ERASMUS UNIVERSITY ROTTERDAM
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Firm Performance and CSR: The Role of Market Sentiment

Abstract

Based on annual Corporate Social Responsibility (CSR) scores on four different pillars, I investigate the sensitivity of the effect of CSR on firm performance to sentiment in the market. The OLS regression results suggest that firm performance goes up with a higher CSR economic score, but the outcomes do not show different firm performance when looking at the corporate governance, social or environmental score. However, when a company has an increasingly intensive CSR investment strategy, the return is lower compared to the return of lower CSR scoring companies for all different CSR pillars. The analyses conducted reveals some influence from market sentiment on firm value based on CSR which is negative on the short-term but does not show an effect with an improving CSR strategy. The sensitivity to sentiment of the CSR effect on firm performance does not hold when excluding the recessionary period of 2008-2009.

Keywords: Corporate Social Responsibility, Investor Sentiment, Financial Performance

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1. Introduction

In recent years, Corporate Social Responsibility (CSR) has gained importance worldwide, not only in business but also politically as well as academically (Campbell, 2007). An increasing share of market participants have become aware of socially responsible investing, and inventors want to see that they invest in companies that acknowledge the relevance of environmental, social and governance (ESG) factors (Malla, 2017).

Existing literature has provided evidence that CSR is driven by different financial and non-financial factors. When looking at a financial side, literature has not come to a concluding answer on the association between socially responsible investment and increasing firm value (Dam and Scholtens, 2015). However, CSR is not only related to a companies' decisions on profit maximization, but also to external factors such as legislation, institutional arrangements and societal demands (Liang & Renneboog, 2017). The objectives beyond profit maximization that influence the CSR investment decisions of firms differ. This can be caused by country or firm specific factors, or as Liang and Renneboog (2017) argue, by a country's legal origin.

Different studies highlight the relevance of the possible behavioral explanation for companies' CSR investment strategy. As the investors' expectations towards CSR have increased, market sentiment can play a role in the companies' decisions on CSR investments (Pradhan, 2018). Cheah et al. (2011) highlight the direct and positive link between Socially Responsible Investors (SRI) and CSR. In addition to this, Cheong et al. (2017) find evidence that CSR is reactive to investor and market sentiment. They state that negative sentiment is followed by higher CSR efforts (Cheong et al., 2017). Keleş and Çetin (2018) extend these studies and investigate whether noise trading follows on CSR, causing an increase in market volatility. They state that their study introduces this combination of the effect of investor sentiment and CSR.

In my thesis, I focus on the link between investors preferences and CSR and build further on the framework introduced by Keleş and Çetin (2018). I investigate whether the financial performance of companies that invest more in CSR are more sensitive to sentiment than companies that have lower CSR investment. Following on this, I study whether a higher Corporate Social Responsibility (CSR) score leads to higher returns and how this varies with market sentiment. Additionally, I investigate the effect on firm financial performance of an improvement of CSR as a reaction to investor sentiment. This can show if the profitability of CSR investments is affected by sentiment in the market.

Studies on investor sentiment and firm performance show that the returns in the market are lower in the period following on high investor sentiment (Keleş and Çetin, 2018). This is especially the case for very volatile, unprofitable, non-dividend paying, young firms (Baker & Wurgler, 2006). Moreover, Keleş and Çetin (2018) find that CSR creates noise which increases volatility. Following on these findings, my hypothesis is that companies with a higher CSR score will have lower returns following a period of high sentiment relative to companies with a lower CSR score. Next to this, my second hypothesis is that firm performance of companies that have an improving CSR strategy is more sensitive to sentiment than companies that do not show an improvement in their CSR investment score.

Existing studies focus on CSR regarding the environmental and social responsibility (Keleş and Çetin, 2018; Naughton et al. 2014). I add to this literature by looking at the total CSR score, which includes governance and economic responsibility scores as well as the environmental and social score to get a broader picture of the relation between CSR and firm performance and the sensitivity to sentiment in the market. Furthermore, I use more recent data as I study the time

period from 2007-2017 for the US stock market. The motivation to use the more recent data is based on the increasing importance and awareness of CSR (Pradhan, 2018).

According to the highest and lowest 25% ASSET4 CSR scores of the companies in the sample I form portfolios and construct a dependent variable existing of the difference in returns. I use the stock price returns to measure financial performance of the companies and conduct an OLS regression on different market sentiment indicators and add the Fama and French four risk factors as control variables. The ASSET4 social responsibility scores are assigned on four different aspects of the CSR environment, which are a score on corporate governance, social responsibility, environmental responsibility and economic responsibility. I use four different indicators for sentiment in the US market. These are the Consumer Sentiment Index of the university of Michigan, the Investor Sentiment Index constructed by Baker and Wurgler (2006), the Business Confidence Index of the OECD and the Consumer Confidence Index from the Federal Reserve Economic Database. These four different sentiment indicators are used to ensure the results of the analyses are valid as sentiment is difficult to measure (Baker & Wurgler, 2006; DeFranzo, 2012, Feldman, 2010). The Fama and French four factors, the market risk return, the firm size, the value premium and the momentum factor, are added as controls to capture the abnormal returns coming from the macroeconomic circumstances.

First of all, the analysis on the CSR annual scores shows that a higher responsibility score is associated with higher returns, which significantly holds for the total CSR score and the economic responsibility pillar. The results of the subsequent analysis on an increasingly improving CSR investment strategy show a significantly lower return premium if the engagement in responsible investing has increased in the period 2007-2017. This lower premium suggests that CSR commitment results from moral incentives, rather than an incentive to increase long-term firm performance.

A possible explanation of the different outcomes of the long and short-term CSR scores can be assigned to the time necessary for processing information on the CSR engagement (Tetlock, 2014). The difference between the short-and long-term outcomes can on the one hand arise from an agency problem where managers act in their own interest, resulting in lower long-term returns. However, this is not likely as with increasing CSR, also the governance structure improves (Samet and Jarboui, 2017). Alternatively, the difference in short- and long-term CSR commitment can be due to investors that value social responsibility and therefore accept the lower returns. Secondly, the return premium is lower following high market sentiment when based on the annual CSR scores. On the other hand, the return premium for the improving CSR investment does not significantly alter following high sentiment. The negative sentiment effect on the CSR and firm performance relation in the short-term results is low in significance and the effect between the sentiment indicators varies. These outcomes can flow from the difficulty to capture sentiment and the different approaches of the sentiment indicators to measure sentiment.

Lins et al. (2017) find that the CSR and firm performance association increases in economic distressed times, which is why I control for the financial crisis in my analyses. When excluding the 2008-2009 period, the short-term CSR firm performance sensitivity to sentiment declines. The results of the long-term analysis do not alter when excluding the financial crisis.

My thesis is organized as follows; in section 2 relevant existing literature is reviewed. Section 3 describes the data collected and the methodology used to conduct the analysis on the CSR-firm performance sensitivity to sentiment. Section 4 describes the empirical results and in section 5 additional robustness checks are summarized to validate the findings. Finally, in section 6 the conclusions are summed up and some points of discussion will be provided, as well as recommendations for future research.

2. Literature Review

In this section, relevant literature on CSR and investor sentiment is discussed, with a focus on the definition of CSR and the role of responsible investment in financing decisions studied in previous work.

2.1 Different Dimensions of CSR

Existing literature has no single definition for CSR as there are numerous factors that influence a firms' decision to engage in CSR (Keleş & Çetin, 2018). According to Toyne (2005), CSR captures the extent to which a company is aware of its impact on environmental, social, ethical and economic issues and undertakes action in a responsible way to deal with negative externalities coming from their business activities. In line with this description, Dahlsrud (2008) examines academic literature and has investigated five dimensions of CSR. These are summed up; an environmental dimension, a social dimension, an economic dimension, a stakeholder dimension and a voluntariness dimension. Respectively these refer to the natural environment, the business-society connection, the financial aspects of CSR, stakeholder(s) such as employees, customers and suppliers, and lastly the altruistic side of CSR (Dahlsrud, 2008). The non-financial drivers of CSR are mostly studied singularly and for the United States (Liang & Renneboog, 2017)

To define CSR in my thesis, I will follow the broad view of Keleş and Çetin (2018), who argue that CSR indeed does not have a single definition but contains business management that considers public policies and social issues in their investment decision-making process. In my thesis, the distinction between the different dimensions of CSR is made upon the ASSET4 score[1].

2.2 CSR and Financial Performance

Apart from the behavioral side of CSR, the largest motives for companies to invest responsibly are the possible increase in profitability and enhancing firm value by doing so (Liang & Renneboog, 2017). This complies with the classical view in finance which claims that firms should only concern about profit maximization of shareholders (Friedman, 1970). As CSR expenditures are done with the aim to enhance firm value and maximize profits, CSR is connected to corporate financial performance (Keleş and Çetin, 2018).

The assumption that social performance enhances financial performance is based on another assumption in finance, namely that markets are efficient (Naughton et al., 2014). If investors are willing to invest in a firm that engages (more) in CSR, they are assumed to agree to pay more for those particular stocks, hence the market value of the firm goes up by a certain premium (Naughton et al., 2014). On the other hand, Dam & Scholtens (2015) argue that socially responsible investors prefer responsible stocks over a stock that is less responsible, and therefore accept the lower return of a responsible stock.

However, existing literature is inconclusive about the direction of the effect of CSR on financial performance, or whether there is an effect at all (Krüger, 2015, Keleş and Çetin, 2018). Some studies provide evidence to believe there exists a positive connection between the two and find that CSR activities can enhance firm value (Flammer, 2015, Dimson et al., 2015).

[1] The ASSET4 scores are divided in a social score, an environmental score, an economic score and a corporate governance score.

Additionally, studies confirm that CSR investment in controversial industries[2] enhances firm value, even though their business is continually harmful to the society (Cai et al., 2012).

Contrarily, other studies find that engaging in CSR is mainly an additional cost for a firm, emphasizing the altruistic and voluntary objective, and therefore does not increase firm value (Liang & Renneboog, 2017). Dam and Scholtens (2015) find that the theoretical foundation between CSR and firm performance is solid, however when they extensively examine the outcome of existing studies, the connection between the two depends on the way financial performance is measured. Dam and Scholtens state that the examined literature finds a positive relationship between CSR and financial performance when the firm value is measured by the book-to-market value or the return on assets. However, this positive association does always not hold when stock market returns are used as a measure for the performance of the company (Dam and Scholtens, 2015).

Furthermore, previous studies have not found a convincing answer to the possible causality between CSR and financial performance (Krüger, 2015). Difficulties lie in the determination whether companies "do good" by engaging in CSR and as a result they perform better or if better performing (less financially constrained) companies have the ability to "do good" (Krüger, 2015, Liang & Renneboog, 2017).

2.3 Investors Perspective on Responsible Investment

The theoretical and empirical evidence regarding the motives for investors to engage in socially responsible investment (SRI) is also still ambiguous. Possible explanations for investing responsibly are strong social preferences, the desire to boost an investors' social status or reputation, positive risk-return expectations of these type of investments or diversification of portfolio risk (Riedl & Smeets, 2017).

Cheah et al. (2011) note that the non-financial motives for SRI are linked with CSR. This link suggests that investor preferences play a role in the CSR practices of companies (Michelson et al, 2004, Waring & Edwards, 2008, Cheah et al., 2011). Companies are aware of the investors' preferences and adjust to these by engaging in CSR to mitigate the collateral damage of their business (Grougiou et al., 2016). For example, companies operating in controversial, or 'sin' industries try to boost their reputation by compensating with CSR investments and reports of their CSR activities (Cheong et al., 2017).

2.4 Investor Sentiment and CSR

Naughton et al. (2014) investigate whether investor preferences drive the CSR expenditures of companies and find that CSR expenditures are boosted when investor sentiment is high. They measure investor sentiment towards the companies in their sample on the basis of CSR-related press releases. In line with the study of Naughton et al. (2014), Cheong et al. (2017) connect investor sentiment with CSR by investigating the effect of both movements in the market and investor sentiment on CSR engagement of companies. They find that when the market is negative and investor sentiment is low, the following year CSR performances of companies improve. This

[2] Controversial industries cover companies that operate in 'sin' industries such as tobacco, gambling and alcohol, or industries that cause direct harm to the environment, as well as companies that cope with social or ethical issues, such as the weapon or fossil fuels industries (Cai et al., 2012).

suggests that CSR efforts of companies are reactive to market and investor sentiment movement, rather than driven by altruism or philanthropy (Cheong et al., 2017).

Naughton et al. (2014) measure CSR expenditures on social and environmental issues. However, they do not investigate the economic and governance factors. They state that in their analysis they only focus on the social and environmental score as they want to discover the investor demand for ethical expenditures (Naughton et al., 2014). However, a high governance score indicates that a firm is more transparent about its CSR which is important to determine to what extent the information on the CSR activities are reaching the stakeholders. When this mechanism enhances the monitoring of corporate performance, the firm is more likely to behave in socially responsible ways (Campbell, 2007).

The economic score explains the ability of a company to generate continuous growth and return on investment. It indicates the general status of a company in the market and therewith the capacity to generate long term shareholder value (Thomson Reuters, 2011). I think this should be considered when conducting the analysis as this explains the extent to which investor sentiment influences the decisions of a company, apart from the ethical expenditures based on a moral objective.

Therefore, both the governance and economic score are from added value for my study. My thesis differs from the previously mentioned studies as I investigate the cross-sectional effect of investor sentiment on the stock returns of companies that are (more extensively) engaged in CSR. More specifically, I focus on whether companies that engage strongly in CSR react more to investor sentiment than companies that do not consider or score low on CSR investment.

2.5 Investor Sentiment and Firm Performance

In addition to the already discussed relationship between investor preferences and CSR investments, the influence of investor sentiment on firm performance can be considered. Studies on investor sentiment suggest that investors base their decisions and actions on cognitive biases, rather than make rational choices based on the available information (Baker & Nofsinger, 2002). Therefore, investor sentiment can explain the return and risk that is not justified by the facts at hand (Baker & Wurgler, 2007). Several studies have investigated investor sentiment and confirm that this noise trading influences different categories of stock returns (Baker et al. 2012, Perez Liston, 2016). The general outcome of studies on investor sentiment and stock returns is that market returns are lower in the period following on high investor sentiment (Keleş and Çetin, 2018). This negative effect holds especially for stocks of small, young, highly volatile, unprofitable, non-dividend paying, extreme growth and distressed firms (Baker & Wurgler, 2006).

