doing this correctly is important for finding significant results. Researchers often use industry classification codes in order to determine in which industry a firm operates. Though, industry classification alone is not enough. Some firms are better able to deal with adverse shocks than others within the same industry. An example is that a larger firm might be able to implement hedging strategies and be better able to absorb shocks than a smaller firm. In this case, further peer grouping based on size is a solution (Albuquerque, 2009).

An adaption of the method proposed by Albuquerque (2009) will be used. First, the industry is determined based on the two-digit NIACS code. Then, firms are grouped by size quartiles based on total revenue in period *t*. The yearly average RRI and stock return are then calculated.

4.3 Data

All of the databases are accessed through the Wharton Research Data Services website (WRDS, 2022). CSP data is gathered from the RepRisk database. It contains data on companies between 2007 and 2020. This restricts the dataset to this time period. Executive compensation data is gathered from the ExecuComp database. This database has compensation data on executives from North American companies, providing a geographical restriction. Financial performance data is gathered from CRSP and accounting data is gathered from CompuStat. Only CEOs are included in the sample as they have the most influence on CSP.

After merging the databases, observations with missing values or impossible values, such as a negative tenure, are removed from the sample. Observations with a tenure of less than one are also removed, as an executive who has not been active for more than a year is unlikely to have had an impact on CSP. Furthermore, some variables, such as return on assets (ROA) have to be calculated. This generates missing values for some observations, which are consequently dropped. Some variables are not normally distributed and are consequently normalized by adding one and taking the natural logarithm. Some variables are lagged by one period as done by Jayaraman et al. (2021) and is related to the use of accounting measures. The result is a sample of 12,210 observations. Descriptive statistics can be seen below in table 1 and table 2:

Table 1: Descriptive statistics for variables

	Count	Mean	Std. Dev.	p25	Median	p75
Total Comp$_t$	12,210	6982.467	7891.227	2704.631	5230.424	8907.458
ln(Total Comp$_t$)	12,210	8.438	1.041	7.903	8.562	9.095
RRI$_t$	12,210	9.956	11.725	0.000	5.583	18.417
Industry RRI$_t$	12,210	9.956	8.311	3.679	7.429	14.522
Firm Ret$_t$	12,210	0.074	0.408	-0.087	0.108	0.279
Industry Ret$_t$	12,210	0.074	0.221	0.002	0.090	0.191
Size$_{t-1}$	12,210	7.759	1.576	6.762	7.727	8.736
BM$_{t-1}$	12,210	0.524	0.557	0.257	0.445	0.719
ROA$_{t-1}$	12,210	0.046	0.107	0.019	0.048	0.087
Tenure$_t$	12,210	2.046	0.683	1.536	2.038	2.533
Age$_t$	12,210	56.993	7.061	52.000	57.000	61.000
Duality$_t$	12,210	0.075	0.264	0.000	0.000	0.000
Own$_{t-1}$	12,210	0.020	0.055	0.001	0.003	0.011

Table 2: Correlation table

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Total Comp$_t$	1.000											
(2) ln(Total Comp$_t$)	0.670	1.000										
(3) RRI$_t$	0.349	0.351	1.000									
(4) Industry RRI$_t$	0.390	0.445	0.709	1.000								
(5) Firm Ret$_t$	0.059	0.087	0.003	0.012	1.000							
(6) Industry Ret$_t$	0.032	0.055	0.015	0.022	0.543	1.000						
(7) Size$_{t-1}$	0.439	0.527	0.606	0.734	0.026	0.048	1.000					
(8) BM$_{t-1}$	-0.073	-0.068	-0.044	-0.024	0.014	0.041	-0.001	1.000				
(9) ROA$_{t-1}$	0.078	0.108	0.067	0.074	0.030	0.001	0.209	-0.132	1.000			
(10) Tenure$_t$	0.015	-0.058	-0.118	-0.126	-0.011	-0.021	-0.101	-0.004	0.035	1.000		
(11) Age$_t$	0.081	0.098	0.070	0.121	-0.014	-0.003	0.126	0.016	0.050	0.381	1.000	
(12) Duality$_t$	0.028	0.024	0.004	-0.017	0.007	-0.012	-0.046	-0.041	0.010	0.078	0.059	1.000
(13) Own$_{t-1}$	-0.076	-0.246	-0.085	-0.109	-0.010	-0.035	-0.126	-0.036	0.026	0.303	0.182	0.059

4.4 Variable Definitions

This part elaborates on the definition of the variables and how some of the variables are calculated. Most of the variables are the same as the variables defined in the paper by Jayaraman et al. (2021).

