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ERASMUS SCHOOL OF ECONOMICS

BSc Economie & Bedrijfseconomie

The short-term effects of corporate social responsibility announcements on the stock prices of companies.

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Date final version: …….

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Abstract

The urge for more corporate social responsibility (CSR) at companies is growing and growing. The environmental and social issues are bigger than ever. However, the most important thing for the business sector is financial performance. Is it possible to do good and also satisfy your shareholders? This is researched in the following paper. An event study is constructed on the basis of news announcements, related to the S&P100 companies, from the last eighteen years regarding corporate social responsibility. Out of this event study, the cumulative abnormal returns are calculated, and these are used in a regression analysis to further investigate different relations. There turned out to be no clear statistically significant relation between the stock price of companies and the corporate social responsibility announcements. These cumulative abnormal returns were inserted in a regression to look which factors have an impact on them. It can be concluded that, after a positive CSR announcement, the aspect of the announcements and the current ESG-score of the company have statistically significant impact. Negative CSR announcement, on the other hand, are not significantly influenced by these factors. This could also be due to the fact that the data set is not sufficient. Recommendations for later studies will be to use a bigger sample size and try to give a certain weight to the announcement or use comparable news announcements.

1. Introduction

April 20, 2010, an enormous explosion on the Deepwater horizon oil rig, located in the Gulf of Mexico, occurred. The explosion took the lives of eleven employees working on the platform, and 17 more were heavily injured. Two days later, the 22th of April, the rig capsized and sank to the bottom of the ocean. Afterwards the drilling riser was raptured, and oil began to discharge into the gulf. This oil rig was leased by the 6th biggest oil company of the world, British Petroleum (better known as BP) (Helman, 2012). They themselves estimated around 1000 barrels of oil a day, which escaped into the ocean. U.S. government on the other hand shocked the world, saying the leakage peaked around 60,000 barrels a day (Pallardy, 2020). The well discharged oil into the Gulf of Mexico for eighty-seven days until the attempt to cement the well shut was successful, but at that point the damage was already done. An estimated 4.9 million barrels of oil was released into the Gulf, contaminating the waters and surrounding shorelines (Brennan, 2013). The impact on the surroundings were enormous. The main stakeholders in the area, which were affected by the spill were tourist driven businesses and fisherman. Most important, surely, was the impact it had on the environment. 32 wildlife refuges were at risk (Cleveland, 2010), approximately 1800 kilometres of the coasts were victim to the effects of the oil spill and the reported deaths of dolphins in the three years following the incident rose with 800% (Spier et al, 2013).

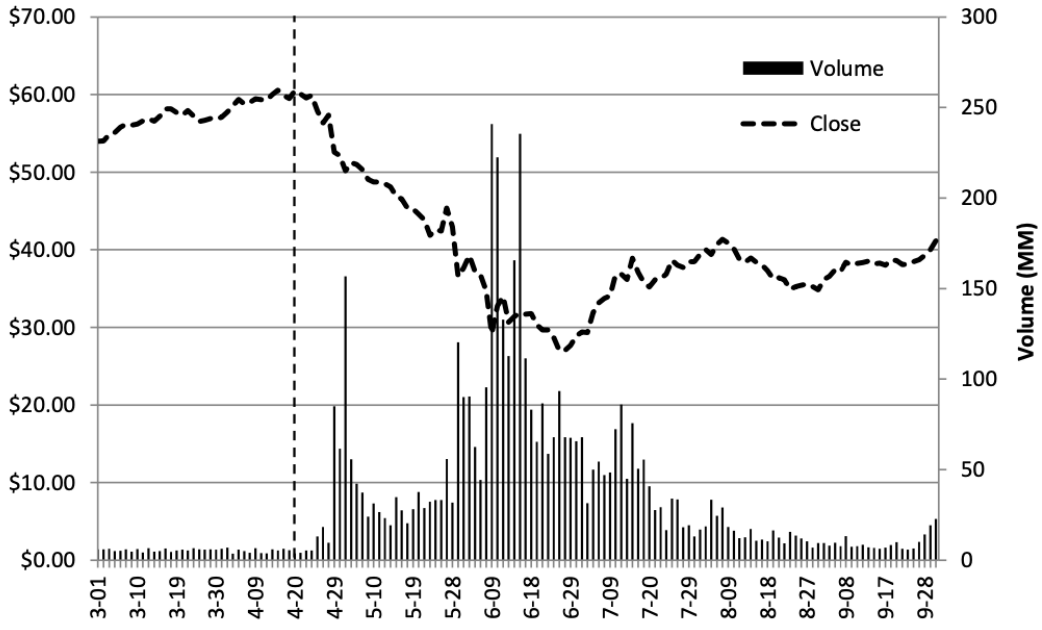

Figure 1. Daily closing prices and trading volumes from March 1 through September 30 (Fodor & Stowe, 2010).

The financial impact it had on BP was devastating for the company. The estimated 4.9 million barof crude oil had an average market price of around 374 million dollars (Ingersoll, Locke & Reavis, 2012), the company incurred a total of 4.06 billion dollars in penalties, and apart from that BP incurred $8.53 billion environmental provisions and $39.13 billion litigations and claims relating to the environment. In a study which was done in 2018 it is calculated that BP had an ultimate cost of around 114.89 billion dollars (Lee, Garza-Gomez & Lee, 2018).
The stock price of the company was also impacted hugely. The investors did not see the economic and environmental impact it would have on BP directly, but eventually they recognized the catastrophic dimensions of this oil disaster. The share price continued to drop for over 2 months, until it reached its lowest value in 14 years. The share price of BP has declined from $60.48 to $27.02, a decline of 54.6% (see figure 1.) (Fodor & Stowe, 2010).

The impact the explosion had on the environment, but also on the financial performance of BP, make it one of the biggest environmental scandals ever. Especially in this century, where the urge and need for more corporate social responsibility is very high, the impact of a disaster like this, is reflected heavily in the stock prices of companies. Out of a Corporate social responsibility (CSR) survey sent to managers, performed by PriceWaterHouse Coopers in 2013, 58% of the respondents say that they think CSR is very important in their company. Moreover, the survey also found that the larger the company is, the more important CSR is for the company managers (see figure 2).