3 Data & Methodology

This section introduces the data and methodology used for the analysis conducted. It elaborates on the CSR scores of the different companies in my dataset and the different indices to indicate sentiment in the market as well as the firm performance measure and the control variables.

3.1 The Empirical Analysis

For the empirical analysis, I build on the methodology introduced by Keleş and Çetin (2018), which consists of a few steps. First, I obtain the CSR score of the listed companies of the ASSET4 database of Datastream. Secondly, I sort these companies according to their CSR scores for all different pillars as well as the overall score. Thirdly, following Keleş and Çetin (2018), I form portfolios with a high, medium and low CSR score (25th percentile, median and 75th percentile). I construct a CSR return premium based on the difference between the natural logarithm of the average returns of firms with a high (75th percentile) and a low (25th percentile) CSR score.

The OLS regression model introduced by Keleş and Çetin (2018) equals:

$$CSRRET_t^j = \alpha_t + \beta_1 IS_{t-1}^i + \beta_2 RFMF_t + \beta_3 SMB_t + \beta_4 HML_t + \beta_5 MOM_t + \varepsilon_t \qquad (1)$$

Where *CSRRET* represents the premium of an asset with a high responsibility score minus a low responsibility score at time *t* for pillar *j*. The independent variable *IS* represents the (lagged) investor sentiment at time *t-1*, measured for sentiment index *i*. The sentiment indices are included in the model as a dummy to be able to interpret alpha as risk-adjusted return. The Fama and French four factors are added to control for firm specific factors and effect on returns coming from the movement of the US stock market. Following on the general outcome of the effect of investor sentiment, my hypothesis is that the firm performance of companies that engage more in CSR is more sensitive to sentiment than the firm performance of companies that engage less or do not in CSR. More specifically, I expect to find that companies with a higher CSR score will have lower returns following a period of high sentiment relative to companies with a lower CSR score.

Following on this, I want to study if the returns of a company that has an increasingly intensive CSR investment strategy are more sensitive to investor sentiment than the returns of companies that have a less intensive CSR investment strategy. I use the following OLS regression model to conduct the analysis:

$$\Delta CSRRET_t^j = \alpha_t + \beta_1 IS_{t-1}^i + \beta_2 RFMF_t + \beta_3 SMB_t + \beta_4 HML_t + \beta_5 MOM_t + \varepsilon_t \qquad (2)$$

ΔCSRRET represents the premium for engaging in CSR with a more intensive CSR investment strategy at time *t* for pillar *j*. The independent variables are the same as in equation 1. The results of Cheong et al. (2017) show that the CSR performance increases as a reaction on low investor sentiment and Keleş and Çetin (2018) find that sentiment plays a role in returns of companies that emphasize the importance of CSR. In line with these findings I hypothesize that firm performance of companies that increasingly engage in CSR, captured by an increasing CSR score, is more sensitive to sentiment than companies that do not engage in CSR or do not improve their CSR investment strategy, hence their CSR score.

3.2 Data and variables

The sample used in my thesis contains data from 2401 publicly traded companies situated in the US over a 10-year sample (2007-2017). This is annual data as the CSR scores are revised annually[3]. Keleş and Çetin (2018) and Cheong et al. (2017), as well as most existing literature on CSR from a finance perspective, look at annual data. However, to validate the results of the study and make the analysis statistically more powerful the regression is done using monthly data points. The 10-year time span allows for fluctuations in the economic environment[4] as it contains periods of economic crisis as well as economic growth. The time span covers the most recent decade in which awareness of social responsibility has increased significantly and therewith has gained importance (Malla, 2017).

CSR – Following Keleş and Çetin (2018), I use the CSR score of the ASSET4 database from Thomson Reuters, available from Datastream. This database assigns scores to the companies on a scale from 0-100 on four pillars; economic, environmental, social and governance[5]. Additionally, a score on an aggregated level is available. The CSR framework is summarized in figure 1.

Keleş and Çetin (2018) study only the social and environmental scores. In my thesis, however, I study also the economic and governance, as well as the total level scores as I think this gives a more complete insight in CSR performance and it is relevant to know to what extend companies are willing to adjust their CSR investment strategy as a result of investor sentiment.

Total Score			
Governance Score	**Social Score**	**Environmental Score**	**Economic Score**
Board structure Compensation policy Board functions Shareholder rights Vision & strategy	Employment quality Training & development Diversity & opportunity Community Product responsibility	Resource reduction Emission reduction Product innovation	Client loyalty Performance Shareholder loyalty
The governance score measures the extend of control of the board members and executives which ensures that they operate in the best interest of their long-term shareholders. **The social score** describes the ability of the company to create a good working environment and the extent to which the company maintains trust and loyalty with its customers and society through their management practices. **The environmental score** covers the impact of the business on natural systems, including air, land and water as well as the complete ecosystem. It measures the effectiveness of management on avoiding risk regarding the environment and capitalize on environmental opportunities to generate long-term shareholder value. **The economic score** captures the general financial health of the company and long-term shareholder value through their management. As well as the ability of the company to generate sustainable growth and return on investment by the efficient use of resources.			

Figure 1. Summary of the ASSET4 CSR framework and its indicators[6]

[3] https://financial.thomsonreuters.com/content/dam/openweb/documents/pdf/financial/esg-scores-methodology.pdf

[4] Federal Reserve Bank of Philadelphia, Leading Index for the United States [USSLIND], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/USSLIND, April 9, 2018

[5] The four scores are calculated by equally weighting and z-scoring the underlying data points and comparing them to all companies included in the ASSET4 database. Therefore, this results in a percentage score which is a relative performance measure between 0 and 100%. This represents the deviation of the mean score of all companies.

[6] *ASSET4 ESG Data Glossary, Thomson Reuters, 2013*

Investor Sentiment – To capture the sentiment in the market I add four different indices, two sentiment indices and two confidence indices. I include these different proxies for investor sentiment to control for measurement error for sentiment indices as they are obtained via the market components that may also include non-sentiment related components (Baker & Wurgler, 2006). Secondly, survey data is dependent on the responses of the participants, who may not be truly honest, can give socially "expected" answers or other factors can play a role that may cause a bias in sentiment measurement (DeFranzo, 2012). To come to a valid conclusion, it is valuable to see whether the results are consistent with the different sentiment indicators, as three out of the four indices are based on surveys.

The Consumer Sentiment Index[7] (CSI) is retrieved from the University of Michigan database. The data index is derived from monthly surveys of consumers' prospects of the economic conditions. The Investor Sentiment Index[8] (ISI) is used to determine the investor sentiment in the market, is derived from market ratios and is retrieved from the Jeffrey Wurgler database. The updated investor sentiment index, as used by Baker & Wurgler (2006), is based on five sentiment proxies where each of the proxies has been orthogonalized with respect to a set of six macroeconomic indicators. The Business Confidence Index[9] (BCI) is based on enterprises' views on their current position as well as expectations for the future found on survey data. The BCI is retrieved from the database of the OECD. The Consumer Confidence Index[10] (CCI) is a survey based composite index of consumer expectations of the economy retrieved from the Federal Reserve Economic Database.

In the regression analysis the sentiment indices are added as a dummy. The dummy variable for the sentiment indices equals one if the sentiment is higher than the previous year and zero if it is lower than the previous year, indicating that sentiment is more positive or negative relatively to the sentiment in the previous period.

Financial performance – To capture the firm's financial (market) performance, the difference of the return value of the high and low average will be used as dependent variable, following the analyses of Naughton et al. (2014) and Keleş & Çetin (2018). This data is retrieved from Datastream. As the CSR data is retrieved from the ASSET4, the return of the companies that are listed in that database will be used. As displayed in table 1, the natural logarithms of the return variable are used. This adjustment is done as the observations are highly positively skewed.

Risk factors – I obtained the Mkt-RF, SMB, HML and MOM from the Kenneth R. French data library[11]. These risk factors are calculated based upon the CRSP database in December 2017. The variable Mkt-RF represents the excess return of the value-weighted market rate over the risk-free rate. The variable HML (High Minus Low) accounts for the spread in returns between companies with high book-to-market ratios (value stocks) and companies with lower book-to-market value stocks (growth stocks). The variable SMB (Small Minus Big) controls for the size of the firm based

[7] https://data.sca.isr.umich.edu/data-archive/mine.php Survey of Consumers, University of Michigan
[8] http://people.stern.nyu.edu/jwurgler/ Investor sentiment data (1965-2016)
[9] OECD (2018), Business confidence index (BCI) (indicator). doi: 10.1787/3092dc4f-en (Accessed on 03 April 2018) https://data.oecd.org/leadind/business-confidence-index-bci.htm
[10] Organization for Economic Co-operation and Development, Consumer Opinion Surveys: Confidence Indicators: Composite Indicators: OECD Indicator for the United States [CSCICP03USM665S], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/CSCICP03USM665S, April 3, 2018.
[11] Kenneth R. French Library (2018) http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

on the market capitalization of the company. The variable MOM is the momentum factor, which captures the trend of the return of high return stocks minus the low return on stocks over the past [-12, -2] months. In table 1 the descriptive statistics of the factors are displayed.

3.3 Descriptive Statistics

The means of the different CSR pillars lie in a range of 40.66 – 48.21, whereas the mean of the governance score lies higher at 66.91. The range of all the CSR scores however, differs highly from 1.42 to about 98, which indicates that the sample contains companies that engage highly in CSR investments and companies that do not engage in CSR that much. The environmental score has a slightly smaller range from 8.26 to 95.35 and the economic score of companies differs slightly more from 1.61 to 98.81.

Table 1. Descriptive Statistics

Variable	Mean	Max	Min	Observations
ln_Return	-0.004	1.649	-1.694	120,667
CSR Total	48.290	97.420	2.960	125,304
Governance Score	66.905	97.900	1.420	125,304
Social Score	42.292	97.840	3.530	125,304
Environmental Score	40.656	95.350	8.260	125,304
Economic score	47.422	98.810	1.610	125,304
Consumer Sentiment Index	-0.005	8.100	-12.700	290,521
Investor Sentiment Index	-0.075	0.849	-0.866	249,704
Business Confidence Index	0.011	0.651	-0.905	290,521
Consumer Confidence Index	0.004	0.542	-0.573	290,521
Mkt-RF	0.664	11.350	-17.230	290,521
SMB	-0.114	8.270	-11.100	290,521
HML	0.104	6.110	-4.360	290,521
MOM	-0.026	12.540	-34.390	290,521

Table 1 displays the mean, minimum and maximum value and the number of observations of the monthly variables used in the analysis. The ln_Return variable displays the natural logarithm of the risk adjusted return per company and is retrieved from the Datastream database. The CSR Overall, Governance Score, Social Score, Environmental Score and Economic Score display the engagement of the companies in the sample in the CSR environment as based on the ASSET4 database, retrieved from Datastream. The Consumer Sentiment Index, Investor Sentiment Index, Business Confidence Index and the Consumer Confidence Index variables represent the sentiment in the market and the expectations of individuals and companies on future economic development. The MktRF, SMB, HML and MOM, indicate the abnormal returns coming from common market factors.

When looking more deeply into the distribution of the variables I examine the variables in the 25% quartile and 75% quartile of the total CSR score as displayed in table 2. The mean of the market-to-book variable of the quartiles differs by 14.8 basis points, and the variance of the market-to-book variable is smaller for the companies in the 75% CSR total score quartile than for the companies in the 25% CSR total score quartile. The mean of the 25% CSR total score quartile lies at 15.17 and ranges between 2.96 – 30.84 while the 75% CSR total score quartile has a mean of 89.56 and the range lies between a score of 59.21 – 97.42. The other four CSR pillars also have a lower score in the 25% CSR total score quartile when comparing to the scores in the 75% CSR

total score quartile, suggesting that the scores are positively correlated with each other. The indices and the risk factors do not or very slightly differ from each other in the different quartiles. The descriptive statistics of the regression analyses based on the corporate governance, social, environmental and economic score are added in appendix A.

Table 2. Descriptive Statistics Highest and Lowest CSR Total Quartile

	25% Lowest CSR Total Score				25% Highest CSR Total Score			
Variable	Mean	Max	Min	Obs	Mean	Max	Min	Obs
ln_Return	0.004	0.910	-1.112	30,590	0.004	1.649	-1.309	28,897
CSR Total	15.171	30.840	2.960	31,388	89.549	97.420	59.210	31,278
Governance Score	45.687	91.160	1.420	31,388	86.949	97.900	37.520	31,278
Social Score	14.907	66.790	3.530	31,388	81.081	97.840	18.830	31,278
Environmental Score	13.805	59.370	8.260	31,388	82.040	95.350	11.240	31,278
Economic score	18.996	90.950	1.610	31,388	81.040	98.810	9.050	31,278
Consumer Sentiment Index	0.134	8.100	-12.700	31,388	0.134	8.100	-12.700	31,278
Investor Sentiment Index	-0.087	0.849	-0.866	23,096	-0.087	0.849	-0.866	23,005
Business Confidence Index	0.014	0.651	-0.905	31,388	0.015	0.651	-0.905	31,278
Consumer Confidence Index	0.015	0.542	-0.573	31,388	0.015	0.542	-0.573	31,278
Mkt-RF	0.727	11.350	-17.230	31,388	0.727	11.350	-17.230	31,278
SMB	0.107	8.270	-11.100	31,388	0.108	8.270	-11.100	31,278
HML	0.150	6.110	-4.360	31,388	0.149	6.110	-4.360	31,278
MOM	-0.124	12.540	-34.390	31,388	-0.124	12.540	-34.390	31,278

Table 2 displays the mean, minimum and maximum value and the number of observations of the variables used in the analysis based on the lowest and highest quartile the CSR Total Score. The ln_Return variable displays the natural logarithm of the risk adjusted return per company and is retrieved from the Datastream database. The CSR Total, Governance Score, Social Score, Environmental Score and Economic Score display the engagement of the companies in the sample in the CSR environment as based on the ASSET4 database, retrieved from Datastream. The Consumer Sentiment Index, Investor Sentiment Index, Business Confidence Index and the Consumer Confidence Index variables represent the sentiment in the market and the expectations of individuals and companies on future economic development. The MktRF, SMB, HML and MOM, indicate the abnormal returns coming from common market factors.