Table 3: Variable definitions

Variable	Description
Total Comp$_t$	The TotalComp$_t$ variable includes salary, bonus, the grant-date fair value of stock and option grants, long-term incentive payouts, other annual compensation, and all other annual compensation. This is equal to the TDC1 variable in Execucomp (Jayaraman et al., 2021). This variable is in thousands of dollars.
ln(Total Comp$_t$)	lnTotalComp$_t$ is equal to the natural logarithm of 1 plus TotalComp$_t$.
RRI$_t$	RRI$_t$ is equal to the average RepRisk Index for a company in period *t*. The RRI can take a value between -1 and 100. A higher score indicates that the company is associated with more ESG issues.
Industry RRI$_t$	This variable takes the value of the average RRI in the relevant two-digit NAICS industry and size quartile.
Firm Ret$_t$	Firm Ret$_t$ is measured as the natural logarithm of 1 plus the holding period stock return in period *t*.
Industry Ret$_t$	This variable takes the value of the average Firm Ret$_t$ in the relevant two-digit NAICS industry and size quartile.
Size$_{t-1}$	Size is measured as the natural logarithm of 1 plus the total revenue of the firm during *t-1*. A CEO at a larger firm has more responsibility and more impact. Furthermore, a larger firm benefits more from having a talented CEO. Consequently, CEOs at larger firms have higher compensation (Jayaraman et al., 2021).
BM$_{t-1}$	BM$_{t-1}$ is equal to the firm's book-to-market ratio at the beginning of period t. Book-to-market is measured as the book value of equity divided by market value of equity. Book value of equity is measured by shareholders' equity plus deferred tax and investment credit minus preferred stock. The market value is calculated by the number of common shares outstanding multiplied by the share price (Jayaraman et al., 2021). This variable is added as it proxies for growth opportunities. A lower book to market ratio signals that the firm has more growth opportunities. Academic literature agrees that CEO's of firms with growth opportunities receive higher renumeration (Li & Kuo, 2017).
ROA$_{t-1}$	ROA$_{t-1}$ is equal to the income before extraordinary items during *t-1* divided by the total assets at the end of *t-1*.

$Tenure_t$	Tenure is measured as the natural logarithm of 1 plus the difference between the year of the DATEBECAMECEO variable in ExecuComp and period *t*. Tenure has been found to significantly increase compensation (Mangel & Singh, 1993).
Age_t	The variable age is equal to the CEO age variable in ExecuComp in period *t*.
$Duality_t$	Duality is a dummy variable that is equal to 1 if the CEO is also chairman of the board and 0 otherwise. Duality is associated with higher CEO power and higher compensation (Krause, Semadeni & Cannella, 2014).
Own_{t-1}	Ownership is calculated as the number of shares owned by the CEO excluding options divided by the number of shares outstanding for the company at the beginning of period *t*.

4.5 Methodology

In order to test the hypotheses, an adaptation of the method applied by Jayaraman et al. (2021) is used. Most of the variable definitions and regression techniques are also borrowed from this paper. *t* indicates the time period and *i* represents the company.

Hypothesis 1:

There is a positive relationship between CSP and executive compensation

This hypothesis can be tested using a fixed effects ordinary least squares (OLS) regression. This empirical specification was first proposed by Holmström and Milgrom (1987). The regression will take the form of equation 1:

$$ln(TotalComp_{t,i}) = \beta_1 RRI_{t,i} + \beta_2 ControlVariables_{t,i} + \varepsilon_t \quad (1)$$

This OLS regression will use year and company fixed effects in order to control for year and firm specific factors. A higher RRI value indicates a higher current level of ESG risk incidents. Therefore, a higher RRI should lead to lower CEO compensation. The coefficient β_1 in equation 1 is expected to be negative.

Hypothesis 2:

There is a negative relationship between the CSP of industry peers and executive compensation

Hypothesis 2 can also be tested by using a fixed effects ordinary least squares regression as seen in equation 2:

$$ln(TotalComp_{t,i}) = \beta_1 RRI_{t,i} + \beta_2 RRIindustry_{t,i} + \beta_3 ControlVariables_{t,i} + \varepsilon_t \quad (2)$$

For the same reason as with hypothesis 1, year and company fixed effects are used. RPE theory predicts that a CEO is not compensated for industry performance. Therefore, compensation should be corrected for industry performance. This would mean that a higher industry RRI leads to a upwards adjustment of compensation. It is expected that coefficient β_2 in equation 2 will be positive.