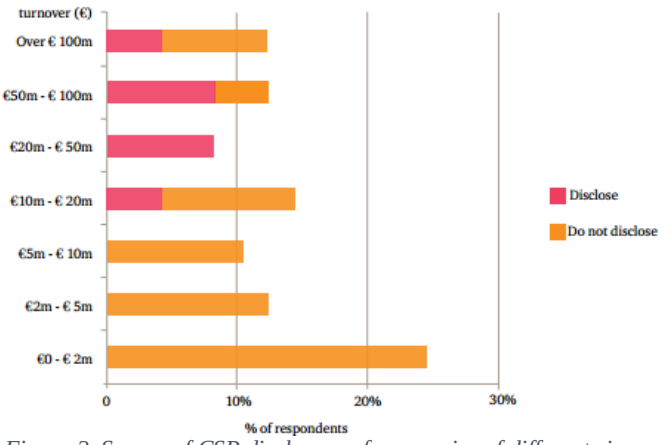

Figure 2. Survey of CSR disclosure of companies of different size as measured by annual turnover. Reprinted from Corporate Social Responsibility Practices Survey by Pricewaterhouse Coopers, 2013

This scandal shows the impact corporate social responsibility announcements can have on the financial performance, and particularly on the stock prices of companies. Especially now, in the twenty-first century, where the environmental issues are a big topic of debate. Corporate social responsibility is also receiving considerable attention in academic research (Stefan & Paul, 2008; Flammer, 2015; Weber, 2017). Despite this growing attention for sustainability, only little is known about the relationship between corporate social responsibility and the stock prices of companies.

This paper is written to give more clarity about the short-term relationship between these two. Former papers already gave some insight in this relationship, but al the recent papers looked more in to specific industries or only at the environmental aspect. It also differs between papers what is used as the events for corporate social responsibility or corporate social irresponsibility. This paper will have a look at the companies, which are included in the S&P100 between 2002 and 2020. So only companies with a large market capitalization, which are based in the United States are researched. To identify corporate social responsibility or corporate social irresponsibility the paper will use news announcements relating to the companies. These news announcements are analysed afterwards and ordered in different categories, to perform various tests with. These tests will afterwards give a more clarity regarding the influence corporate social responsibility has on the stock prices of companies.

I have chosen this topic, because in my opinion environmental and social issues are heavily related with the way financial markets work nowadays. Shareholders, investors and managers rather have short-term profits then being sustainable. Multiple studies have already accounted for a positive correlation between investing in sustainability and the financial performance of companies on the long-term (Lin, Yang & Liou, 2009; DiSegni, Huly & Akron, 2015). However, shareholders and investors invest in a decreasingly degree in companies for the long-term. In 1991, Hazen, who has studied the relationship between short- and long-term investing, already stated the following: "Professor Hazen contends that markets have become more volatile in recent years, causing investors to focus increasingly on near-term performance. He further asserts that the proliferation of short-term derivative instruments has exacerbated this problem. As investors demand superior near-term results, corporate managers feel compelled to shore up current earnings, often at the expense of investing for the future." This focus on short-term profits has as a consequence that companies do not care enough about their corporate social responsibility and rather see profits in the near future. With this paper I hope to make people aware of this problem in the modern financial markets.

This research is structured as follows, first, the definition of corporate social responsibility will be defined, as well as the transformation the term had in the last couple of decades, to give a bigger understanding about this topic. This is followed by an extensive literature review, where former papers will be covered which gave empirical evidence of the relationship between financial performance and corporate social responsibility. Afterwards the social and scientific relevance will be illustrated. The social relevance will be told on the basis of current problems in the world. The scientific relevance on the other hand will elucidated with former papers, and the lack of papers which performed the research the same as this one. Thereafter, to define where the paper will look into, a few hypotheses are, and a research question are composed. The data and methodology section can be found hereafter. The data section shows where and how the data, used in this research, is collected. The methodology shows how this data is used, to give us the results. These are shown afterwards, in the results section. According to

these results some conclusions are made. These conclusions are sketched in the last paragraph. Some recommendations to later papers will be given with the conclusions.

2. Theoretical Framework

2.1. What exactly is the definition of corporate social responsibility?

To understand the exact purpose of this research, it is very important to first understand what corporate social responsibility exactly is and which news categorizes itself under it. A term which looks similar and has about the same meaning as "corporate social responsibility", is "social responsibility". This term was first used by Howard Bowen in his book *Social Responsibility of The Businessmen,* which was published in 1953. He gave it the following definition: "The obligation of businessmen to pursue the policies and follow the lines of action which adhere to the objectives and values of the society" This term has evolved over the years, until the well-defined definition it is having today. A few years later, in 1960, an article was released which answered the question if businesses could afford to ignore social responsibility. In this article the following was given definition to social responsibility: "Businessmen's decisions and actions taken for reasons at least partially beyond the firm's direct economic or technical interest." (Davis). In this article he came to the conclusion that businesses' managements were not capable enough back then, to deal with social responsibility. He predicts a "social re-evolution" in the following fifty years, in which companies would incorporate social thinking. A vision which is opposite from most of the interpretations that are given to CSR is from the well-known capitalist Milton Friedman, he said the following: "the only one responsibility of business towards society is the maximization of profits to the share-holders within the legal framework and the ethical custom of the country" (1970). He always strongly believed in the power of the free market and thought that the maximization of the welfare would be achieved by striving for maximum profits. One of the first to actually use the exact term "corporate social responsibility" was Thomas M. Jones. He gave a precise definition to corporate social responsibility, which sounded: "Corporate social responsibility is the notion that corporations have an obligation to constituent groups in society other than stockholders and beyond that prescribed by law or union contract" (1980). He also pronounced that two facets of this definition are critical. First off, the obligation must be voluntary adopted. And secondly, the obligation is a broad one, extending beyond the traditional duty to shareholders and other societal groups such as customers, employees, suppliers, and neighbouring communities. A more recent paper from Mcwilliams and Siegel gave the same definition to CSR, and they also gave some examples. These are only a small amount of CSR announcements which will be looked at in the paper, but to have a small notion of what the announcements are: "Some examples of CSR actions include going beyond legal requirements in adopting progressive human resource management programs, developing non-animal testing procedures, recycling, abating pollution, supporting local businesses, and embodying products with social attributes or characteristics" (2001). Later on, in the theoretical framework more examples will

be given. In 2001 the European Commission also called for more corporate social responsibility. They gave the following definition to it: “a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis”.

To conclude, this paper will use as definition for corporate social responsibility: Everything a company voluntary does, that not directly concerns the financial performance of the company, and not only has impact on the stakeholder of the company but could also have impact non-stakeholders.

2.2. Empirical evidence for a short-term relationship between corporate social responsibility announcements and financial performance.

2.2.1. Impact on the profitability of companies

There has been quite a lot of research towards the short-term relationship between certain corporate social responsibility related events and the financial performance of the associated companies. It especially has been examined in specific industries. In 2010 for example, a paper was released about the relationship between the CSR announcements and the financial performance in the hospitality sector. Thus, this study examines the different impacts of positive and negative CSR activities on financial performance of hotel, casino, restaurant and airline companies. The results differentiated among the industries. The paper found a positive correlation between return on equity of the hotels and restaurants, and the positive CSR announcements for example, but this was in contrast with the airline companies (Kang, Lee & Huh, 2010). Contrary to this paper, another paper focussed on a certain index, the Russel 3000 index. In this research he used the following methodology and found these results: “I present evidence on the causal effect of CSR on financial performance. To obtain exogenous variation in CSR, I exploit the passage of shareholder proposals on CSR that pass or fail by a small margin of votes. The outcome of such close call proposals is as good as random and hence provides a randomized assignment of CSR to companies. Using a regression discontinuity design methodology, I find that the adoption of close call CSR proposals leads to a significant increase in shareholder value by 1.77%.” (Flammer, 2015). As can be seen, this paper used a whole different methodology as the other papers.