As displayed in table 3 the CSR scores are positively correlated with each other at a significance level of 1%. This positive correlation means that companies that score high in one of the CSR pillars, also score high in the other pillars and the total score. This suggests that the results on the link between the firm performance and the different pillars must be aligned. The environmental and social score are the most correlated when looking at the different pillars of which the CSR score is constructed. The social score is the most correlated with the total CSR score.

Table 3. Correlation matrix of the CSR scores

	CSR Total	Governance Score	Social Score	Environmental Score	Economic score
CSR Total	1.00				
Governance Score	0.781	1			
Social Score	0.928	0.666	1		
Environmental Score	0.890	0.608	0.824	1	
Economic score	0.833	0.603	0.705	0.593	1

Table 3 displays the correlation among all four CSR scores as well as the correlation with the Total CSR score of all companies in the sample.

Table 4 shows the correlation between the different sentiment variables. The indices are not all positively correlated, indicating that the sentiment of investors as well as consumers and enterprises does not move in the same direction over time. Only the dummy variable of consumer confidence index is positively correlated with the consumer sentiment and business confidence index dummy variable. All other sentiment indicator dummy variables are negatively correlated. The correlation is significant at 1% level between all different indices. As most of the different sentiment indices do not move together, this can lead to different results when applied in the regression models.

Table 4. Correlation Matrix of the Sentiment Indicator Dummy Variables

	CSI	ISI	BCI	CCI
CSI	1			
ISI	-0.017	1		
BCI	-0.020	-0.192	1	
CCI	0.466	-0.140	0.214	1

Table 4 displays the correlation among the sentiment indicator dummy variables, which are the Consumer Sentiment Index (CSI), the Investor Sentiment Index (ISI), the Business Confidence Index (BCI) and the Consumer Confidence Index (CCI). The four different sentiment indicators are added to the regression model as dummy variables for increasing (1) or decreasing (0) sentiment.

4. Results

This section covers the effect of the CSR investment strategy on company financial performance and the sensitivity of this connection to investor sentiment. This is analyzed on a short-term basis according to annual CSR scores, as well as on a long-term basis, derived from the development of CSR commitment over time.

4.1 CSR Score, Firm Performance and Sentiment

4.1.1 Long Portfolio Analysis

First, I look briefly at the outcome of the analysis on the returns of the separate portfolios based on the 25% highest and lowest CSR scores. A table with results is included in appendix B. The results suggest that the return of both portfolios is negative when looking at the alpha, as interpreted as risk adjusted return. However, this negative return is not significant. The sentiment indicators display mostly negative coefficients for both portfolios, indicating that returns are lower following a period of high investor sentiment. However, these are also insignificant.

4.1.2 Short-term CSR Score, Firm Performance and Sentiment

Table 5 displays the results of regression model 1. I perform four regressions including a varying indicator for investor sentiment as an independent variable and as the dependent variable the CSR total score return premium (panel A), the corporate governance score return premium (panel B), the social score return premium (panel C), the environmental score return premium (panel D) and the economic score return premium (panel E).

CSR Total score – Panel A from table 5 displays the output of the regression model with the return premium on the total CSR score as dependent variable. The significant alpha coefficients are positive when including the investor sentiment and consumer confidence index as sentiment indicators and significant at the respectively 5% and 10% significance level. This indicates that the firms with a relatively higher CSR total score have a slightly higher return than companies in the sample that have a relatively low overall CSR score. However, this is not robust to the different sentiment indicators used. When sentiment in the previous period is high, the returns of companies with a high CSR total score seem to go down as the dummy variable coefficient for one period lagged high sentiment is negative. The sentiment result is only significant for the investor sentiment index at the 1% significance level. The premium for the relatively high CSR total score company goes down 0.01% following a period of increasing sentiment when measured with the investor sentiment index. The consumer sentiment index and the consumer confidence index also display a negative coefficient however are not significant.

The market factor and value factor have highly significantly negative predictive power on the premium for the higher CSR total score. The size factor (SMB) also displays a negative significant association with the return premium. The momentum factor is only significant for two out of the four regression estimates.

Table 5. CSR Premium

	Panel A: CSR Total Score Dependent Variable: CSR Total Premium				Panel B: Corporate Governance Responsibility Dependent Variable: Corporate Governance Premium			
Variable:								
CSI_{t-1}	-0.003				-0.004			
	(-0.77)				(-1.33)			
ISI_{t-1}		-0.008**				-0.004		
		(-2.39)				(-1.55)		
BCI_{t-1}			0.005				0.006**	
			(1.53)				(2.11)	
CCI_{t-1}				-0.005				-0.000
				(-1.33)				(-0.11)
MktRF	-0.121***	-0.122***	-0.136***	-0.114***	-0.064*	-0.065**	-0.080**	-0.064**
	(-2.97)	(-3.01)	(-3.22)	(-2.74)	(-1.98)	(-2.05)	(-2.49)	(-1.98)
SMB	-0.141**	-0.150**	-0.140**	-0.128*	-0.047	-0.058	-0.053	-0.052
	(-2.01)	(-2.27)	(-2.09)	(-1.89)	(-0.83)	(-1.13)	(-1.04)	(-0.99)
HML	-0.438***	-0.446***	-0.469***	-0.473***	-0.305***	-0.311***	-0.323***	-0.322***
	(-5.45)	(-5.80)	(-6.05)	(-6.09)	(-4.81)	(-5.17)	(-5.45)	(-5.34)
MOM	0.066**	0.034	0.057*	0.048	0.061**	0.039	0.052**	0.048*
	(2.00)	(0.99)	(1.68)	(1.41)	(2.32)	(1.46)	(2.02)	(1.83)
Alpha	0.003	0.006**	-0.001	0.004*	0.000	0.001	-0.004**	-0.001
	(1.19)	(2.54)	(-0.33)	(1.76)	(0.05)	(0.46)	(-2.20)	(-0.59)
N	104	120	120	120	104	120	120	120
R^2	0.49	0.49	0.48	0.47	0.39	0.38	0.40	0.37
Adj. R^2	0.46	0.47	0.45	0.45	0.36	0.36	0.37	0.34
AIC	-546.79	-623.21	-619.80	-619.21	-595.66	-682.39	-684.49	-679.90
BIC	-530.93	-606.49	-603.07	-602.48	-579.79	-665.67	-667.76	-663.18

Panel A and B from table 5 display the output of the OLS regression model (1) with the return premium on the total CSR score and the premium of the corporate governance score as the dependent variable. The variable Alpha is the constant, CSI_{t-1}, ISI_{t-1}, BCI_{t-1} and CCI_{t-1} represent the Consumer Sentiment Index, Investor Sentiment Index, Business Confidence Index and the Consumer Confidence Index and are dummy variables for sentiment which are equal to one if the sentiment is higher than the previous year and zero if it is lower than the previous year, indicating that sentiment is more positive or negative relatively to the sentiment in the previous period. MktRF, SMB, HML and MOM variables indicate the abnormal returns coming from common market factors of which the natural logarithm is used in the regression. N is the number of observations. *t statistics in parentheses * p<.10 ** p<.05 *** p<.01*

Corporate Governance score – In panel B of table 5 the regression results with the corporate governance premium as dependent variable are displayed. The alpha coefficients indicate that there is no significantly difference in return for companies that have a higher social score, as only for the model including the business confidence index as sentiment indicator the alpha shows a significantly negative coefficient. The sentiment indicators do not show significant effects towards the corporate governance return premium. However, only the business confidence index, with a 5% significance level, shows a significantly higher premium of about 0.01% after a period of high sentiment. The market risk factor has a significant negative effect on the return premium. The value factor (HML) has a negative, highly significant effect on the corporate governance return premium. The momentum factor displays a significant positive coefficient, which indicates that the momentum factor is present and has predictive power for the return premium.

Table 5 - *Continued*

	Panel C: Social Responsibility Dependent Variable: Social Premium				Panel D: Environmental Responsibility Dependent Variable: Environmental Premium			
Variable:								
CSI_{t-1}	-0.002				0.000			
	(-0.75)				(0.06)			
ISI_{t-1}		-0.005*				-0.009***		
		(-1.86)				(-3.01)		
BCI_{t-1}			0.002				0.003	
			(0.80)				(0.84)	
CCI_{t-1}				-0.006*				-0.006**
				(-1.97)				(-2.05)
MktRF	-0.072**	-0.071**	-0.077**	-0.061*	0.031	0.027	0.021	0.038
	(-2.00)	(-2.02)	(-2.10)	(-1.73)	(0.83)	(0.74)	(0.53)	(1.02)
SMB	-0.035	-0.076	-0.069	-0.053	-0.169**	-0.188***	-0.176***	-0.160**
	(-0.56)	(-1.31)	(-1.18)	(-0.92)	(-2.61)	(-3.15)	(-2.86)	(-2.60)
HML	-0.452***	-0.454***	-0.469***	-0.476***	-0.351***	-0.385***	-0.410***	-0.417***
	(-6.30)	(-6.77)	(-6.96)	(-7.15)	(-4.76)	(-5.56)	(-5.76)	(-5.94)
MOM	-0.016	-0.043	-0.029	-0.037	-0.023	-0.053*	-0.029	-0.038
	(-0.54)	(-1.46)	(-0.98)	(-1.27)	(-0.74)	(-1.72)	(-0.94)	(-1.25)
Alpha	0.001	0.002	-0.002	0.002	-0.001	0.005**	-0.001	0.003
	(0.55)	(1.16)	(-0.77)	(1.20)	(-0.25)	(2.13)	(-0.66)	(1.40)
N	104	120	120	120	104	120	120	120
R^2	0.39	0.42	0.40	0.42	0.26	0.35	0.30	0.32
Adj. R^2	0.36	0.39	0.38	0.39	0.22	0.32	0.27	0.29
AIC	-570.43	-656.15	-653.25	-656.58	-564.52	-648.35	-639.94	-643.56
BIC	-554.56	-639.43	-636.53	-639.86	-548.65	-631.63	-623.21	-626.84

Panel C and D from table 5 display the output of the OLS regression model with the return premium on the social score and the return premium of the environmental score the dependent variable. The variable Alpha is the constant, CSI_{t-1}, ISI_{t-1}, BCI_{t-1} and CCI_{t-1} represent the Consumer Sentiment Index, Investor Sentiment Index, Business Confidence Index and the Consumer Confidence Index and are dummy variables for sentiment which are equal to one if the sentiment is higher than the previous year and zero if it is lower than the previous year, indicating that sentiment is more positive or negative relatively to the sentiment in the previous period. MktRF, SMB, HML and MOM variables indicate the abnormal returns coming from common market factors of which the natural logarithm is used in the regression. N is the number of observations. *t statistics in parentheses * p<.10 ** p<.05 *** p<.01*

Social score – When examining the results of the social responsibility premium, as displayed in panel C of table 5, it is visible that the firms that have a relatively higher social responsibility score do not have significantly higher returns than companies with a lower social responsibility score as the alpha coefficient is not significantly different form zero.

The sentiment sensitivity is negative by 0.01%, only marginally significant for the investor sentiment index and the consumer confidence index.

The market factor has a negative significant effect on the return premium based on the social score. Again, the HML factor is highly significant and negative. The premium goes down for value companies, by around 0.5%. No conclusions can be drawn from whether the other risk factors as control variables can predict the return premium based on the social scores as the coefficients are not significant.

Environmental score – Panel D of table 5 presents the results on the premium based on the environmental pillar. For the environmental score, the alpha coefficient is only marginally significantly negative for the model including the investor sentiment index. However, this is not robust as for the models with the other sentiment indicators, the coefficient is not significant. This indicates that there is no premium on the returns of the portfolios with the high and low environmental CSR score.

The sentiment indicators for the investor sentiment and consumer confidence index show a negative relation with the environmental premium. With respectively 1% and 5% significance, the environmental premium is about 0.01% lower following a period of high sentiment compared to a previously low sentiment period.

The risk factors for size and value have highly significant predictive power over the environmental return premium.

Economic score – The results for the analysis on the economic score is displayed in panel E of table 5. The return premium is significantly larger for three out of the four models of the companies with a higher economic responsibility score. These point at around 0.01% higher return for a high economic score, relative to a lower economic score.

The sentiment indicators show different results. The investor sentiment index seems to predict a 0.01% marginally significantly lower premium in the upcoming period if the sentiment was high. However, the consumer sentiment index, has a positive significant effect of 0.01% on the premium based on economic CSR score. The other sentiment indicators show also a small negative coefficient, although not significant.

The risk factors are all have highly significant predictive power for the difference in returns based on environmental CSR scores. The market factor, size factor and the value factor effects are negative and momentum effect is positive.

4.1.3 Concluding the results of model 1: Premium on CSR Scores and Sentiment

The alpha coefficients for the models displayed in table 5 suggest that the companies in the sample that score better on the economic score slightly outperform the companies that have a lower economic score when controlling for the risk factors. This is also true for two out of the three models with the return premium based on the total CSR score. The return premiums based on the other CSR pillars do not show significantly different risk adjusted returns between the portfolios.

The effect of sentiment is negative for the consumer sentiment, the investor sentiment and the consumer confidence index, which is in line with the findings of Keleş and Cetin (2018). This indicates that the return premiums based on CSR are smaller following a period of high sentiment compared to the premium after a period of low investor sentiment. The magnitude of the effect of sentiment does not differ too much between the return premiums based on the different pillars and lies around a lower return from about 0.01%.