Hypothesis 3

The impact of CSP on executive compensation has increased in the last few years

The third hypothesis will be tested by performing an ordinary least squares regression for the years 2007 through 2020. The form of the regression is similar to that of the one used for testing hypothesis 1.

$$ln(TotalComp_i) = \beta_1 RRI_i + \beta_2 ControlVariables_i + \varepsilon \quad (3)$$

Only return and size will be used as control variables in this regression. This is because the number of observations is lower due to only a single year of observations being used for each regression. Keeping the regression simple improves the chance of significant results. Industry fixed-effects are added to the regression to control for industry specific factors. The coefficient β_1 is expected to increase over time as RRI starts to play a larger role in determining executive compensation.

CHAPTER 5, Results

This chapter will show the results of the regressions that were performed. It will also discuss the significance of the results and the sign of the coefficients.

5.1 Hypothesis 1

Table three shows an overview of the regressions performed to test hypothesis 1. Hypothesis 1 states that there is expected to be a positive relationship between CSP and executive compensation.

The first regression is simply testing whether executive compensation is dependent on stock returns, as predicted by agency theory. The regression shows that this is indeed the case, as the coefficient of the Firm Return variable is positive and significant at the 1% level after controlling for company fixed-effects and year fixed-effects. This result is what is to be expected.

Regression 2 is the same but it looks at RRI instead of stock returns. Without controlling for other time varying factors, the RRI appears to have no significant effect on executive compensation. The same is true for the third regression where the return variable is added to the model. Again, the RRI variable remains insignificant while there is a clear relationship between stock return and executive compensation.

Regression 4 shows something interesting. By adding firm size as a control variable to the regression, the RRI variable becomes negative and significant at the 5% level. This is also the outcome that is predicted by agency theory. Even after adding more control variables, as seen in regression number 5, the RRI remains negative and significant at the 10% level. It is only after adding ownership as a control variable in regression 6 that the RRI variable is no longer significant.

Overall, there appears to be a negative relationship between a company its RRI and CEO compensation. The significance of this relationship is however limited, particularly compared to other variables.

Table 4: Regression results hypothesis 1

	(1) Return	(2) RRI	(3) Both	(4) Controlled	(5) Controlled	(6) All
Firm Ret_t	.121***		.120***	.139***	.144***	.145***
	(.014)		(.014)	(.014)	(.014)	(.014)
RRI_t		-.001	.000	-.002**	-.001*	-.001
		(.001)	(.001)	(.001)	(.001)	(.001)
$Size_{t-1}$				.228***	.211***	.199***
				(.015)	(.015)	(.015)
BM_{t-1}					-.029**	-.030**
					(.014)	(.014)
ROA_{t-1}					.259***	.280***
					(.067)	(.067)
$Duality_t$					.076*	.089**
					(.040)	(.040)
$Tenure_t$					.066***	.078***
					(.013)	(.013)
Age_t					-.003*	0.000
					(.001)	(.001)
Own_{t-1}						-2.490***
						(.213)
Constant	8.093***	8.099***	8.094***	6.419***	6.533***	6.566***
	(.031)	(.032)	(.032)	(.114)	(.130)	(.130)
Observations	12210	12210	12210	12210	12210	12210
R-squared	.115	.110	.115	.134	.138	.149
Company FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES

Standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*
Table 4 presents the regression results of variations on the following ordinary least squares regression:
$ln(TotalComp_{t,i}) = + \beta_1 RRI_{t,i} + \beta_2 ControlVariables_t + \varepsilon_t$
The $RRI_{t,i}$ variable is added from column 2 onwards. Both year fixed effects and company fixed effects are used. The estimations use the full sample. Normal standard errors are used. All variables are defined in table 3.

5.2 Hypothesis 2

Table 4 shows the regression results for testing hypothesis 2. Hypothesis 2 predicted that there is a negative relationship between the CSP of industry peers and executive compensation.

The first regression is a test for RPE theory with regards to stock returns. As expected, executive compensation is still positively related to stock returns and significant at the 1% level. The coefficient for industry return is negative, also as expected. This coefficient is expected to be negative as executive compensation should be adjusted downwards as industry performance goes up. It is however not significant at the 10% level. The absence of RPE in a sample is possibly related to the method of peer group construction (Jayaraman et al., 2021). Regression 2 paints a similar picture, where no significant RPE is found for the RRI.