2.2.2. Impact on the return of stock

When we specifically look for the relationship between CSR announcements and the return on stocks, there is a lot less literature about the topic. To start of there has been released a paper about the short-term impact of corporate social responsibly on the stock price in South-Africa. This paper used the entrance and exit of companies in the Johannesburg securities exchange socially responsible investment index as the factor for CSR announcements. The research found that only in 2004 and 2014 there was a positive abnormal return when entering the index and there was a negative abnormal return in 2012

when leaving the index, but on average they didn't find any short-term effects of the CSR announcements on the stock price (Chetty, Naidoo & Seetharam, 2015). In contrast to this study, where they looked at one specific country, there has also been released a paper in 2010 where they looked at one industry. In this paper they looked at chemical plants and industries from all over the world and examined 64 different negative incidents. After done an event study, they found out that on average there would be a negative abnormal return of 1.3% over the following two days (Capelle-Blancard & Laguna, 2010). Lastly, in 2013, a research was performed about the effects of CSR announcements of specific companies over the whole world on their stock prices. In this paper there was searched for "eco-friendly" and "eco-harmful" articles with the news search engine Factiva. This article only took environmental announcements in consideration as corporate social responsibility, so they left out the corporate governance and the social aspect of CSR. With these news articles they performed an event study and came to the conclusion that shareholders are sensitive for eco-friendly and eco-harmful corporate initiatives. He also suggested that positive engagement with the environment is a new competitive resource for firms and that the standard for companies is set even higher, because becoming green is institutionalized as the norm. Although becoming green has a positive effect on the Stock returns, he did argue that it is a recourse with decreasing marginal returns (Flammer, 2013).

2.3. The relevance of this research

2.3.1. Social relevance

In a world that is beginning to see the downside of capitalism, where the externalities of the free market are beginning to show, there is a growing urgency for more attention for environmental and social factors under profit-driven institutions. These companies, led by shareholders, mostly look for short-term profits. Managers of these companies, who have to make as much financial improvements in their short tenure periods of, on average, just seven years (Carpenter, Sanders & gregersen, 2001). These managers do not have the environmental or social factors as their highest priority. They will receive the most prestige out of their financial performances. Managers who think corporate social responsibility is more important than the financial performance, like the former CEO of Unilever Paul Polman, are under a lot of pressure of their shareholders (de Boer, 2018). In this world, it is very important to show the relevance of corporate social responsibility to the companies, because this relevance is becoming bigger overtime.

Because of the importance of short-term returns for the shareholders, it is very interesting to have a look at the effect of certain CSR events on the returns of stocks. So, this proves the social relevance of this research.

2.3.2. Scientific relevance

As is seen in the former paragraphs, there has already been quite a lot of research towards corporate social responsibility. To start the definition of corporate social responsibility has been widely researched, and it is a clearly defined term right now. When CSR increasingly became a public debate, an increasing number of economists researched the topic and the effects it could have on the performance of a company. These people mostly focus on a single industry, as can be seen in former papers, where they focussed on the hospitality and chemical industry respectively (Kang, Lee & Huh, 2010; Capelle-Blancard & Laguna, 2010). It also widely differs what is used as factor for corporate social responsibility. In the paper of Chetty, Naidoo and Seetharam for example, they looked at the entrance and exit of companies in a socially responsible investment index.

It can be concluded from this, that the paper will be scientifically relevant, because it differs from other papers as it will look at all the industries and won't focus on a single one, furthermore it will use a different methodology as most other corporate social responsibility related researches, because it will use news announcements as instruments to detect CSR initiatives. These announcements will be acquired in the same way as in the article of Flammer, but it will focus on all the CSR aspects, in contrast to the paper of Flammer, which only looked at the environmental aspects.

2.4. Research question and the Hypothesis

2.4.1. Research Question

To get a better understanding about the effects of corporate social responsibility on the financial performance and specifically the short-term stock returns of companies, this paper is going to answer one main research question and three hypotheses to clarify this question. As can be seen in former paragraphs there are a lot of opposing views with aspect on the financial effects of corporate socially responsible actions. To give a clearer view, this paper is going to answer the following research question.

What is the short-term effect of positive and negative corporate social responsibility news announcements on the stock returns of companies?

As is told in a former section of this paper, we will use the following definition for corporate social responsibility: "Everything a company voluntary does, that not directly concerns the financial performance of the company, and not only has impact on the stakeholder of the company but could also have impact non-stakeholders.". Furthermore, in this paper a short-term effect will be an effect on the stock return until the day after the event has happened.

2.4.2. Hypotheses

To answer this question as clarified and understandable as possible, a few extra hypotheses will be answered. These statements will constitute a guidance through this paper. As Flammer (2013) stated in

his article, that engagement with the environment is a new competitive resource, it will be hypothesized that there is a positive relationship between positive CSR news and stock prices

Hypothesis 1: There is a positive correlation between positive CSR news and the stock return of a company.

By answering this question, there will be looked at all the different sorts of CSR news. So, if this hypothesis would be true, negative CSR news will lead to negative returns and positive CSR news will lead to positive returns.

There will be looked for the differences between companies which are associated with being "fair companies" and companies which are not. In the research of Flammer (2013) he stated the following: "standard neoclassical models typically assume decreasing marginal returns of production factors (e.g., capital and labour). By the same reasoning, environmental resources may exhibit decreasing marginal returns as well: "as companies keep "investing" in green initiatives, the marginal return of an additional green initiative decreases". With this in mind, the second hypothesis will be:

Hypothesis 2: The stocks of companies with an already high corporate social performance will reacts worse towards positve news and companies with low corporate social performance react better toward positive news.

As a standard for the corporate social performance of companies, the ESG-scores provided yearly by ASSET4 are used.

Thirdly, as there are a couple of different aspects of corporate social responsibility, the paper will look into the different effects of these aspects. It will be investigated which form of CSR will have the most and least impact on the stock returns. Because, there is a high pressure from the media towards companies to have a focus on helping environment and it also has a lot of strategic motives for companies to focus on the environment (Babiak & Trendafilova ,2011), the hypothesis will be the following:

Hypothesis 3: The Environmental aspect of corporate social responsibility will have the biggest impact on the stock returns of companies.

The aspects of corporate social responsibility will be divided into the same pillars as are used for the ESG-scores provided by ASSET4: Governance, social and environmental.

Lastly, the paper will have a look if there are different effects on the abnormal return of companies when they act in different industries. For example, it is noted that in between the hospitality sector, the implementation of CSR has different impacts on for example the restaurants, casino's and the airline companies (Kang, Lee & Huh, 2010). This hypothesis will research this, but on a larger scale. Therefore, the last hypothesis will be:

Hypothesis 4: The impact of corporate social responsibility news announcements on the abnormal return between different industries will differ.