However, this impact should be interpreted with care as from the results presented in table 5, the significance of this sentiment sensitivity is low. The effect is small and only significant for the investor sentiment and consumer confident index as sentiment indicators when the return premium is based on the social and environmental pillar. This finding is in line with the framework of Naughton et al. (2014) who find that these are the most altruistic pillars of CSR and therefore create noise in the market which is why the premium significantly declines when following a high

Table 5. - *Continued*

Panel E: Economic Responsibility

Dependent Variable: Economic Premium

Variable:				
CSI_{t-1}	-0.004			
	(-0.96)			
ISI_{t-1}		-0.008**		
		(-2.13)		
BCI_{t-1}			0.006*	
			(1.69)	
CCI_{t-1}				-0.002
				(-0.53)
MktRF	-0.249***	-0.252***	-0.270***	-0.248***
	(-5.45)	(-5.55)	(-5.73)	(-5.31)
SMB	-0.198**	-0.200***	-0.190**	-0.184**
	(-2.50)	(-2.69)	(-2.54)	(-2.42)
HML	-0.375***	-0.411***	-0.433***	-0.435***
	(-4.16)	(-4.76)	(-5.02)	(-4.98)
MOM	0.135***	0.101***	0.125***	0.118***
	(3.61)	(2.63)	(3.31)	(3.09)
Alpha	0.008***	0.011***	0.004	0.008***
	(3.17)	(4.16)	(1.33)	(3.02)
N	104	120	120	120
R^2	0.61	0.60	0.60	0.59
Adj. R^2	0.59	0.58	0.58	0.57
AIC	-522.73	-595.57	-593.84	-591.18
BIC	-506.86	-578.85	-577.12	-574.45

Panel E from table 5 displays the output of the OLS regression model with the return premium on the economic score as the dependent variable. The variable Alpha is the constant, CSI_{t-1}, ISI_{t-1}, BCI_{t-1} and CCI_{t-1} represent the Consumer Sentiment Index, Investor Sentiment Index, Business Confidence Index and the Consumer Confidence Index and are dummy variables for sentiment which are equal to one if the sentiment is higher than the previous year and zero if it is lower than the previous year, indicating that sentiment is more positive or negative relatively to the sentiment in the previous period. MktRF, SMB, HML and MOM variables indicate the abnormal returns coming from common market factors of which the natural logarithm is used in the regression. N is the number of observations. *t statistics in parentheses * p<.10 ** p<.05 *** p<.01*

sentiment period. The Business Confidence index (BCI) is the only sentiment indicator that has a significant positive effect on the returns of the companies in the sample for all premia based on

the corporate governance and economic sore. The different direction of the sentiment sensitivity might come from the different construction of the sentiment indices. The surveys to construct the consumer sentiment, business confidence and consumer confidence index might be carried out among less sophisticated market participants or due to giving socially acceptable responses (DeFranzo, 2012). The significant results of the business confidence index dummy can come from the fact that this index is based on the enterprises expectations. These are the more "sophisticated" market participants and therefore be less biased in their future expectations than individuals (van Rooij et al., 2011).

Keleş and Cetin (2018) find a negative relation between sentiment and the sensitivity of CSR engaging firms which is higher in magnitude than my results. This could be due to the fact that they use the raw sentiment data instead of the sentiment dummies. To make the comparison possible between the relation in my analysis and their findings, I check for this. The results are displayed in appendix C. However, I find that the sentiment sensitivity coefficients lose their predictive power when using the raw data points as independent variable.

Another explanation for the different magnitude in results and can be that the data Keleş and Cetin (2018) use is older than the data that I have used. I cover a more recent sample from 2007-2017, while their sample covers a period from 2002 – 2014. In the most recent decade CSR has become a crucial part of business globally (Pradhan, 2018). This growth in the importance of social responsibility in business in the most recent years might indicate that the association with sentiment in the market has declined.

4.2 Time-varying CSR

4.2.1 CSR Score Over Time, Firm Performance and Sentiment

To elaborate on the question whether CSR engagement has gained more importance over time I conduct an analysis on the adjustment in the CSR scores of the companies in the sample. I study the effect of CSR on firm performance and the sensitivity of this effect to sentiment in the market. Proceeding on this, I construct portfolios based on whether the CSR score has increased in the timespan 2007-2016[12]. I interpret the highest 25% increase in CSR score of companies that increasingly engage in responsible investment and the lowest 25% of companies that do not alter their investment strategy for improving their CSR activities. The premium is regressed on the different sentiment indicators, with the risk factors added as controls. The results of regression model 2 are displayed in table 6.

CSR Total score – Panel A of table 6 displays the results of the regression model regarding the change in the score of the CSR total score. The return is significantly lower for the companies that have an improved CSR overall score over the past decade. The alpha coefficient shows at a 5% significance level that the returns are about 0.01% lower on a monthly basis for a company with an increasingly intensive CSR strategy. The results do not display a significant effect for the premium after a period of high sentiment. The market factor (MktRf), size (SMB) and value (HML) are significantly positive and significantly negative for the momentum factor.

Corporate Governance score – The same results hold for the outcome of the regression model with the attitude towards the corporate governance score, displaying a significantly lower premium for companies that have an increase in their corporate governance score, presented in panel C of table 6. There is no significant effect of sentiment on return premium when the CSR intensity is measured with the corporate governance pillar. The business and consumer confidence index show a negative but insignificant coefficient. The risk factors are all highly significant and are about the same in magnitude as for the CSR total return premium.

[12] The difference between the CSR score in 2007 to 2016 is used as there are more observations preserved than when using the score of 2017. The CSR scores of 2017 is not fully updated yet in the Datastream database, leading to a lot of missing values for the CSR score differences if the scores of 2017 are used.

Table 6. CSR Improvement Premium

	Panel A: CSR Total Score				Panel B: Corporate Governance Responsibility			
	Dependent Variable: CSR Total Premium				Dependent Variable: Corporate Governance Premium			
Variable:								
CSI_{t-1}	-0.001				0.000			
	(-0.48)				(0.16)			
ISI_{t-1}		0.001				0.000		
		(0.40)				(0.04)		
BCI_{t-1}			-0.002				-0.003	
			(-0.53)				(-1.29)	
CCI_{t-1}				-0.000				-0.003
				(-0.14)				(-1.33)
MktRF	0.221***	0.225***	0.229***	0.226***	0.232***	0.235***	0.245***	0.241***
	(5.94)	(6.30)	(6.25)	(6.26)	(7.31)	(7.54)	(7.68)	(7.70)
SMB	0.252***	0.201***	0.199***	0.200***	0.304***	0.250***	0.249***	0.258***
	(3.89)	(3.44)	(3.42)	(3.40)	(5.52)	(4.89)	(4.93)	(5.06)
HML	0.526***	0.483***	0.486***	0.486***	0.383***	0.348***	0.349***	0.345***
	(7.14)	(7.12)	(7.23)	(7.20)	(6.10)	(5.87)	(5.97)	(5.89)
MOM	-0.098***	-0.098***	-0.102***	-0.101***	-0.117***	-0.117***	-0.119***	-0.121***
	(-3.21)	(-3.25)	(-3.47)	(-3.43)	(-4.51)	(-4.44)	(-4.68)	(-4.73)
Alpha	-0.003	-0.006***	-0.005**	-0.005**	-0.004**	-0.005***	-0.004**	-0.004**
	(-1.45)	(-2.88)	(-2.18)	(-2.56)	(-2.05)	(-3.00)	(-2.01)	(-2.15)
N	104	120	120	120	104	120	120	120
R^2	0.72	0.69	0.69	0.69	0.78	0.74	0.75	0.75
Adj. R^2	0.71	0.68	0.68	0.68	0.77	0.73	0.73	0.73
AIC	-564.75	-653.41	-653.54	-653.26	-598.18	-685.70	-687.44	-687.53
BIC	-548.88	-636.69	-636.81	-636.54	-582.32	-668.97	-670.72	-670.80

Panel A and B from table 6 display the output of the OLS regression model (2) with the premium on the change in total CSR score and the premium of the change of the corporate governance score as the dependent variables. The variable Alpha is the constant, CSI_{t-1}, ISI_{t-1}, BCI_{t-1} and CCI_{t-1} represent the Consumer Sentiment Index, Investor Sentiment Index, Business Confidence Index and the Consumer Confidence Index and are dummy variables for sentiment which are equal to one if the sentiment is higher than the previous year and zero if it is lower than the previous year, indicating that sentiment is more positive or negative relatively to the sentiment in the previous period. MktRF, SMB, HML and MOM variables indicate the abnormal returns coming from common market factors of which the natural logarithm is used in the regression. N is the number of observations. *t statistics in parentheses * p<.10 ** p<.05 *** p<.01*

Social score – In panel C of table 6 the results of the regression of the premium based on social responsibility are displayed. The increase in the social score displays a significantly lower premium for companies that over time have improved their investment strategy based on the social pillar of CSR. The sentiment indicators do not show significant effects for the return premium based on improvement of the social score. The risk factors are all highly significant and show coefficients that are again about the same as for the previous return premiums.

Table 6. CSR Improvement Premium - *Continued*

	Panel C: Social Responsibility				Panel D: Environmental Responsibility			
	Dependent Variable: Social Premium				Dependent Variable: Environmental Premium			
Variable:								
CSI_{t-1}	-0.000				-0.001			
	(-0.10)				(-0.30)			
ISI_{t-1}		-0.003				0.003		
		(-0.93)				(0.92)		
BCI_{t-1}			0.000				-0.001	
			(0.17)				(-0.41)	
CCI_{t-1}				-0.004				0.001
				(-1.34)				(0.26)
MktRF	0.205***	0.208***	0.207***	0.214***	0.162***	0.168***	0.171***	0.166***
	(5.87)	(6.35)	(6.13)	(6.51)	(4.17)	(4.49)	(4.44)	(4.39)
SMB	0.190***	0.146***	0.149***	0.159***	0.333***	0.281***	0.278***	0.276***
	(3.14)	(2.73)	(2.79)	(2.96)	(4.94)	(4.60)	(4.54)	(4.46)
HML	0.481***	0.464***	0.457***	0.453***	0.501***	0.451***	0.459***	0.460***
	(6.97)	(7.46)	(7.37)	(7.35)	(6.52)	(6.35)	(6.49)	(6.49)
MOM	-0.078***	-0.089***	-0.083***	-0.087***	-0.083**	-0.080**	-0.087***	-0.086***
	(-2.73)	(-3.22)	(-3.06)	(-3.24)	(-2.62)	(-2.52)	(-2.83)	(-2.76)
Alpha	-0.004*	-0.004**	-0.005***	-0.003*	-0.003	-0.007***	-0.005**	-0.006***
	(-1.93)	(-2.04)	(-2.80)	(-1.86)	(-1.51)	(-3.19)	(-2.19)	(-2.76)
N	104	120	120	120	104	120	120	120
R^2	0.69	0.68	0.68	0.68	0.67	0.64	0.64	0.64
Adj. R^2	0.68	0.67	0.67	0.67	0.66	0.63	0.62	0.62
AIC	-578.59	-674.25	-673.37	-675.21	-556.03	-642.37	-641.65	-641.55
BIC	-562.72	-657.52	-656.64	-658.48	-540.16	-625.65	-624.93	-624.82

Panel C and D from table 6 display the output of the OLS regression model with the premium on change in the social score and the premium of the change in the environmental score the dependent variable. The variable Alpha is the constant, CSI_{t-1}, ISI_{t-1}, BCI_{t-1} and CCI_{t-1} represent the Consumer Sentiment Index, Investor Sentiment Index, Business Confidence Index and the Consumer Confidence Index and are dummy variables for sentiment which are equal to one if the sentiment is higher than the previous year and zero if it is lower than the previous year, indicating that sentiment is more positive or negative relatively to the sentiment in the previous period. MktRF, SMB, HML and MOM variables indicate the abnormal returns coming from common market factors of which the natural logarithm is used in the regression. N is the number of observations. *t statistics in parentheses * p<.10 ** p<.05 *** p<.01*

Environmental score – The environmental score exhibits results that point in the same direction as the previously discussed CSR score pillars, visible in panel D of table 6. The return for an improving environmental score is significantly lower for three out of the four models and the sentiment indices show no significant effect on the return premium. The table shows a significantly positive market, size and value factor coefficient. The momentum factor displays negative highly significant coefficients, in line with the results of the other CSR pillars.

Table 6. CSR Improvement Premium - *Continued*

Panel E: Economic Responsibility

Dependent Variable: Economic Premium

Variable:				
CSI_{t-1}	-0.003			
	(-0.75)			
ISI_{t-1}		0.002		
		(0.62)		
BCI_{t-1}			0.001	
			(0.34)	
CCI_{t-1}				0.001
				(0.37)
MktRF	0.231***	0.231***	0.228***	0.229***
	(5.62)	(5.97)	(5.71)	(5.85)
SMB	0.190***	0.147**	0.145**	0.142**
	(2.67)	(2.32)	(2.28)	(2.22)
HML	0.523***	0.465***	0.470***	0.472***
	(6.44)	(6.31)	(6.42)	(6.43)
MOM	-0.149***	-0.147***	-0.151***	-0.150***
	(-4.45)	(-4.47)	(-4.72)	(-4.67)
Alpha	-0.004	-0.007***	-0.007***	-0.007***
	(-1.65)	(-3.31)	(-3.07)	(-3.20)
N	104	120	120	120
R^2	0.70	0.67	0.67	0.67
Adj. R^2	0.68	0.66	0.66	0.66
AIC	-544.50	-633.57	-633.28	-633.31
BIC	-528.64	-616.84	-616.56	-616.58

Panel E from table 6 displays the output of the OLS regression model with premium on the change of the economic score as the dependent variable. The variable Alpha is the constant, CSI_{t-1}, ISI_{t-1}, BCI_{t-1} and CCI_{t-1} represent the Consumer Sentiment Index, Investor Sentiment Index, Business Confidence Index and the Consumer Confidence Index and are dummy variables for sentiment which are equal to one if the sentiment is higher than the previous year and zero if it is lower than the previous year, indicating that sentiment is more positive or negative relatively to the sentiment in the previous period. MktRF, SMB, HML and MOM variables indicate the abnormal returns coming from common market factors of which the natural logarithm is used in the regression. N is the number of observations. *t statistics in parentheses * p<.10 ** p<.05 *** p<.01*

Economic score – Panel E of table 6 contains the regression results with the premium based on the improvement of the economic score. The premium is significantly lower for three out of the four models, indicating financial performance of companies acting increasingly responsibly in the economic field decreases. Again, the sentiment indices do not indicate an effect on the return premium, here based on the economic responsibility pillar of the CSR score.