Regression three adds control variables to the test for RPE in returns. Both the return and industry return coefficient increase in significance but the industry return variable does not cross the 10% threshold. Something interesting happens in regression 4 where the industry RRI variable becomes significant at the 1% level. The sign of the corresponding coefficient is negative which is not as expected. The result would indicate that an executive's compensation is adjusted downwards when there is more reputational damage in an industry. A CEO can rarely influence the level of reputational damage in an industry and should therefore not be punished for it in the form of lower renumeration. A comparable effect was mentioned in the theoretical framework where CEOs are more likely to be fired after bad industry performance (Jenter & Kanaan, 2015). This effect remains significant when all control variables are added to the model in regression 5.

Table 5: Regression results hypothesis 2

	(1) Return	(2) RRI	(3) Control	(4) Control	(5) All
Firm Ret_t	.125***		.151***	.144***	.150***
	(.016)		(.016)	(.014)	(.016)
Industry Ret_t	-.025		-.034		-.036
	(.039)		(.039)		(.039)
RRI_t		.000	-.001	.000	.000
		(.001)	(.001)	(.001)	(.001)
Industry RRI_t		-.002		-.007***	-.007***
		(.002)		(.002)	(.002)
$Size_{t-1}$			.199***	.211***	.212***
			(.015)	(.016)	(.016)
BM_{t-1}			-.030**	-.030**	-.030**
			(.014)	(.014)	(.014)
ROA_{t-1}			.281***	.273***	.273***
			(.067)	(.067)	(.067)
$Duality_t$			.090**	.088**	.088**
			(.040)	(.040)	(.040)
Own_{t-1}			-2.490***	-2.477***	-2.476***
			(.213)	(.213)	(.213)
$Tenure_t$			.078***	.078***	.078***
			(.013)	(.013)	(.013)
Age_t			.000	.000	.000
			(.001)	(.001)	(.001)
Constant	8.093***	8.104***	6.566***	6.487***	6.486***
	(.031)	(.032)	(.130)	(.131)	(.131)
Observations	12210	12210	12210	12210	12210
R-squared	.115	.110	.149	.150	.151
Company FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES

Standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*
Table 5 presents the regression results of variations on the following ordinary least squares regression:
$ln(TotalComp_{t,i}) = \beta_1 RRI_{t,i} + \beta_2 RRIindustry_{t,i} + \beta_3 ControlVariables_{t,i} + \varepsilon_t$
The $RRI_{t,i}$ variable and $RRIindustry_{t,i}$ *variable* are added from column 2 onwards. Both year fixed effects and company fixed effects are used. The estimations use the full sample. Normal standard errors are used. All variables are defined in table 3.

5.3 Hypothesis 3

The third hypothesis predicted that there would be an increase in the coefficient of RRI over the years as investors become more concerned with CSP over the last few years. Table 5 shows the regression. There appears to be no clear and discernable pattern over the last few years. The sign of the coefficient changes from positive to negative and back to positive again. The only year where the coefficient for RRI is significant at the 5% level is 2017. A table with the regression results from all the years in the dataset can be found in appendix A and shows a similar pattern for the other years.

A curious result that can be seen in the table in the appendix is that the coefficient for RRI becomes significant at the 1% level in 2008. The coefficient is positive indicating that higher reputational risk leads to increased executive compensation. A possible explanation is that, during the fallout of the financial crisis, highly paid executives were called out and portrayed negatively by the media. This would lead to a higher RRI for companies with higher paid executive and may explain results for the 2008 regression.

Table 6: Regression results hypothesis 3

	(1) 2015	(2) 2016	(3) 2017	(4) 2018	(5) 2019	(6) 2020
RRI_t	.001	-.002	-.007**	.000	.002	-.005
	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)
Firm Ret_t	.227***	.118	.286***	.186***	.308***	.273***
	(.073)	(.089)	(.088)	(.070)	(.081)	(.078)
$Size_{t-1}$	.344***	.371***	.360***	.390***	.357***	.393***
	(.021)	(.023)	(.025)	(.023)	(.024)	(.025)
Constant	5.283***	5.012***	5.709***	4.252***	4.547***	5.771***
	(.566)	(.629)	(.642)	(.776)	(.810)	(.222)
Observations	995	1002	988	947	925	826
R-squared	.351	.316	.275	.372	.359	.312
Industry FE	YES	YES	YES	YES	YES	YES

Standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*
Table 6 presents the regression results of variations on the following ordinary least squares regression:
$ln(TotalComp_i) = \beta_1 RRI_i + \beta_2 ControlVariables_i + \varepsilon$
Industry fixed effects are used. The estimations use the observations from the specific year identified at the top of the column. Normal standard errors are used. All variables are defined in table 3.