To research this, the Standard industrial classification codes (SIC-codes) will be taken as factor to determine in which industry a company act. As this research will only look at the S&P100, which consists of a hundred different companies, there is not much differentiation between industries. Therefore, only the first two digits of the code, which show the major groups, are used to answer the hypothesis.

3. Data and Methodology

3.1. Data

To analyse the effect of corporate socially responsible and irresponsible news announcements on the stock price of companies, it is important to take a specific event as the standard for the announcements. There are multiple options for this. It is for example possible to base it on ratings which are given by a trustworthy standalone company, like for example Vigeo (Chollet & Cellier, 2011) or KLD (Harjoto & Jo, 2015). It is also possible to use the act of being incorporated or removed from a socially responsible investing index (Chetty et al, 2015; Gladysek & Chipeta, 2012). In this paper, there has been chosen for a different approach. The study is going to use news announcements as the events for CSR announcements (Flammer, 2013; Nagayama & Takeda, 2006). The reactions of the stock market following these news announcements, related to corporate social responsibility of companies, will be examined to give a better understanding of the consequences of CSR.

Factiva is used as a database for the news announcements. This is one of the major newspaper databases, which is owned by The Dow Jones. On Factiva it is possible to search for corporate social responsibility subjects in specific newspapers. As it is of great importance that the news announcements are published for the first time, because the stock price will react immediately to public news according to the efficient market hypothesis (Malkiel & Fama, 1970), this paper is only using three well established financial news websites. These will be the *Wall street Journal*, *Reuters Newswire* and *The Financial Times (see figure 3 in the appendix)*. From these news websites the financial news, related to all the S&P100 companies, is extracted and analysed. The sample period of the paper will be from January 1, 2002 to January 1, 2020. This period is chosen because of the availability of the data relating to the current corporate social performance of the companies, which is needed to answer the second hypothesis.
To identify the articles relating to corporate social responsibility, the option to look for different subjects on Factiva is used. The following subjects related to corporate social responsibility are used: “environmental protection”, “environmental/social/governance”, “corporate environmental responsibility”, “corporate governance”, “corporate social responsibility”, “workers’ pay”, “employee

benefits", "workplace discrimination/abuse", "workplace diversity", "workplace safety\health issues", "women executives", "environmental crime", "illegal wildlife trade", "climate change", "animal health", "environmental health", "demographic health", "natural environment", "deforestation", "fuel efficiency", "environmental pollution" and "sustainable development/sustainability". These are chosen to make a good diversification between the different aspects of corporate social responsibility. There are subjects related to corporate governance, social and environmental issues. After having filtered for the correct news articles, all the announcements are analysed sufficiently to make sure they are related to corporate social responsibility. With using these different filters and having analysed the articles, 267 different news articles, which could later be used as the events, are collected. 175 of these events are "friendly" and the other 92 are "harmful". They are categorized in a few different categories. Again, these categories are based on the different aspects of CSR; Corporate governance, social and environment. This is done, to answer the third hypothesis, which states that the environmental aspect of corporate social responsibility will have the biggest impact on the stock prices of the related companies. From these 267 events, 106 events are environmental, 111 are social and 49 have impact on the corporate governance. As clarification of the different aspects of CSR, an overview of how ASSET4 (Thomson reuter) determines their scores and on bases of which subjects can been seen in Table 1.

Pillar	**Aspects**
Corporate Governance Score	Board structure
	Compensation policy
	Board functions
	Shareholders rights
	Vision and strategy
Environmental Score	Resource reduction
	Emission reduction
	Product Innovation
Social Score	Community
	Product responsibility
	Employment quality
	Health and safety
	Training and development
	Diversity
	Human rights

Table 1. Overview of ASSET4 ESG-scores measurement

These 267 events, which are divided over a total of 71 companies, need to be filtered more because of the event study methodology. To calculate the normal returns, a control period in which no other events

happen is needed (Binder, 1998). The control periods are further filtered on the following events: Stock splits, CEO successions and equity offerings (Mcwilliams, Siegel & Teoh, 1999). There is not filtered on mergers and acquisitions, which would have normally been done. The S&P100 companies perform acquisitions so often, that it would be impossible to find control periods. These acquisitions also normally not have that big of an impact on the stock prices of these large capitalization companies, because they do them so often (Moeller, Schlingemann & Stulz, 2004). There is also filtered for other CSR events, which happened in the control period and influenced the same company. After performing these filters, there were 240 different events left in the data sample. These were divided in 147 "friendly" events and the other 80 are "harmful" events. Furthermore, there are 91 environmental, 96 social and 40 corporate governance events to answer hypothesis 3. These will afterwards also be divided in different industries based on the standard industrial classification (SIC-codes). The distribution from this can be found in table 2.

	friendly	**harmful**
Enviromental	70	21
Social	59	37
Corporate governance	18	22
Total	147	80

Table 2. Summary statistics of the news announcements obtained with factiva

There was also a variable needed to reflect the current corporate social responsibility of the company to answer hypothesis 2. As spoken about before, the ESG-score provided by ASSET4, which is owned by Thomson Reuters, will be used. This variable is constituted with three scores: Corporate governance score, social score and environmental score. The aspects of these pillars can be found in Table 1. The summary statics of these ESG-scores can be found in table 3. The score of the year before will be used as the variable for performance of the company in the year the event occurred. As can be seen in the table there is no information of the year 2007, these are not available. For events happening in the year 2008, the scores of 2006 will be used.

To use these scores in a regression, they will be categorized into different groups. These groups are based on the quartiles they are in, so there will be four different groups. This is important, so that the companies are relatively categorized. The higher the group the company is in, the better their current CSR policies are. See table 4 for the distribution of the different groups.

year	minimum	maximum	Average	median	Standard deviation
2002	24,32	85,01	59,00	61,45	15,11
2003	27,03	85,56	59,43	61,11	14,92949217
2004	36,04	88,01	62,89	62,9	13,56218997
2005	32,46	92,58	67,69	70,23	14,2143554
2006	32,46	94,88	68,45	70,95	15,2148358
2007	NA	NA	NA	NA	NA
2008	27,63	96,22	70,78	75,09	15,27774163
2009	22,76	97,41	71,92	76,43	16,55437411
2010	26,01	97,66	71,62	74,59	16,11305949
2011	22,76	92,48	72,16	75,775	15,98509921
2012	18,64	93,19	69,94	73,6	16,00436686
2013	19,41	92,6	71,16	74,95	15,99015475
2014	22,42	92,52	72,30	75,09	15,00980175
2015	26,35	93,54	74,87	77,05	13,93155131
2016	31,73	94,19	77,73	80,3	12,0675666
2017	31,67	93,25	78,88	79,7	10,96510725
2018	31,75	95,62	78,41	80,65	11,27052875