The risk factors show all highly significant predictive power for the return premium based on the economic pillar of the CSR score, which is negative for the market, size and value factor, and positive for the momentum factor.

4.2.2 Robustness

To control whether the outcome of the regressions is robust, I analyze the intensity of the responsible investment strategies by constructing two portfolios. One containing companies of which their CSR score has increased over the period 2007-2016 and one where the CSR score has remained the same or has decreased. I interpret the increase in CSR as responsible investment becoming more important for the strategy of a company and the decrease as a diminishing responsible investment strategy. The results of this additional analysis differ from the results displayed in table 6, however the significance severely decreases. The table containing the results of this analysis is included in appendix D.

The results show that the sentiment indicators have a negative influence on the premiums however this is low in significance. The alpha shows positively significant coefficients for the economic responsibility score indicating that an increase in the CSR economic intensity increases returns. However, there is no significantly difference in returns for the other portfolios. The predictive power of the risk factors when using only two portfolios based constructed from CSR improvement compared to the 25% highest and lowest scoring companies returns is lower.

However, the distinction between the two portfolios is less accurate than the distinction between the two portfolios with the 25% highest and lowest CSR improvement. There is a large difference in number of observations between improving or decreasing CSR scores. There is relatively a very large amount of companies with improving CSR scores versus a relatively very small amount of observations that shows a decrease in CSR score.

The results of this controlling analysis do not alter the conclusions derived from the regression based on portfolios with the 25% highest and lowest CSR improvement due to the low significance of the outcome.

4.2.3 Concluding the Results of Model 2: Premium on CSR Improvement and Sentiment

The results suggest significantly lower firm performance if the engagement in responsible investing has increased in the period 2007-2016. This holds for all different pillars of CSR as well as for the overall CSR score. The results suggest a lower premium based on an increasing CSR score by a lower return of 0.01%. This negative premium could be a result of the different incentives to decide whether to improve their CSR strategy. Moreover, the outcome suggests that CSR improvement is something altruistic or philanthropic as an increasing CSR strategy does not improve the firm performance, complying with the findings of Liang & Renneboog (2017).

The sentiment sensitivity analysis shows no effect for either one of the sentiment indicators, as the coefficients of the sentiment indicators are zero or close to zero as well as insignificant. These outcomes hold for all the different CSR pillars as well as the overall score.

The risk factors added as control show predictive power for the CSR premium based on improvement of all CSR pillars as well as the CSR total score. The risk factor coefficient is highly significantly negative. The SMB and HML coefficients are negative, indicating that when a company is small or a value firm, the return premium goes down. The momentum factor displays negative coefficients for all different CSR scores.

4.3 Comparing the Results of CSR-Firm Performance Sentiment Sensitivity

Comparing the results of regression model 1 and 2, leads to different conclusions on firm performance sensitivity to sentiment, relative to CSR scores. First of all, the analysis on the

portfolios based on the different CSR pillars annually suggest that higher CSR scores lead to having a significantly higher return premium, whereas the return premium based on the portfolios with the CSR improvement over time shows to be significantly negative. Secondly the return premium is lower following high market sentiment when based on the annual CSR scores. On the other hand, the return premium for the improving CSR investment does not significantly alter following high sentiment.

In the first analysis the portfolio composition is allowed to vary. As the portfolio changes annually and the CSR scores are evaluated and allocated every year, the companies can move over the quantiles annually. Whereas in the second analysis the companies were either engaged in CSR or not, meaning that the portfolio composition is equal for all periods. The annual CSR score portfolio performance in the first model is a more short-term analysis. In the second model, as the companies are assigned to be CSR engaged or not over the past decade, this can be interpreted as a long-term analysis. As suggested by Charlo et al. (2017) there might be a difference between the short-term effects (model 1) and the longer-term effects (model 2).

These short term and long-term difference can be seen in the higher firm performance in the portfolios based on higher annual CSR scores and lower firm performance for portfolios based on larger CSR improvement.

The difference in the outcomes can be assigned to the time necessary for processing information on the CSR engagement (Tetlock, 2014). Investors or other market participants possibly need time to process the information and become aware of the CSR strategy of the companies and therefor the risk adjusted returns are significantly lower on the long run. Another possible explanation can be that the CSR score signals the efficiency of the investment strategy of a company. This can be that a company has already a solid CSR foundation when the score is high, whereas improving CSR brings along additional (opportunity) costs (Sprinkle & Maines, 2010).

The short-term high CSR score return premium is negatively sensitive to the investor sentiment, which indicates that the prices become less efficient when noise in the market increases. This noise fades with the passing of time, as the long-term CSR strategy and return (firm performance) does not display sensitivity to investor sentiment. This is in line with the study of Brown and Cliff (2005), who find support for the asset values being affected by sentiment, and this effect fades over a longer horizon. The variation of the direction and magnitude of the sentiment effects stem from the difference in movement of the sentiment indicators.

There are two alternative explanations for the difference in the results on the effect of CSR investment on firm performance. It could be an agency problem where managers act in their own interest. Based on their own objectives, it can be that they want to be altruistic or have the urge to be a philanthropist and therefore engage in CSR. They succeed to keep the information on this away from the investors at the short-term, but they cannot keep the information on the CSR expenses from the investors in the long-term (Rhodes, 2010). Resulting in lower returns associated with a strategy to improve the CSR score. However, this is not very likely as Samet and Jarboui (2017) find empirical evidence on CSR improving the governance structure and reduces this kind of agency problem.

Alternatively, companies that keep improving their CSR strategy might have investors/shareholders that also value socially responsible investments, and therefore accept the lower long-term returns. This is in line with the arguments of Dam & Scholtens (2015) and Riedl & Smeets (2017) which suggest that investing responsibly comes from strong social preferences and is altruistic.

The outcome the annual CSR analysis does not reject my first hypothesis, as my analysis suggests that companies with a higher CSR score will have lower premium following a period of

high sentiment, relative to companies with a lower CSR score. However, the results should be interpreted with care as the sentiment sensitivity is not significant for all four sentiment indicators.

Alternatively, my second hypothesis is rejected by the findings of the analysis as it does not confirm that the premium of companies that increasingly engage in CSR, captured by an increasing CSR score, is more sensitive to sentiment than companies that do not improve their CSR investment strategy, either because the CSR investment strategy is already integrated in the investment strategy or the firm does not have a CSR focused objective.

5. Additional Test: Financial Crisis

Lins et al. (2017) find evidence that suggests that the relation between CSR and firm performance is stronger during times of worsened economic circumstances. They state that in times of economic crisis companies that engage in CSR receive a premium and therewith the CSR commitment can be seen as an alternative for insurance for an unexpected decline in confidence in the market (Lins et al., 2017).

To ensure that my results are not driven by the possibly stronger relation between CSR intensity and firm financial performance due to extremely negative economic circumstances, I repeat the analysis on both the annual CSR intensity as well as the CSR commitment analysis excluding the most recent financial crisis. According to the recession indicator of the Federal Reserve Bank of St. Louis[13], the US economy was in a recession from January 2008 till June 2009. As the relation between CSR and firm performance increases in crisis, I expect to find a lower alpha for both the short- and long-term CSR investment strategy when excluding the recession. The sensitivity for investor sentiment has been found to decrease in a recession (Chung et al., 2012). Therefore, if the recessionary period drives the results, I expect the sentiment indicators to display stronger and more significant coefficients when excluding the financial crisis. The findings are displayed in appendix E and F.

The results for the short-term analysis, when excluding the recession, show that most of the sentiment coefficients lose their significant explanatory power compared to the outcomes of the total time span. In the short-term analysis the results do not differ in terms direction of the effects. The only marginally significant effect remains for when the sentiment is indicated by the consumer confidence index, which points at a lower return premium based on the social and environmental score. The lower significance suggests that the sentiment effect on the CSR-firm performance relationship is stronger during economic downturn, and insignificantly higher in better economic circumstances. As only the social and environmental pillars continue showing sensitivity to sentiment, this suggests that CSR improvement comes from altruistic objectives, as suggested by Liang & Renneboog (2017). The lower significance of the sentiment sensitivity on the short-term suggests that the CSR and firm performance association is stronger affected by sentiment in the most recent recession, which is not in line with the findings of Chung et al. (2012). The alpha coefficients for the short-term analysis excluding the recession do not show different results from the analysis on the total timespan.

For the long-term analysis the sentiment indicators remain insignificant when excluding the recession. The risk adjusted returns indicated by the alpha remain significantly negative, indicating lower return premiums with an improving CSR investment strategy. The risk factors do not show different results from the analysis on the total sample. This holds for both the premiums based on the largest and smallest quartile, as well as the premiums based on the increasing or decreasing CSR scores for the long-term analysis when comparing the whole timespan with the results excluding the recession.

[13] Federal Reserve Bank of St. Louis, NBER based Recession Indicators for the United States from the Period following the Peak through the Trough [USREC], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/USREC, May 6, 2018.

6. Conclusion

I investigate whether a higher CSR score leads to better financial performance and how this performance varies with investor sentiment. Using the ASSET4 database to determine the CSR score for the different companies and building further on the empirical model of Keleş and Cetin (2018), my results suggest that on the short-term a higher CSR total score or a higher economic responsibility score leads to higher returns. My results do not show a significant difference of returns for the high and low scoring companies based on the governance, social and environmental responsibility. However, for a long-term CSR investment strategy, the results of the regression analysis suggest that the firm performance decreases when the intensity of the CSR strategy improves. This holds for all different CSR pillars as well as the overall CSR score.

The analysis on the annual CSR scores, suggests that the returns are lower for companies that have a higher CSR score following a period of high sentiment, however the significance of the outcomes varies over the different sentiment indicators. Subsequently, the analysis on the CSR commitment does not show significantly different premia following a period of high sentiment.

After checking the robustness of the results by extracting the data stemming from the financial crisis of 2008-2009, the findings on the short-term firm performance and CSR relationship and the sentiment sensitivity reduce in significance. The results of the long-term analysis do not alter when excluding the data stemming from the recession of 2008-2009.

In my thesis I focus on the firm performance on market-level. As Dam & Scholtens (2015) find that for finding the relation between CSR and firm performance, using returns as firm performance indicator does not always lead to the same results. A suggestion for future research is to investigate firm performance using firm-level data. Further research on this topic is needed to reveal whether there exists a relationship between firm performance according to CSR and the sentiment. When looking at the firm-level, a control for the capabilities of companies to engage in CSR investment can be included. This could reveal if there is the causal relation between CSR and firm performance or whether the effect is a result of the ability of companies to engage in CSR as stated by Krüger (2015) and Liang & Renneboog (2017).

My study can be extended by investigating whether there the ownership of shares (institutional or individual) influences the sensitivity of the CSR and firm performance to sentiment in the market. Next to this, as my thesis is limited using the data sample for the US for the timespan of 2007-2017, the study can be done on another economic area, such as Europe or covering a longer time span. Thirdly, the low sentiment sensitivity significance of this thesis might come from low CSR awareness. To investigate this, my study can be extended by examining if companies that have more media coverage on their CSR policy, get better results and show stronger sentiment sensitivity. If the effect can be detected, this can have implications for the way companies report and promote their CSR activities. Lastly, it would be interesting to see if there exists a link between the CSR score, firm performance and sentiment sensitivity across industries. For example, it can be that sin industries compensate more for their negative externalities by more intensive CSR investment strategies and are therefore are more sensitive to sentiment.

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Appendix A. Descriptive Statistics

Table 7.a Descriptive Statistics Highest and Lowest Governance Quartile

Table 7.a-d display the mean, minimum and maximum value and the number of observations of the variables used in the analysis based on the lowest and highest quartile the CSR Total Score. The ln_Return variable displays the natural logarithm of the risk adjusted return per company and is retrieved from the Datastream database. The CSR Total, Governance Score, Social Score, Environmental Score and Economic Score display the engagement of the companies in the sample in the CSR environment as based on the ASSET4 database, retrieved from Datastream. The Consumer Sentiment Index, Investor Sentiment Index, Business Confidence Index and the Consumer Confidence Index variables represent the sentiment in the market and the expectations of individuals and companies on future economic development. The MktRF, SMB, HML and MOM, indicate the abnormal returns coming from common market factors.