CHAPTER 6, Conclusion

The results related to the three hypotheses give an overview of the overall relationship between CSP and executive compensation. The results to the first hypothesis show how there appears to be a relationship between CSP and executive compensation, as CEO's of firms with higher reputational risk receive less compensation. The significance of this effect however depends on the control variables that are used and disappears when the ownership variable is added. The second hypothesis demonstrates how there appears to be no RPE, until control variables are added. What emerges is the apparent downward adjustment of CEO compensation in industries with higher average reputational risk. This is an unexpected result and would indicate that companies incorrectly punish CEO's for bad industry CSP. The results to hypothesis 3 reveal how there appears to be no trend in the relationship between CSP and executive compensation over time between 2007 and 2020. What does stand out is that the results for 2008 and 2017 are significant, but with different signs. The results for 2008 are most likely affected by the financial crisis.

There is a plethora of literature on executive compensation and its determinants. However, the relationship between CSP and executive compensation through the lens of agency theory has not yet been thoroughly examined. This thesis finds this relationship to be ambiguous and comparatively insignificant compared to other determinants, such as firm size. Thus, the main contribution to existing literature is that there is no strong link between executive compensation and CSP in this sample.

The lack of a clear link could indicate that CSP incentives only make up a small part of an executive's salary or that many companies have not yet incorporated CSP incentives effectively. Maas (2018) found that incorporating well defined and quantitative CSP targets into executive compensation can significantly improve a companies CSP. Thus, the findings of this thesis suggest that there is a lot to gain by more strongly linking CSP to executive compensation.

What the results also show is that companies operating in an industry where there is a higher average reputational risk are incorrectly compensating their CEO less than a CEO of a company in an industry with lower reputational risk. It is therefore advisable for companies operating in these high reputational risk industries to accurately benchmark CSP against peers when

implementing CSP incentives into executive compensation. The importance of this is strengthened by the fact that these companies with on average bad CSP have the most to gain from CSP incentives.

Further research into the relationship between CSP and executive compensation might focus on using different measurement techniques for CSP. Different methods for quantifying CSP have their strengths and weaknesses and there is not a perfect method (yet). Using a different method might lead to different and or more significant results. Another suggestion would be to construct more detailed peer groups when examining RPE in CSP based compensation. Especially in combination with a larger dataset, this could lead to more significant results.

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Appendix A

	(1) 2007	(2) 2008	(3) 2009	(4) 2010	(5) 2011	(6) 2012	(7) 2013	(8) 2014	(9) 2015	(10) 2016	(11) 2017	(12) 2018	(13) 2019	(14) 2020
RRI	.001	.031***	.009	-.001	-.002	.002	-.001	-.002	.001	-.002	-.007**	.000	.002	-.005
	(.014)	(.008)	(.007)	(.004)	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)
Return	.124	.126	.057	.256***	.275***	.120	.099	.469***	.227***	.118	.286***	.186***	.308***	.273***
	(.161)	(.081)	(.068)	(.084)	(.074)	(.084)	(.087)	(.095)	(.073)	(.089)	(.088)	(.070)	(.081)	(.078)
Size	.36***	.26***	.27***	.391***	.377***	.353***	.37***	.337***	.344***	.371***	.36***	.39***	.357***	.393***
	(.046)	(.038)	(.030)	(.022)	(.021)	(.021)	(.021)	(.022)	(.021)	(.023)	(.025)	(.023)	(.024)	(.025)
Constant	5.917***	4.912***	5.506***	5.527***	5.244***	5.367***	5.032***	5.798***	5.283***	5.012***	5.709***	4.252***	4.547***	5.771***
	(.433)	(.849)	(.708)	(.502)	(.443)	(.443)	(.474)	(.497)	(.566)	(.629)	(.642)	(.776)	(.810)	(.222)
Observations	365	515	613	956	1025	1027	1015	1011	995	1002	988	947	925	826
R-squared	.246	.192	.193	.347	.337	.324	.364	.324	.351	.316	.275	.372	.359	.312
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Standard errors are in parentheses

**** p<.01, ** p<.05, * p<.1*

Appendix A presents the regression results of variations on the following ordinary least squares regression:

$ln(TotalComp_i) = \beta_1 RRI_i + \beta_2 ControlVariables_i + \varepsilon$

Industry fixed effects are used. The estimations use the observations from the specific year identified at the top of the column. Normal standard errors are used. All variables are defined in table 3.