Table 3. Summary statistics of the ESG-scores

First quartile, Group 1	Second quartile, Group 2	Third quartile, Group 3	Fourth quartile, Group 4
0 - 64,72	64,72 – 73,69	73,79 – 81,19	81,19 - 100

Table 4. Distribution of groups based on the ESG score

3.2 Methodology

The event study methodology examines the reaction of the stock prices to the corporate social responsibility events provided by Factiva. Eventus, an event study program provided Wharton (WRDS), is utilized to run the event studies automatically. The program has access to all the CRSP daily stock returns and will use these to perform the event study. In this research there is chosen to use a Fama and French three factor model (Fama & French, 1993) as the return generating process, this one is needed to estimate the normal returns in the estimation period. The chosen window as the control period will be from 60 days prior to the event to 10 days prior to the event [-60, -10]. This period is used, because the event relating issues may not have

any influence on the control period, for this reason the control period is chosen well before the event occurring. It also may not be too long, the chance of other big events happening in this period would be to big (Van der Sar, 2018). To start off, it is required to calculate the normal returns R_{it}, with these it possible to calculate the abnormal returns.

$$(1)\ R_{it}* = \alpha_i + \beta_i*R_{mt} + \gamma_i*SMB_t + \delta_i*HML_t + \varepsilon_{it}$$

Where R_{it}, the depended variable, stands for the daily rate of return of stock i on day t. The alpha, also known as Jensen's Alpha, is the expected value of $R_i - \beta_i*R_{mt}$. Here the β_i stands for the sensitivity of stock i to the market return at time t, the γ_i for the sensitivity of stock i to the return difference between small and large market capitalization stocks and the δ_i is the sensitivity of this stock to the return difference between value and growth stocks. R_{mt} is the daily return of the market index, eventus will obtain these from CRSP. Furthermore, SMB_t is the size factor, it measures the difference between the return on the portfolio of small stocks and that of big stocks. Lastly, there is HML_t, this is the B/M factor, which measures the difference in the return performance of stock portfolios distinct in B/M.

After Eventus has generated the 240 different normal returns, is will automatically calculate the abnormal returns of the events. This is done by calculating the differences between the normal returns, which were calculated with the Fama and French three-factor model, and the actual return, which eventus will obtain from CRSP.

$$(2)\ AR_{it} = R_{it} - R_{it}*$$

Or

$$(3)\ AR_{it} = R_{it} - (\alpha_i + \beta_i*R_{mt} + \gamma_i*SMB_t + \delta_i*HML_t + \varepsilon_{it})$$

Normally, the day that the event occurs, in this research the day that the CSR announcement was first published, is [0]. Because of event date uncertainty, it is possible that the event may influence other trading days (MacKinlay, 1997), this is against the efficient market hypothesis. To fix this problem, there is certain test period. The period must fix the problem of event date uncertainty but may not be too long to avoid the effect of confounding events during that period (McWilliams et al, 1999). Therefore, this research will take a test period of 1 day prior to the event to 1 day after the event [-1, 1]. Since it is necessary to know to whole effect of the event, the cumulative abnormal return (CAR) will be calculated. This can be automatically done by eventus. The cumulative abnormal return is the sum of the abnormal returns over the test period.

$$(4)\ CAR_{i,-1,1} = \sum_{-1}^{1} AR_{i,t}$$

To avoid the possibility that the results of the events will cancel each other out, the events will be divided in certain groups. First off, they are divided into a "friendly" and a "negative" group. With this information the first hypothesis will be tested, which says there will be a positive correlation between CSR announcement and the stock prices of companies.

There will also be constituted groups which are based on the industries the companies work in. By doing this, it will be possible to answer the fourth hypothesis, if there are differences in impact the CSR announcements have on the abnormal return between industries. These groups are made on the basis of the standard industrial classification (SIC-codes) the companies have. As told in the theoretical framework these groups of industries are only based on the first two digits of the SIC-codes, because the sample sizes of the different industries would otherwise be too small to get a statistically significant result. The different groups, with the belonging number of companies and news announcements in our sample, can be found in table 5.

Code Range	**Group number**	**Industry Name**	**Number of companies**	**Number of news announcements**
0-999	1	Agriculture, forestry and fishing	0	0
1000-1499	2	Mining	1	5
1500-1799	3	Construction	0	0
2000-3999	4	Manufacturing	14	37
4000-4999	5	Transportation, Communication, Electric, Gas, Sanitary Service	10	32
5000-5199	6	Wholesale Trade	3	13
5200-5999	7	Retail Trade	12	34
6000-6799	8	Finance, Insurance, Real Estate	13	48
7000-8999	9	Service	19	71

Table 5. Summary statistics of the different industries based on the SIC-code of the companies.

Lastly, to answer the third hypothesis, there will be also a categorization based on the ESG-score provided by ASSET4. The categories are based on the quartiles they are in (see table 4). So, there will be four different groups, with the first being the worst and the fourth being the best at corporate social responsibility. By doing this, it will be possible to see if companies which are known for their positive

CSR activities are affected more by a CSR announcement as companies which are known for their negative activities. The companies will be reselected in groups every year, because there is major difference between the scores in 2002 and those in 2018. The scores which will be used in the regression, are the scores from the year before the announcement. The scores of 2007 are unavailable, and therefore for all the announcements occurred in 2008, the scores of 2006 are used.

With these groups, a regression analysis will be done in stata to research the exact impact of the different factors. The different factors which will be investigated, are the news sentiments (so whether it is positive of negative), Which aspect the news announcements has (so does it impact the environment, social aspects or the corporate governance of a company), the industry in which the company works (based on the SIC-codes) and lastly is the company is known as an "CSR-friendly" or "CSR-harmul" company (which is based on the ESG-Scores provided by Thomson Reuters). The coefficients which come out of this regression, will provide the answers to the different hypotheses. Stata will also give the probability of the coefficients, on which the statistical significance of the them will be based. This will again both be done for positive and negative news sentiment, so the cumulative abnormal return cannot cancel itself out.

$$(5)\ CAR = \alpha + \beta_1 * \text{SIC\_industry\_Categories} + \beta_2 * Category + \beta_3 * Quartile\_ESG\_score + \beta_4 * LN(Size) + \beta_5 * Companyage + \varepsilon$$

In this regression the α is the fixed effects (or the intercept), the β's are the coefficients for the given variables, SIC_industry_Categories is the group number of the industry (can be found in table 5), *Category* is the type of news announcement, Quartile_ESG_score are the quartiles in which the groups are sorted, LN(size) is the natural logarithm of the market capitalization of the company and lastly Companyage is the amount of years the company is in business. These last two variables are used as control variables in the regression. The natural logarithm at the size is taken to filter out the outliers. This regression will be separately done for friendly and harmful events, because otherwise the effects would cancel each other out.