	25% Lowest Governance Score				25% Highest Governance Score			
Variables	Mean	Max	Min	Observations	Mean	Max	Min	Observations
ln_Return	0.005	1.641	-1.366	29,159	0.003	0.995	-1.528	30,400
Governance Score	40.128	66.380	1.420	31,389	90.097	97.900	76.090	31,273
CSI	0.134	8.100	-12.700	31,389	0.135	8.100	-12.700	31,273
ISI	-0.087	0.849	-0.866	23,100	-0.087	0.849	-0.866	23,001
BCI	0.014	0.651	-0.905	31,389	0.015	0.651	-0.905	31,273
CCI	0.015	0.542	-0.573	31,389	0.015	0.542	-0.573	31,273
Mkt-RF	0.726	11.350	-17.230	31,389	0.727	11.350	-17.230	31,273
SMB	0.149	6.110	-4.360	31,389	0.150	6.110	-4.360	31,273
HML	0.107	8.270	-11.100	31,389	0.108	8.270	-11.100	31,273
MOM	-0.124	12.540	-34.390	31,391	-0.124	12.540	-34.390	31,277

Table 7.b Descriptive Statistics Highest and Lowest Social Quartile

	25% Lowest Social Score				25% Highest Social Score			
ln_Return	0.005	1.649	-1.495	29,431	0.003	0.910	-1.112	30,547
Social Score	11.516	24.140	3.530	31,391	83.232	97.840	50.280	31,277
CSI	0.134	8.100	-12.700	31,391	0.134	8.100	-12.700	31,277
ISI	-0.087	0.849	-0.866	23,095	-0.087	0.849	-0.866	23,004
BCI	0.014	0.651	-0.905	31,391	0.015	0.651	-0.905	31,277
CCI	0.015	0.542	-0.573	31,391	0.015	0.542	-0.573	31,277
Mkt-RF	0.726	11.350	-17.230	31,391	0.727	11.350	-17.230	31,277
SMB	0.149	6.110	-4.360	31,391	0.150	6.110	-4.360	31,277
HML	0.107	8.270	-11.100	31,391	0.108	8.270	-11.100	31,277
MOM	-0.124	12.540	-34.390	31,391	-0.124	12.540	-34.390	31,277

Table 7.c Descriptive Statistics Highest and Lowest Environmental Quartile

	25% Lowest Environmental Score				25% Highest Environmental Score			
ln_Return	0.004	1.641	-1.629	30,020	0.003	0.910	-1.112	30,644
Environmental Score	11.124	13.560	8.260	31,621	85.438	95.350	37.490	31,275
CSI	0.136	8.100	-12.700	31,621	0.134	8.100	-12.700	31,275
ISI	-0.086	0.849	-0.866	23,309	-0.087	0.849	-0.866	23,003
BCI	0.014	0.651	-0.905	31,621	0.015	0.651	-0.905	31,275
CCI	0.015	0.542	-0.573	31,621	0.015	0.542	-0.573	31,275
Mkt-RF	0.721	11.350	-17.230	31,621	0.727	11.350	-17.230	31,275
SMB	0.151	6.110	-4.360	31,621	0.149	6.110	-4.360	31,275
HML	0.101	8.270	-11.100	31,621	0.108	8.270	-11.100	31,275
MOM	-0.121	12.540	-34.390	31,621	-0.124	12.540	-34.390	31,275

Table 7.d Descriptive Statistics Highest and Lowest Economic Quartile

	25% Lowest Economic Score				25% Highest Economic Score			
ln_Return	0.002	1.649	-1.694	29,315	0.006	0.803	-1.112	30,719
Economic score	13.267	34.180	1.610	31,391	86.815	98.810	64.160	31,276
CSI	0.133	8.100	-12.700	31,391	0.135	8.100	-12.700	31,276
ISI	-0.087	0.849	-0.866	23,101	-0.087	0.849	-0.866	23,004
BCI	0.014	0.651	-0.905	31,391	0.015	0.651	-0.905	31,276
CCI	0.015	0.542	-0.573	31,391	0.015	0.542	-0.573	31,276
Mkt-RF	0.725	11.350	-17.230	31,391	0.727	11.350	-17.230	31,276
SMB	0.149	6.110	-4.360	31,391	0.150	6.110	-4.360	31,276
HML	0.107	8.270	-11.100	31,391	0.108	8.270	-11.100	31,276
MOM	-0.123	12.540	-34.390	31,391	-0.125	12.540	-34.390	31,276

Appendix B. Long positions

Table 8. 25% Highest and Lowest CSR Score Returns

Table 8 displays the analysis on the returns in the 25% highest and lowest scoring companies. Panel A and B from table 8 display the output of the OLS regression on the returns of the portfolios based on the total CSR score and the corporate governance score as the dependent variables. Panel C and D from table 8 display the output of the OLS regression on the returns of the portfolios based on the social score and on the environmental score the dependent variable. Panel E from table 8 displays the output of the OLS regression on the returns of the portfolios based on the economic score as the dependent variable. The variable Alpha is the constant, CSI_{t-1}, ISI_{t-1}, BCI_{t-1} and CCI_{t-1} represent the Consumer Sentiment Index, Investor Sentiment Index, Business Confidence Index and the Consumer Confidence Index and are dummy variables for sentiment which are equal to one if the sentiment is higher than the previous year and zero if it is lower than the previous year, indicating that sentiment is more positive or negative relatively to the sentiment in the previous period. MktRF, SMB, HML and MOM variables indicate the abnormal returns coming from common market factors of which the natural logarithm is used in the regression. N is the number of observations.
*t statistics in parentheses * p<.10 ** p<.05 *** p<.01*

	Panel A: CSR Total Score							
	Return Lowest 25% Score				Return Highest 25% Score			
Variable:								
CSI_{t-1}	0.006				0.003			
	(0.93)				(0.67)			
ISI_{t-1}		0.007				-0.001		
		(1.26)				(-0.15)		
BCI_{t-1}			-0.010				-0.004	
			(-1.64)				(-0.94)	
CCI_{t-1}				0.001				-0.004
				(0.16)				(-0.79)
MktRF	1.237***	1.231***	1.258***	1.229***	1.116***	1.109***	1.122***	1.115***
	(16.05)	(17.45)	(17.42)	(17.15)	(18.47)	(19.95)	(19.70)	(19.94)
SMB	0.297**	0.280**	0.270**	0.268**	0.156	0.129	0.130	0.140
	(2.23)	(2.42)	(2.36)	(2.29)	(1.49)	(1.42)	(1.44)	(1.53)
HML	0.508***	0.539***	0.560***	0.560***	0.070	0.093	0.091	0.087
	(3.33)	(4.02)	(4.23)	(4.18)	(0.59)	(0.88)	(0.87)	(0.83)
MOM	-0.153**	-0.126**	-0.150**	-0.143**	-0.087*	-0.092*	-0.093**	-0.095**
	(-2.43)	(-2.12)	(-2.60)	(-2.43)	(-1.76)	(-1.96)	(-2.05)	(-2.07)
Alpha	-0.006	-0.008*	0.001	-0.005	-0.003	-0.002	0.000	-0.000
	(-1.25)	(-1.90)	(0.22)	(-1.12)	(-0.79)	(-0.56)	(0.03)	(-0.13)
N	104	120	120	120	104	120	120	120
R^2	0.84	0.84	0.84	0.84	0.84	0.84	0.85	0.85
Adj. R^2	0.83	0.83	0.83	0.83	0.84	0.84	0.84	0.84
AIC	-413.65	-490.00	-491.15	-488.38	-464.21	-547.22	-548.13	-547.85
BIC	-397.78	-473.28	-474.43	-471.65	-448.35	-530.49	-531.40	-531.13

Panel B: Corporate Governance Responsibility

	Return Lowest 25% Score				Return Highest 25% Score			
Variable:								
CSI_{t-1}	0.007				0.004			
	(1.22)				(0.69)			
ISI_{t-1}		0.005				0.001		
		(0.85)				(0.11)		
BCI_{t-1}			-0.008				-0.003	
			(-1.51)				(-0.54)	
CCI_{t-1}				-0.003				-0.003
				(-0.53)				(-0.64)
MktRF	1.237***	1.227***	1.250***	1.231***	1.173***	1.162***	1.170***	1.167***
	(17.21)	(18.65)	(18.60)	(18.51)	(17.96)	(19.47)	(19.09)	(19.42)
SMB	0.220*	0.211*	0.205*	0.213*	0.173	0.153	0.152	0.160
	(1.76)	(1.96)	(1.92)	(1.96)	(1.53)	(1.56)	(1.56)	(1.63)
HML	0.452***	0.469***	0.482***	0.478***	0.146	0.157	0.159	0.155
	(3.18)	(3.75)	(3.91)	(3.84)	(1.13)	(1.39)	(1.42)	(1.38)
MOM	-0.174***	-0.152***	-0.169***	-0.167***	-0.113**	-0.113**	-0.116**	-0.118**
	(-2.97)	(-2.74)	(-3.13)	(-3.06)	(-2.12)	(-2.24)	(-2.37)	(-2.40)
Alpha	-0.005	-0.005	0.001	-0.001	-0.005	-0.004	-0.003	-0.003
	(-1.20)	(-1.35)	(0.37)	(-0.39)	(-1.30)	(-1.24)	(-0.75)	(-0.75)
N	104	120	120	120	104	120	120	120
R^2	0.85	0.85	0.85	0.85	0.84	0.84	0.84	0.84
Adj. R^2	0.84	0.85	0.85	0.85	0.83	0.84	0.84	0.84
AIC	-428.12	-506.71	-508.33	-506.25	-447.97	-530.15	-530.44	-530.57
BIC	-412.25	-489.98	-491.61	-489.52	-432.11	-513.42	-513.72	-513.84

Panel C: Social Responsibility								
	Return Lowest 25% Score				Return Highest 25% Score			
Variable:								
CSI$_{t-1}$	0.007				0.004			
	(1.02)				(0.82)			
ISI$_{t-1}$		0.005				-0.000		
		(0.92)				(-0.03)		
BCI$_{t-1}$			-0.007				-0.004	
			(-1.14)				(-0.89)	
CCI$_{t-1}$				0.001				-0.005
				(0.19)				(-0.99)
MktRF	1.214***	1.203***	1.221***	1.201***	1.141***	1.132***	1.144***	1.139***
	(15.78)	(17.28)	(17.10)	(17.04)	(18.33)	(19.78)	(19.52)	(19.83)
SMB	0.185	0.199*	0.193*	0.190	0.150	0.124	0.124	0.136
	(1.39)	(1.75)	(1.70)	(1.65)	(1.39)	(1.32)	(1.33)	(1.45)
HML	0.527***	0.551***	0.566***	0.566***	0.075	0.096	0.096	0.091
	(3.46)	(4.16)	(4.32)	(4.29)	(0.61)	(0.89)	(0.90)	(0.84)
MOM	-0.098	-0.073	-0.090	-0.085	-0.114**	-0.117**	-0.119**	-0.122**
	(-1.56)	(-1.25)	(-1.58)	(-1.47)	(-2.24)	(-2.41)	(-2.54)	(-2.59)
Alpha	-0.005	-0.006	0.001	-0.003	-0.004	-0.003	-0.001	-0.001
	(-1.21)	(-1.36)	(0.15)	(-0.84)	(-1.17)	(-0.94)	(-0.30)	(-0.29)
N	104	120	120	120	104	120	120	120
R^2	0.82	0.83	0.83	0.83	0.84	0.84	0.85	0.85
Adj. R^2	0.81	0.82	0.82	0.82	0.84	0.84	0.84	0.84
AIC	-414.03	-493.24	-493.71	-492.39	-458.02	-540.32	-541.14	-541.34
BIC	-398.16	-476.52	-476.99	-475.66	-442.15	-523.59	-524.42	-524.62

Panel D: Environmental Responsibility								
	Return Lowest 25% Score				Return Highest 25% Score			
Variable:								
CSI_{t-1}	0.004				0.004			
	(0.69)				(0.80)			
ISI_{t-1}		0.009*				0.000		
		(1.76)				(0.05)		
BCI_{t-1}			-0.007				-0.004	
			(-1.24)				(-0.84)	
CCI_{t-1}				0.003				-0.003
				(0.64)				(-0.61)
MktRF	1.160***	1.155***	1.173***	1.148***	1.191***	1.182***	1.193***	1.187***
	(16.51)	(18.10)	(17.76)	(17.64)	(18.85)	(20.42)	(20.12)	(20.36)
SMB	0.355***	0.345***	0.333***	0.324***	0.186*	0.157	0.157*	0.164*
	(2.91)	(3.30)	(3.18)	(3.05)	(1.69)	(1.66)	(1.66)	(1.73)
HML	0.475***	0.510***	0.536***	0.540***	0.124	0.125	0.126	0.122
	(3.42)	(4.21)	(4.43)	(4.43)	(0.99)	(1.14)	(1.16)	(1.12)
MOM	-0.094	-0.065	-0.091*	-0.083	-0.117**	-0.118**	-0.121**	-0.122**
	(-1.64)	(-1.20)	(-1.73)	(-1.56)	(-2.26)	(-2.40)	(-2.54)	(-2.54)
Alpha	-0.004	-0.008**	-0.000	-0.005	-0.005	-0.004	-0.002	-0.002
	(-1.09)	(-2.25)	(-0.04)	(-1.44)	(-1.36)	(-1.14)	(-0.48)	(-0.71)
N	104	120	120	120	104	120	120	120
R^2	0.84	0.85	0.85	0.85	0.85	0.85	0.86	0.86
Adj. R^2	0.83	0.84	0.84	0.84	0.85	0.85	0.85	0.85
AIC	-432.80	-514.14	-512.54	-511.35	-454.90	-537.54	-538.27	-537.93
BIC	-416.93	-497.41	-495.81	-494.62	-439.03	-520.81	-521.55	-521.20

Panel E: Economic Responsibility								
	Return Lowest 25% Score				Return Highest 25% Score			
Variable:								
CSI$_{t-1}$	0.007				0.004			
	(1.06)				(0.72)			
ISI$_{t-1}$		0.008				-0.001		
		(1.21)				(-0.11)		
BCI$_{t-1}$			-0.010				-0.003	
			(-1.56)				(-0.71)	
CCI$_{t-1}$				-0.000				-0.002
				(-0.02)				(-0.47)
MktRF	1.365***	1.359***	1.386***	1.358***	1.116***	1.107***	1.116***	1.110***
	(16.75)	(18.15)	(18.08)	(17.87)	(18.69)	(20.16)	(19.82)	(20.08)
SMB	0.308**	0.288**	0.278**	0.278**	0.110	0.088	0.089	0.094
	(2.18)	(2.35)	(2.29)	(2.24)	(1.06)	(0.98)	(0.99)	(1.04)
HML	0.531***	0.564***	0.585***	0.584***	0.156	0.153	0.152	0.149
	(3.30)	(3.96)	(4.16)	(4.11)	(1.32)	(1.47)	(1.47)	(1.44)
MOM	-0.189***	-0.159**	-0.183***	-0.177***	-0.054	-0.058	-0.059	-0.059
	(-2.84)	(-2.51)	(-2.99)	(-2.85)	(-1.11)	(-1.25)	(-1.30)	(-1.30)
Alpha	-0.010**	-0.011**	-0.003	-0.008*	-0.001	-0.000	0.001	0.000
	(-2.09)	(-2.61)	(-0.58)	(-1.76)	(-0.43)	(-0.12)	(0.32)	(0.13)
N	104	120	120	120	104	120	120	120
R^2	0.85	0.85	0.85	0.85	0.84	0.84	0.84	0.84
Adj. R^2	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
AIC	-402.00	-475.75	-476.74	-474.21	-466.59	-550.29	-550.81	-550.51
BIC	-386.14	-459.02	-460.01	-457.49	-450.73	-533.57	-534.08	-533.79