4. Results

To assess the short-term effect of corporate social responsibility news on the stock prices of companies, the event study, as it has been explained in the methodology section, has been conducted. The event study is executed with the program Eventus (provided by Wharton research data services), which is able to generate the abnormal returns. This section will first off have a look at the average abnormal returns, which were generated by the event study methodology. With these average abnormal returns, it is able to start drawing a conclusion for hypothesis 1. Thereafter it will use these results to perform a regression analysis. Before the results of the regressions are given, the robustness of the analysis will be assured. The regression analyses are performed with Stata. With the regressions it is able to have a clearer view on the effect corporate social responsibility news has on the stock price of companies. Having conducted the regression, it is also possible to have a look at what impact the different factors of the news announcement have on the stock prices. According to this information, the answers to the different hypotheses are given. Now that a comprehensible view about the relationship is created, it will also be able to answer the research question, which sounded:

What is the short-term effect of positive and negative corporate social responsibility news on the stock returns of companies?

4.1. The event study

Eventus calculated all the different cumulative abnormal returns. It is set as requirement, that it needs at least forty of the fifty returns to calculate the normal returns with the Fama & French three factor model. In thirteen of the in total 240 announcements, this what not the case. First of Eventus calculated all the different cumulative abnormal returns, these answers are later imported in Stata. When imported in Stata, the average cumulative abnormal returns are calculated and also the ratio between positive and negative cumulative abnormal returns are counted, these can be seen in Table 6. The positive news is divided from the negative news, to overcome the fact that the results cancel each other out.

Positive news		**Negative news**	
Average CAR (p-value)	**Positive: Negative**	**Average CAR (p-value)**	**Positive: Negative**
0,001951153 (0,5180)	68:79	0,001566305 (0,54748)	43:36

Table 6 Average cumulative abnormal returns and the ratio between positive and negative reactions

** significant at 10% level*

*** significant at 5% level*

**** significant at 1% level*

It can be seen in table 6, that the average cumulative abnormal returns react statistically insignificant to both positive and negative corporate social responsibility news. Neither does the ratio between positive and negative CAR show a clear reaction. It is not possible to conclude anything out of this table, other than that there is no statistically significant effect of CSR news announcements on the cumulative abnormal returns of companies. On the basis of this information the answer to the first hypothesis, if there is a positive correlation between positive CSR news and the stock return of a company, would be that there is no correlation.

4.2. The regression analysis

As mentioned before, to create a clearer view on the effect of corporate social responsibility announcements on the stock prices, and to also be able to answer the hypotheses, a regression analysis will be constructed. The formula for the multivariate regression will be formula 5. Before doing the regression, the robustness has to be checked.

4.2.1. Robustness

In order to ensure the soundness of the inferences, a series of robustness checks, which address potential concerns, are done. These several tests are based on problems in previous studies. In the following section, these tests will be discussed briefly.

4.2.1.1 Homoskedasticity

First of there will be tested for homoskedasticity. Homoskedasticity means that the residuals of the variances are the same ($var(u_i) = \sigma^2$). To test the homoskedasticity assumption the Breush-Pagan test is used. This test is formally chosen, because the white test loses its power when there are a lot of variables in the regression. The result of the test says that the variances of the residuals are not the same, so they are heteroskedastic. When using the White test, it gives either way the same result. To fix the problem of heteroskedasticity, robust standard errors are used in the regression.

4.2.1.2. Multicollinearity

Secondly, the multicollinearity assumption is tested. Multicollinearity takes place, when multiple variables are near perfect linear combinations of each other. The primary concern is that as the degree of multicollinearity increases, the regression model estimates of the coefficients become unstable and the standard errors for the coefficients can get inflated. This assumption is first tested with a correlation table, when the correlation between two variables is above 0.8 ($r > 0.8$) there is multicollinearity. As can be seen at table 7 in the appendix, none of the variables have a correlation of above 0.8. To further investigate the multicollinearity assumption, the variance inflation factor (VIF) is computed in stata. When the VIF is above 10, there could be multicollinearity. As can be seen at table 8 & 9, also in the appendix, neither of the tests give out the result that there is multicollinearity.

4.2.1.3. confounding events

Thirdly, as told in the data section, there is filtered for confounding events. Confounding events within an event study may complicate statistical inference (Mcwilliams et al, 1999). There is chosen for a 3-day event window to reduce the likelihood of confounding events. There is also filtered for other events happening in the event window. Events with CEO successions, equity offerings and stock splits in the event and estimation window are left out of the study. There is not filtered for mergers and acquisitions, because the companies in the S&P100 do them so often it would be too hard to find corporate social responsibility news without confounding events (Moeller et al, 2004).

4.2.2 Results from the regression analysis

Now that the robustness is assured, there can be looked at the results from the regression analysis. The multivariate regression will be displayed (table 10 & 11) and analysed. The regressions are divided in two groups, the first group is the one with positive corporate social responsibility news and the second one is with negative corporate social responsibility news.

In table 10 and 11, the regression analysis of respectively the positive and negative CSR news announcements are displayed. Out of the regression with the positive CSR news a few conclusions can be made as regards to the relationship between the stock returns and the different announcements, because this one has statistically significant results. These conclusions will be discussed in the following sections.

The regression regarding the negative CSR news announcement do not have any statistically significant results. According to this, we can say that none of the variables used, have a statistically significant effect on the cumulative abnormal return after negative CSR news is announced. This could be due to the fact that there is just no significant effect visible, or due to the fact that sample is not sufficient to show statistically significant results.

Stata automatically leaves out one group, because these are categorical variables. This is always the group, which is labelled as the first. These groups are the reference groups and their coefficient will always be zero. The hypothesis two to four will now be discussed one by one in different paragraphs to create more clarity.

4.2.2.1 Effect of current corporate social performance

Hypothesis 2 stated that companies with an already high corporate social performance react worse towards positive CSR news as companies with low corporate social performance. As a standard for the social performance, the ESG-scores (provided by ASSET4) from the year before the news announcement are used. These scores are later divided in 4 quartiles. The summary statistics of these ESG-scores can be found in table 4.

It can be seen in the regression analysis with the positive corporate social responsibility news announcement that, they all have statistically significant negative impact on the stock returns at a 5% level and quartile 2 even at a 1% level. Out of the fact that quartile 4 has a negative impact of -0.0179 and quartile 1, as it is the reference variable, has a coefficient of 0, it can be concluded that hypothesis 1 is true. Contrary to this conclusion is that the difference in impact is not cascading. The impact of quartile 2, which includes companies with a lower corporate social performance, is worse as the impact quartile 4 has on cumulative abnormal return. So out of this it can be concluded that in the extremes, the companies with high corporate social performance react worse towards positive CSR news as companies with low corporate social performance. In spite of this, this conclusion is not valid for the companies included in quartile 2 and 3.

4.2.2.2. Effect of the news aspect

The third hypothesis asserted the following: *The Environmental aspect of corporate social responsibility will have the biggest impact on the stock returns of companies.* This is tested by analysing all the different the news announcements and labelling them as environmental, social or corporate governance.

As can be seen in the regression analysis, both the social news and the environmental news have statistically significant negative influence on the stock price of companies. The impact of environmental and social news respectively is -0.0161 and -0.0113, with the environmental news being statistically significant at a 1% level and the social news at a 5% level. Corporate governance, being the reference variable, has an impact of zero. According to this regression, it is possible to conclude that the environmental CSR news has the biggest impact on the stock price of companies. It is however, negatively correlated with the with each other, which means that the fact that the news is about an environmental topic, will have a negative impact on the stock price of companies.

4.2.2.3. Effect of the industry

The last hypothesis, Hypothesis 4, claimed that the impact of the news announcements will differ depending on the industry the company is in. To differentiate between different industries, the first two digest of the SIC-codes are used. This will lead to the different categories which are displayed in table 5.

It can be seen in the regression analysis that, apart from the mining industry, all the industries are highly statistically insignificant. Based on the fact that they are highly insignificant, it is possible to conclude that, apart from the mining industry, the industry in which a company cooperates does not have any influence on the impact CSR news has on stock price of the company. As regards to the mining industry, positive CSR news announcements have statistically significant positive impact of 0.0242 on the stock price of these companies. On the basis of this information, the fourth hypothesis will be rejected. The influence the different industries has on the cumulative abnormal return following CSR news is not big enough to assume this hypothesis is true.

Cumulative abnormal return	Coef.	Robust Std. Err.	T	P>|t|	[95% Conf. Interval]	
Quartile ESG Score						
Quartile 2	-.0219967***	.0080941	-2.72	0.007	-.0380065	-.0059868
Quartile 3	-.0164548**	.0080747	-2.04	0.044	-.0324262	-.0004834
Quartile 4	-.0179413**	.0089824	-2.00	0.048	-.0357082	-.0001745
SIC industry Categories						
Manufacturing	.0006386	.0065514	0.10	0.922	-.0123198	.0135971
Mining	.0242842***	.0046314	5.24	0.000	.0151234	.033445
Retail trade	-.0022067	.0049508	-0.45	0.657	-.011999	.0075857
Service	-.0005284	.0058656	-0.09	0.928	-.0121303	.0110734
Transportation, Communication, Electric, Gas	.0003652	.0044622	0.08	0.935	-.0084609	.0091912
Wholesale Trade	.013336	.012634	1.06	0.293	-.0116537	.0383256
category						
environmental	-.0161168***	.0058525	-2.75	0.007	-.0276929	-.0045407
social	-.0113482**	.0061188	-1.85	0.066	-.0234509	.0007545
lnsize	-.0017313	.0020393	-0.85	0.397	-.005765	.0023023
companyage	.0000077	.0000372	0.21	0.837	-.0000659	.0000812
_cons	.0734832	.0490776	1.50	0.137	-.0235905	.1705568

table 10. Regression analysis of the positive CSR results

* significant at 10% level

** significant at 5% level

*** significant at 1% level

5. discussion and conclusion

This current paper researched the short-term relation between corporate social responsibility news announcements and the stock prices of companies. The study focussed on the companies within the S&P100. The news announcements which are used range from 2002 to 2019. This relationship was examined by doing an event study. This was contrary to some former papers. Former papers used for example the entrance and exit into socially responsible investing index (Chetty et al, 2015; Gladysek & Chipeta, 2012) or rating updates which are given by a trustworthy standalone company, like for example Vigeo (Chollet & Cellier, 2011) or KLD (Harjoto & Jo, 2015). This paper, however, as well as the paper of Flammer from 2013, used certain corporate social responsibility news announcement publicised by *Reuters Newswire*, *Wall Street Journal* and *The Financial Times (see figure 3 in the appendix).* This news data can all be found on Factiva. The hard thing with this technique is that there is no standard. News announcements differ a lot from each other, but all announcements are given the same weight in the research. It would be more robust to give a certain weight to different announcements or focus only on news announcements which are comparable.

After making sure there were no confounding events in the event and estimation window (Mcwilliams et al, 1999), an event study was conducted with Eventus. Out of this event study the cumulative abnormal returns of the events were obtained. A test period of -1 to 1 is used. Within this test period, the average cumulative abnormal return was not statistically significant. This is contrary to the conclusion of former papers (Flammer, 2013), but is in line with the paper from Chetty, which was released in 2015. This last paper did not find any significant results after the announcements either. It could be due to the fact, that the market is not as efficient as it is assumed, and the information is incorporated in the stock price a few trading days later, although this is in contradiction with the efficient market hypothesis (Malkiel & Fama, 1970). To improve the study and maybe find a statistically significant cumulative abnormal return, it is advisable to use some different test periods. These cumulative abnormal returns are afterwards used in composing a regression analysis. With this regression analysis the hypotheses are answered and so a clearer view on the relationship between CSR announcements and stock prices is created. Two different regression analyses are constructed. One regression with the negative and one with the positive CSR news announcements. This is done so that the effects of both regressions do not cancel each other out. The regression based on the negative news announcements (table 10) did not gave any statistically significant results and could therefore not be used in this study. The statistical insignificance is probably due to the fact that only 80 of the 227 observations, were about negative CSR news announcements. A larger and more diversified sample is recommended. The positive regression did give statistically significant results, and these are used to answer the hypotheses.

First off, it is found that companies with an already high corporate social performance react worse than companies with a low corporate social performance. As a standard for the corporate social performance, the ESG-scores, provided by ASSET4, are used. This relationship is only found when you compare

quartile 1 with quartile 4, it is not cascading from 1 to 4. This reaction in quartile 1 and 4 is in line with the decreasing marginal returns which Flammer mentioned (2013). Secondly, there was looked into the fact that the aspect of the news announcement would have a different impact on the change in stock price. The hypothesis stated that the environmental announcements would have the biggest impacts on the stock prices of companies, because of the media attention around environmental issues (Babiak, K., & Trendafilova, S., 2011). Out of the regression analysis came, that this was indeed true. The environmental aspect has a statistically significant negative effect on the stock prices of companies. Out of this can be concluded, that when there is positive environmental news, this will have a negative influence on the stock price of companies. The fact that it has a negative return is in contrast with what Flammer (2013) said. He found a positive correlation between the stock price of companies and the environmental news announcements. Lastly, the effect, the differences in industries have on the relationship between corporate social responsibility news and the cumulative abnormal return, is examined. The hypothesis stated that the impact on the abnormal return would differ across the different industries. It is hard to draw any conclusion here, because of the statistical insignificance of the coefficients. The only significant variable is the mining industry. It can be concluded that when a company is in the mining industry, this has a positive influence on the cumulative abnormal return after a CSR announcement. To create a better view on this hypothesis, a larger sample should be used. Because the sample is divided in seven different industries, it is hard to give any statistically significant results.