Appendix C. Raw Sentiment Variables

Table 9. CSR Premium Raw Sentiment Variables

Table 9 displays the analysis using the raw sentiment data instead of the dummy variables for the sentiment indicators. Panel A and B from table 9 display the output of the OLS regression model (1) with the premium on the total CSR score and the premium on the corporate governance score as the dependent variables. Panel C and D from table 9 display the output of the OLS regression model (1) with the premium on the social score and the premium on the environmental score the dependent variable. Panel E from table 9 displays the output of the OLS regression model (1) with premium on the economic score as the dependent variable. The variable Alpha is the constant, CSI_{t-1}, ISI_{t-1}, BCI_{t-1} and CCI_{t-1} represent the Consumer Sentiment Index, Investor Sentiment Index, Business Confidence Index and the Consumer Confidence Index and are dummy variables for sentiment which are equal to one if the sentiment is higher than the previous year and zero if it is lower than the previous year, indicating that sentiment is more positive or negative relatively to the sentiment in the previous period. MktRF, SMB, HML and MOM variables indicate the abnormal returns coming from common market factors of which the natural logarithm is used in the regression. N is the number of observations. *t statistics in parentheses * p<.10 ** p<.05 *** p<.01*

	Panel A: CSR Total Score				Panel B: Corporate Governance Responsibility			
	Dependent Variable: CSR Total Premium				Dependent Variable: Corporate Governance Premium			
Variable:								
CSI_{t-1}	0.001				0.001*			
	(1.57)				(1.72)			
ISI_{t-1}		0.000				-0.004		
		(0.08)				(-1.04)		
BCI_{t-1}			0.004				0.007	
			(0.57)				(1.28)	
CCI_{t-1}				0.007				0.009
				(0.88)				(1.45)
MktRF	-0.133***	-0.122***	-0.129***	-0.129***	-0.075**	-0.059*	-0.078**	-0.075**
	(-3.19)	(-2.96)	(-2.95)	(-3.05)	(-2.33)	(-1.80)	(-2.33)	(-2.30)
SMB	-0.154**	-0.136*	-0.136**	-0.143**	-0.065	-0.040	-0.045	-0.057
	(-2.27)	(-1.92)	(-1.99)	(-2.12)	(-1.24)	(-0.71)	(-0.87)	(-1.10)
HML	-0.461***	-0.448***	-0.467***	-0.469***	-0.316***	-0.324***	-0.320***	-0.323***
	(-5.94)	(-5.47)	(-5.98)	(-6.01)	(-5.30)	(-4.99)	(-5.35)	(-5.40)
MOM	0.053	0.065*	0.059*	0.058*	0.049*	0.065**	0.059**	0.054**
	(1.58)	(1.90)	(1.67)	(1.68)	(1.88)	(2.40)	(2.16)	(2.06)
Alpha	0.002	0.002	0.002	0.002	-0.001	-0.002	-0.001	-0.001
	(1.17)	(1.03)	(1.16)	(1.16)	(-0.95)	(-1.29)	(-0.94)	(-0.95)
N	120	103	120	120	120	103	120	120
R^2	0.48	0.49	0.47	0.47	0.39	0.39	0.38	0.38
Adj. R^2	0.45	0.47	0.44	0.45	0.36	0.36	0.35	0.36
AIC	-619.91	-541.24	-617.69	-618.16	-682.95	-588.90	-681.61	-682.07
BIC	-603.18	-525.43	-600.97	-601.43	-666.23	-573.10	-664.88	-665.35

Table 9. CSR Premium Raw Sentiment Variables - *Continued*

	Panel C: Social Responsibility				Panel D: Environmental Responsibility			
	Dependent Variable: Social Premium				Dependent Variable: Environmental Premium			
Variable:								
CSI_{t-1}	0.000				0.000			
	(1.05)				(0.78)			
ISI_{t-1}		-0.001				0.004		
		(-0.25)				(0.95)		
BCI_{t-1}			-0.002				0.006	
			(-0.29)				(0.89)	
CCI_{t-1}				0.005				-0.001
				(0.76)				(-0.14)
MktRF	-0.078**	-0.072**	-0.067*	-0.077**	0.023	0.026	0.017	0.029
	(-2.14)	(-1.99)	(-1.77)	(-2.09)	(0.59)	(0.69)	(0.42)	(0.76)
SMB	-0.077	-0.027	-0.071	-0.071	-0.183***	-0.172***	-0.170***	-0.176***
	(-1.31)	(-0.42)	(-1.20)	(-1.22)	(-2.94)	(-2.63)	(-2.74)	(-2.84)
HML	-0.465***	-0.468***	-0.470***	-0.469***	-0.407***	-0.342***	-0.409***	-0.410***
	(-6.90)	(-6.44)	(-6.95)	(-6.96)	(-5.70)	(-4.55)	(-5.74)	(-5.74)
MOM	-0.030	-0.013	-0.033	-0.027	-0.031	-0.029	-0.023	-0.032
	(-1.04)	(-0.43)	(-1.07)	(-0.92)	(-1.00)	(-0.93)	(-0.71)	(-1.01)
Alpha	-0.000	0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(-0.26)	(0.16)	(-0.27)	(-0.26)	(-0.07)	(-0.03)	(-0.06)	(-0.07)
N	120	103	120	120	120	103	120	120
R^2	0.41	0.40	0.40	0.40	0.30	0.26	0.30	0.30
Adj. R^2	0.38	0.37	0.37	0.38	0.27	0.23	0.27	0.27
AIC	-653.73	-565.85	-652.67	-653.18	-639.83	-559.06	-640.02	-639.22
BIC	-637.00	-550.04	-635.94	-636.46	-623.11	-543.25	-623.30	-622.50

Table 9. CSR Premium Raw Sentiment Variables - *Continued*

	Panel E: Economic Responsibility			
	Dependent Variable: Economic Premium			
Variable:				
CSI_{t-1}	0.001			
	(1.56)			
ISI_{t-1}		-0.003		
		(-0.53)		
BCI_{t-1}			0.005	
			(0.59)	
CCI_{t-1}				0.009
				(1.06)
MktRF	-0.265***	-0.245***	-0.260***	-0.262***
	(-5.67)	(-5.29)	(-5.33)	(-5.55)
SMB	-0.205***	-0.193**	-0.184**	-0.194**
	(-2.71)	(-2.40)	(-2.43)	(-2.57)
HML	-0.425***	-0.392***	-0.432***	-0.434***
	(-4.90)	(-4.24)	(-4.95)	(-4.98)
MOM	0.120***	0.136***	0.127***	0.126***
	(3.20)	(3.54)	(3.21)	(3.30)
Alpha	0.007***	0.006***	0.007***	0.007***
	(3.77)	(3.28)	(3.73)	(3.74)
N	120	103	120	120
R^2	0.59	0.61	0.59	0.59
Adj. R^2	0.58	0.59	0.57	0.57
AIC	-593.41	-516.38	-591.25	-592.06
BIC	-576.69	-500.57	-574.52	-575.33

Appendix D. CSR Improvement or No CSR Improvement

Table 10. CSR Premium - CSR Improvement or No CSR Improvement

Table 10 displays the results of the regression analysis with the CSR premium based on the companies that show an increase in the CSR score over the time span 2007-2016 minus the average return of the companies that show a decrease in their CSR score in the same period. Panel A and B from table 10 display the output of the OLS regression model (2) with the premium on the change in total CSR score and the premium of the change of the corporate governance score as the dependent variables. Panel C and D from table 10 display the output of the OLS regression model (2) with the premium on change in the social score and the premium of the change in the environmental score the dependent variable. Panel E from table 7 displays the output of the OLS regression model (2) with premium on the change of the economic score as the dependent variable. The variable Alpha is the constant, CSI_{t-1}, ISI_{t-1}, BCI_{t-1} and CCI_{t-1} represent the Consumer Sentiment Index, Investor Sentiment Index, Business Confidence Index and the Consumer Confidence Index and are dummy variables for sentiment which are equal to one if the sentiment is higher than the previous year and zero if it is lower than the previous year, indicating that sentiment is more positive or negative relatively to the sentiment in the previous period. MktRF, SMB, HML and MOM variables indicate the abnormal returns coming from common market factors of which the natural logarithm is used in the regression. N is the number of observations. *t statistics in parentheses * p<.10 ** p<.05 *** p<.01*

	Panel A: CSR Total Score				Panel B: Corporate Governance Responsibility			
	Dependent Variable: CSR Total Premium				Dependent Variable: Corporate Governance Premium			
Variable:								
CSI_{t-1}	-0.002				-0.004*			
	(-0.58)				(-1.86)			
ISI_{t-1}		-0.005				-0.002		
		(-1.49)				(-1.03)		
BCI_{t-1}			0.004				0.005*	
			(1.33)				(1.96)	
CCI_{t-1}				-0.005				-0.001
				(-1.65)				(-0.57)
MktRF	-0.077*	-0.085*	-0.096**	-0.073	-0.043	-0.045	-0.058*	-0.042
	(-1.76)	(-1.84)	(-2.03)	(-1.57)	(-1.37)	(-1.37)	(-1.74)	(-1.25)
SMB	-0.093	-0.118	-0.123	-0.081	0.012	-0.015	-0.028	-0.002
	(-1.18)	(-1.55)	(-1.60)	(-1.06)	(0.22)	(-0.27)	(-0.52)	(-0.04)
HML	-0.476***	-0.494***	-0.507***	-0.518***	-0.339***	-0.348***	-0.354***	-0.358***
	(-6.57)	(-6.62)	(-6.85)	(-7.01)	(-6.56)	(-6.48)	(-6.75)	(-6.68)
MOM	-0.029	-0.053	-0.042	-0.044	-0.008	-0.029	-0.022	-0.024
	(-0.57)	(-1.00)	(-0.79)	(-0.83)	(-0.21)	(-0.75)	(-0.58)	(-0.62)
Alpha	0.002	0.003	-0.001	0.004	-0.000	-0.001	-0.004**	-0.001
	(0.72)	(1.51)	(-0.52)	(1.60)	(-0.30)	(-0.45)	(-2.61)	(-0.84)
N	86	102	102	102	86	102	102	102
R^2	0.48	0.46	0.46	0.46	0.45	0.41	0.42	0.40
Adj. R^2	0.45	0.43	0.43	0.44	0.41	0.38	0.39	0.37
AIC	-491.17	-557.69	-557.22	-558.23	-548.88	-624.42	-627.31	-623.63
BIC	-476.44	-541.94	-541.47	-542.48	-534.15	-608.67	-611.56	-607.88

Table 10. CSR Premium - CSR Engagement or No CSR Engagement - *Continued*

	Panel C: Social Responsibility Dependent Variable: Social Premium				Panel D: Environmental Responsibility Dependent Variable: Environmental Premium			
Variable:								
CSI_{t-1}	-0.002				-0.001			
	(-0.66)				(-0.20)			
ISI_{t-1}		-0.004				-0.006**		
		(-1.40)				(-2.23)		
BCI_{t-1}			0.003				0.002	
			(0.91)				(0.78)	
CCI_{t-1}				-0.007**				-0.006**
				(-2.58)				(-2.06)
MktRF	-0.035	-0.038	-0.045	-0.023	0.019	0.012	0.007	0.027
	(-0.84)	(-0.93)	(-1.05)	(-0.56)	(0.44)	(0.28)	(0.16)	(0.61)
SMB	-0.051	-0.109	-0.109	-0.066	-0.095	-0.154**	-0.145*	-0.108
	(-0.68)	(-1.61)	(-1.59)	(-0.99)	(-1.23)	(-2.17)	(-1.98)	(-1.50)
HML	-0.446***	-0.461***	-0.473***	-0.485***	-0.413***	-0.447***	-0.468***	-0.479***
	(-6.48)	(-6.95)	(-7.15)	(-7.54)	(-5.82)	(-6.41)	(-6.62)	(-6.88)
MOM	-0.123**	-0.140***	-0.130***	-0.132***	-0.073	-0.102**	-0.087*	-0.088*
	(-2.52)	(-2.95)	(-2.76)	(-2.87)	(-1.45)	(-2.05)	(-1.73)	(-1.79)
Alpha	0.000	0.001	-0.003	0.002	-0.000	0.003	-0.001	0.003
	(0.13)	(0.40)	(-1.25)	(1.14)	(-0.08)	(1.51)	(-0.64)	(1.33)
N	86	102	102	102	86	102	102	102
R^2	0.46	0.46	0.46	0.49	0.36	0.41	0.39	0.41
Adj. R^2	0.42	0.43	0.43	0.46	0.32	0.38	0.36	0.38
AIC	-499.76	-581.49	-580.31	-586.27	-494.73	-571.23	-566.71	-570.46
BIC	-485.04	-565.74	-564.56	-570.52	-480.00	-555.48	-550.96	-554.71

Table 10. CSR Premium - CSR Engagement or No CSR Engagement - *Continued*
Panel E: Economic Responsibility

	Dependent Variable: Economic Premium			
Variable:				
CSI_{t-1}	-0.001			
	(-0.35)			
ISI_{t-1}		-0.003		
		(-0.85)		
BCI_{t-1}			0.005	
			(1.43)	
CCI_{t-1}				-0.002
				(-0.54)
MktRF	-0.132***	-0.151***	-0.165***	-0.146***
	(-2.87)	(-3.03)	(-3.26)	(-2.90)
SMB	-0.124	-0.129	-0.143*	-0.113
	(-1.49)	(-1.58)	(-1.74)	(-1.36)
HML	-0.454***	-0.505***	-0.513***	-0.518***
	(-5.97)	(-6.27)	(-6.47)	(-6.46)
MOM	0.030	0.023	0.031	0.029
	(0.55)	(0.41)	(0.56)	(0.51)
Alpha	0.005**	0.006**	0.002	0.005**
	(2.11)	(2.46)	(0.80)	(2.29)
N	86	102	102	102
R^2	0.50	0.49	0.50	0.49
Adj. R^2	0.47	0.47	0.47	0.46
AIC	-482.79	-541.87	-543.26	-541.42
BIC	-468.06	-526.12	-527.51	-525.67

Appendix E. Excluding 2008-2009 Recession

Table 11. CSR Premium - Excluding Recession

Table 11 displays the results of the analysis of the CSR premium excluding the data of the sample period that covers the recession. Panel A and B from table 11 display the output of the OLS regression model (1) with the premium on the total CSR score and the premium on the corporate governance score as the dependent variables. Panel C and D from table 11 display the output of the OLS regression model (1) with the premium on the social score and the premium on the environmental score the dependent variable. Panel E from table 11 displays the output of the OLS regression model (1) with premium on the economic score as the dependent variable. The variable Alpha is the constant, CSI_{t-1}, ISI_{t-1}, BCI_{t-1} and CCI_{t-1} represent the Consumer Sentiment Index, Investor Sentiment Index, Business Confidence Index and the Consumer Confidence Index and are dummy variables for sentiment which are equal to one if the sentiment is higher than the previous year and zero if it is lower than the previous year, indicating that sentiment is more positive or negative relatively to the sentiment in the previous period. MktRF, SMB, HML and MOM variables indicate the abnormal returns coming from common market factors of which the natural logarithm is used in the regression. N is the number of observations. *t statistics in parentheses * p<.10 ** p<.05 *** p<.01*

	Panel A: CSR Total Score				Panel B: Corporate Governance Responsibility			
	Dependent Variable: CSR Total Premium				Dependent Variable: Corporate Governance Premium			
Variable:								
CSI_{t-1}	-0.002				-0.004*			
	(-0.69)				(-1.94)			
ISI_{t-1}		-0.005				-0.002		
		(-1.48)				(-1.04)		
BCI_{t-1}			0.005				0.005**	
			(1.41)				(2.05)	
CCI_{t-1}				-0.005				-0.001
				(-1.51)				(-0.41)
MktRF	-0.077*	-0.085*	-0.098**	-0.074	-0.042	-0.046	-0.060*	-0.043
	(-1.72)	(-1.82)	(-2.04)	(-1.57)	(-1.32)	(-1.34)	(-1.74)	(-1.25)
SMB	-0.121	-0.140*	-0.144*	-0.106	-0.016	-0.037	-0.049	-0.026
	(-1.51)	(-1.82)	(-1.85)	(-1.37)	(-0.28)	(-0.67)	(-0.88)	(-0.46)
HML	-0.453***	-0.473***	-0.489***	-0.495***	-0.316***	-0.328***	-0.336***	-0.338***
	(-6.21)	(-6.31)	(-6.59)	(-6.67)	(-6.00)	(-6.02)	(-6.34)	(-6.23)
MOM	-0.035	-0.059	-0.045	-0.049	-0.015	-0.035	-0.027	-0.030
	(-0.67)	(-1.08)	(-0.83)	(-0.90)	(-0.39)	(-0.88)	(-0.69)	(-0.75)
Alpha	0.002	0.004	-0.001	0.003	-0.000	-0.001	-0.004**	-0.001
	(0.82)	(1.54)	(-0.55)	(1.54)	(-0.15)	(-0.38)	(-2.60)	(-0.88)
N	86	102	102	102	86	102	102	102
R^2	0.46	0.45	0.45	0.45	0.41	0.38	0.40	0.38
Adj. R^2	0.43	0.42	0.42	0.42	0.38	0.35	0.37	0.35
AIC	-488.19	-555.12	-554.93	-555.21	-543.78	-620.31	-623.52	-619.34
BIC	-473.47	-539.37	-539.18	-539.46	-529.06	-604.56	-607.77	-603.59

Table 11. CSR Premium - Excluding Recession - *Continued*

	Panel C: Social Responsibility Dependent Variable: Social Premium				Panel D: Environmental Responsibility Dependent Variable: Environmental Premium			
Variable:								
CSI_{t-1}	= (-0.76)				-0.001 (-0.28)			
ISI_{t-1}		-0.004 (-1.38)				-0.006** (-2.22)		
BCI_{t-1}			0.003 (0.99)				0.003 (0.84)	
CCI_{t-1}				-0.007** (-2.45)				-0.006* (-1.95)
MktRF	-0.036 (-0.84)	-0.038 (-0.93)	-0.046 (-1.08)	-0.024 (-0.58)	0.019 (0.43)	0.012 (0.27)	0.006 (0.14)	0.026 (0.58)
SMB	-0.068 (-0.89)	-0.123* (-1.80)	-0.121* (-1.76)	-0.083 (-1.24)	-0.112 (-1.44)	-0.169** (-2.36)	-0.158** (-2.14)	-0.124* (-1.72)
HML	-0.432*** (-6.27)	-0.448*** (-6.74)	-0.461*** (-6.99)	-0.470*** (-7.29)	-0.398*** (-5.63)	-0.434*** (-6.23)	-0.457*** (-6.48)	-0.464*** (-6.68)
MOM	-0.125** (-2.48)	-0.142*** (-2.94)	-0.132*** (-2.73)	-0.134*** (-2.86)	-0.076 (-1.48)	-0.106** (-2.08)	-0.089* (-1.73)	-0.092* (-1.81)
Alpha	0.000 (0.23)	0.001 (0.43)	-0.003 (-1.26)	0.002 (1.09)	0.000 (0.00)	0.003 (1.53)	-0.001 (-0.66)	0.003 (1.29)
N	86	102	102	102	86	102	102	102
R^2	0.44	0.45	0.45	0.47	0.35	0.41	0.38	0.40
Adj. R^2	0.41	0.42	0.42	0.45	0.31	0.38	0.35	0.37
AIC	-498.09	-579.92	-578.94	-584.07	-493.48	-570.05	-565.68	-568.90
BIC	-483.36	-564.17	-563.19	-568.32	-478.75	-554.30	-549.93	-553.15

Table 11. CSR Premium - Excluding Recession - *Continued*

Panel E: Economic Responsibility

Dependent Variable: Economic Premium

Variable:				
CSI_{t-1}	-0.001			
	(-0.45)			
ISI_{t-1}		-0.003		
		(-0.85)		
BCI_{t-1}			0.005	
			(1.51)	
CCI_{t-1}				-0.001
				(-0.39)
MktRF	-0.131***	-0.151***	-0.166***	-0.147***
	(-2.78)	(-2.98)	(-3.23)	(-2.87)
SMB	-0.165*	-0.160*	-0.172**	-0.145*
	(-1.94)	(-1.91)	(-2.06)	(-1.72)
HML	-0.422***	-0.478***	-0.488***	-0.490***
	(-5.48)	(-5.87)	(-6.11)	(-6.06)
MOM	0.018	0.015	0.025	0.022
	(0.32)	(0.25)	(0.43)	(0.37)
Alpha	0.005**	0.006**	0.002	0.005**
	(2.17)	(2.48)	(0.75)	(2.20)
N	86	102	102	102
R^2	0.48	0.48	0.48	0.47
Adj. R^2	0.45	0.45	0.46	0.44
AIC	-478.93	-538.41	-540.05	-537.81
BIC	-464.20	-522.66	-524.30	-522.06

Appendix F. Excluding 2008-2009 Recession

Table 12. CSR long term Premium - Excluding Recession

Table 12 displays the results of the additional analysis on the CSR premium based on the long-term CSR investment strategy, excluding the data from the recession in 2008-2009. Panel A and B from table 12 display the output of the OLS regression model (2) with the premium on the change in total CSR score and the premium of the change of the corporate governance score as the dependent variables. Panel C and D from table 12 display the output of the OLS regression model (2) with the premium on change in the social score and the premium of the change in the environmental score the dependent variable. Panel E from table 12 displays the output of the OLS regression model (2) with premium on the change of the economic score as the dependent variable. The variable Alpha is the constant, CSI_{t-1}, ISI_{t-1}, BCI_{t-1} and CCI_{t-1} represent the Consumer Sentiment Index, Investor Sentiment Index, Business Confidence Index and the Consumer Confidence Index and are dummy variables for sentiment which are equal to one if the sentiment is higher than the previous year and zero if it is lower than the previous year, indicating that sentiment is more positive or negative relatively to the sentiment in the previous period. MktRF, SMB, HML and MOM variables indicate the abnormal returns coming from common market factors of which the natural logarithm is used in the regression. N is the number of observations. *t statistics in parentheses * p<.10 ** p<.05 *** p<.01*

	Panel A: CSR Total Score				Panel B: Corporate Governance Responsibility			
	Dependent Variable: CSR Total Premium				Dependent Variable: Corporate Governance Premium			
Variable:								
CSI_{t-1}	-0.003				-0.000			
	(-1.02)				(-0.15)			
ISI_{t-1}		-0.002				-0.002		
		(-0.85)				(-0.75)		
BCI_{t-1}			-0.002				-0.003	
			(-0.80)				(-1.20)	
CCI_{t-1}				-0.001				-0.002
				(-0.21)				(-0.98)
MktRF	0.181***	0.198***	0.205***	0.200***	0.177***	0.193***	0.203***	0.199***
	(4.89)	(5.49)	(5.55)	(5.47)	(4.92)	(5.50)	(5.67)	(5.61)
SMB	0.254***	0.177***	0.192***	0.186***	0.251***	0.182***	0.199***	0.197***
	(3.82)	(2.98)	(3.21)	(3.11)	(3.88)	(3.13)	(3.43)	(3.38)
HML	0.523***	0.480***	0.473***	0.472***	0.443***	0.394***	0.388***	0.385***
	(8.65)	(8.29)	(8.25)	(8.20)	(7.52)	(6.97)	(6.97)	(6.89)
MOM	-0.071	-0.061	-0.058	-0.056	-0.089**	-0.073*	-0.071*	-0.069*
	(-1.62)	(-1.45)	(-1.37)	(-1.35)	(-2.08)	(-1.77)	(-1.74)	(-1.70)
Alpha	-0.001	-0.004**	-0.004**	-0.004**	-0.002	-0.004**	-0.003*	-0.003**
	(-0.75)	(-2.02)	(-2.00)	(-2.57)	(-1.10)	(-2.04)	(-1.67)	(-2.00)
N	86	102	102	102	86	102	102	102
R^2	0.74	0.69	0.69	0.68	0.71	0.66	0.66	0.66
Adj. R^2	0.72	0.67	0.67	0.67	0.69	0.64	0.64	0.64
AIC	-520.56	-607.78	-607.68	-607.06	-525.15	-612.87	-613.78	-613.29
BIC	-505.83	-592.03	-591.93	-591.31	-510.43	-597.12	-598.03	-597.54

Table 12. CSR Long-term Premium - Excluding Recession - *Continued*

	Panel C: Social Responsibility				Panel D: Environmental Responsibility			
	Dependent Variable: Social Premium				Dependent Variable: Environmental Premium			
Variable:								
CSI_{t-1}	-0.001				-0.002			
	(-0.57)				(-0.87)			
ISI_{t-1}		-0.003				-0.001		
		(-1.37)				(-0.26)		
BCI_{t-1}			-0.001				-0.002	
			(-0.56)				(-0.57)	
CCI_{t-1}				-0.002				0.001
				(-0.79)				(0.20)
MktRF	0.184***	0.199***	0.205***	0.204***	0.135***	0.153***	0.158***	0.153***
	(5.30)	(6.06)	(6.03)	(6.11)	(3.55)	(4.04)	(4.08)	(3.99)
SMB	0.240***	0.156***	0.171***	0.173***	0.296***	0.230***	0.238***	0.230***
	(3.83)	(2.87)	(3.11)	(3.15)	(4.32)	(3.67)	(3.79)	(3.66)
HML	0.456***	0.441***	0.430***	0.428***	0.531***	0.473***	0.471***	0.472***
	(8.03)	(8.34)	(8.16)	(8.12)	(8.53)	(7.77)	(7.83)	(7.81)
MOM	-0.055	-0.070*	-0.064	-0.063	-0.064	-0.048	-0.047	-0.046
	(-1.33)	(-1.82)	(-1.65)	(-1.65)	(-1.41)	(-1.08)	(-1.08)	(-1.05)
Alpha	-0.003*	-0.004**	-0.004***	-0.004***	-0.002	-0.005**	-0.004**	-0.005***
	(-1.78)	(-2.19)	(-2.68)	(-2.73)	(-0.90)	(-2.42)	(-2.15)	(-2.83)
N	86	102	102	102	86	102	102	102
R^2	0.73	0.70	0.70	0.70	0.71	0.64	0.64	0.64
Adj. R^2	0.71	0.69	0.68	0.68	0.69	0.62	0.63	0.62
AIC	-530.99	-626.45	-624.80	-625.12	-515.57	-597.49	-597.77	-597.47
BIC	-516.26	-610.70	-609.05	-609.37	-500.85	-581.74	-582.02	-581.72

Table 12. CSR Long-term Premium - Excluding Recession - Continued

Panel E: Economic Responsibility

Dependent Variable: Economic Premium

Variable:				
CSI_{t-1}	-0.005*			
	(-1.94)			
ISI_{t-1}		-0.001		
		(-0.50)		
BCI_{t-1}			-0.001	
			(-0.24)	
CCI_{t-1}				0.000
				(0.21)
MktRF	0.190***	0.207***	0.210***	0.207***
	(5.44)	(5.96)	(5.89)	(5.90)
SMB	0.277***	0.200***	0.206***	0.202***
	(4.40)	(3.48)	(3.57)	(3.50)
HML	0.480***	0.427***	0.423***	0.423***
	(8.38)	(7.64)	(7.65)	(7.65)
MOM	-0.082*	-0.070*	-0.067*	-0.067
	(-1.97)	(-1.71)	(-1.66)	(-1.65)
Alpha	-0.002	-0.005***	-0.006***	-0.006***
	(-1.07)	(-3.08)	(-3.19)	(-3.70)
N	86	102	102	102
R^2	0.76	0.69	0.69	0.69
Adj. R^2	0.74	0.68	0.68	0.68
AIC	-529.80	-615.30	-615.10	-615.08
BIC	-515.07	-599.55	-599.35	-599.33