It is difficult to give one definite answer, based on these results, to the research question, which was: *What is the short-term effect of positive and negative corporate social responsibility news on the stock returns of companies?* There is no clear relationship visible between the CSR news announcements and the stock prices of companies. This could either be due to the fact that there just is no statistically significant relationship between these two, or due to the fact that the data and methodology should be improved. A few recommendations can be made for later studies into this topic. First off, a bigger sample size should be used. As Eng said in his study about sample sizes: "Sample size is closely tied to statistical power, which is the ability of a study to enable detection of a statistically significant difference when there truly is one." (2003). Secondly, it would be better to use something else as a stand for corporate social responsibility, give a certain weight to specific announcements or only use comparable announcements.

An idea for later papers around the topic of corporate social responsibility would be a comparison between the reaction to CSR news announcements in different countries. Do western countries react differently to these announcements as developing countries? Another idea would be to compare the reaction of small capitalization companies with those of big companies. Do small companies maybe react negatively to positive announcements, because shareholder still see a lot of growth opportunities

where they would rather invest their money in. As can be seen, there are quite some topics left to be examined around Corporate social responsibility.

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7. appendix

HD **Amazon, Selling Clothes from Unsafe Factories, Faces Backlash -- ESG Insight**

WC 183 words

PD 25 October 2019

ET 16:54

SN Dow Jones Institutional News

SC DJDN

LA English

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LP

Commentary by Ricardo Aceves, research analyst, ESG & impact investing

Amazon's brand reputation faces pressure over The Wall Street Journal's investigation detailing the availability of garments from dozens of Bangladeshi factories blacklisted by most leading retailers. This could have negative implications for socially-concerned investors, who may already fault Amazon for selling defective or expired products, as reported by the Journal in August. While Amazon is making progress in its approach to sustainability--powering its web services through 100% renewable energy sources, using more eco-friendly packaging and investing in drone delivery to cut greenhouse emissions--the company could be forced to spend billions of dollars to prevent the sale of unsafe goods or association with blacklisted factories to maintain the trust of customers.

Figure 3. example of CSR news announcement, obtained via factiva

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) cumulativeabno~n	1.000																
(2) Mining	0.064	1.000															
(3) Manufacturing	0.013	-0.064	1.000														
(4) Transportation, Communication, Electric, Gas, Sanitary Service	0.000	-0.059	-0.167	1.000													
(5) Wholesale Trade	0.044	-0.037	-0.105	-0.096	1.000												
(6) Retail Trade	-0.037	-0.064	-0.182	-0.167	-0.105	1.000											
(7) Finance, Insurance, Real Estate	-0.002	-0.076	-0.215	-0.197	-0.124	-0.215	1.000										
(8) Service	-0.024	-0.093	-0.265	-0.242	-0.153	-0.265	-0.312	1.000									
(9) environmental	-0.070	0.124	0.078	0.216	0.149	-0.097	-0.050	-0.221	1.000								
(10) social	-0.038	-0.064	-0.033	-0.193	-0.051	0.116	0.003	0.124	-0.675	1.000							
(11) corporategove~e	0.140	-0.070	-0.042	-0.014	-0.116	-0.042	0.077	0.093	-0.381	-0.391	1.000						
(12) Quartile_ESG_score1	0.145	0.035	0.025	0.012	-0.035	-0.123	-0.089	0.156	0.025	0.042	-0.106	1.000					
(13) Quartile_ESG_score2	-0.045	-0.081	-0.171	0.133	0.004	0.033	-0.061	0.091	0.038	0.002	-0.061	-0.202	1.000				
(14) Quartile_ESG_score3	0.009	-0.101	0.001	0.130	0.161	-0.104	0.109	-0.163	0.055	-0.060	0.029	-0.253	-0.363	1.000			
(15) Quartile_ESG_score4	-0.070	0.146	0.132	-0.252	-0.137	0.158	0.009	-0.028	-0.105	0.028	0.099	-0.269	-0.386	-0.483	1.000		
(16) lnsize	-0.094	-0.129	-0.118	-0.245	-0.081	-0.028	-0.078	0.456	-0.153	0.055	0.096	-0.055	-0.031	-0.094	0.158	1.000	
(17) companyage	0.012	0.214	0.275	0.007	0.145	0.021	-0.141	-0.264	0.171	-0.058	-0.148	-0.078	-0.040	-0.047	0.135	-0.340	1.000

Table 7. correlation table

Variable	VIF	1/VIF
Quartile ESG score		
Quartile 2	1.58	0.633648
Quartile 3	2.18	0.459577
Quartile 4	2.38	0.419637
SIC Industry Category		
Manufacturing	2.06	0.486445
Mining	1.77	0.563892
Retail trade	1.85	0.541724
Service	2.77	0.361387
Transportation, Communication, Electric, Gas	1.53	0.655064
Wholesale Trade	1.43	0.698740
News element		
Environmental	2.10	0.476433
Social	1.62	0.618791
LN (size)	1.98	0.505343
Company age	2.14	0.466854
Mean VIF	1.95	

Table 7. VIF table for the negative regression

variable	VIF	1/VIF
Quartile ESG score		
Quartile 2	3.52	0.283769
Quartile 3	3.78	0.264532
Quartile 4	4.26	0.234958
SIC Industry Category		
Manufacturing	1.57	0.638526
Mining	1.07	0.930527
Retail trade	1.51	0.660751
Service	1.84	0.542688
Transportation, Communication, Electric, Gas	1.68	0.594155
Wholesale Trade	1.33	0.751307
News element		
Environmental	2.77	0.360853
Social	2.75	0.364018
LN(size)	1.45	0.690012
Company age	1.20	0.831045
Mean VIF	2.21	

Table 8. VIF table for positive regression

Cumulative Abnormal return	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
Quartile ESG Score						
Quartile 2	.0070793	.0058491	1.21	0.230	-.0045989	.0187575
Quartile 3	-.0034342	.0063506	-0.54	0.590	-.0161136	.0092451
Quartile 4	-.009576	.0074905	-1.28	0.206	-.0245313	.0053793
SIC industry Category						
Manufacturing	.0020038	.0083058	0.24	0.810	-.0145792	.0185869
Mining	.0115029	.0117565	0.98	0.331	-.0119697	.0349755
Retail trade	.0018425	.0086991	0.21	0.833	-.0155257	.0192107
Service	-.0042404	.0084733	-0.50	0.618	-.0211579	.0126771
Transportation, Communication, Electric, Gas	-.0002891	.010625	-0.03	0.978	-.0215025	.0209243
Wholesale Trade	-.0100355	.0104	-0.96	0.338	-.0307997	.0107287
category						
environmental	-.0060556	.0071048	-0.85	0.397	-.0202409	.0081296
social	-.0064709	.0056244	-1.15	0.254	-.0177004	.0047587
lnsize	-.0021992	.0029347	-0.75	0.456	-.0080586	.0036601
companyage	-.0000545	.0000791	-0.69	0.493	-.0002124	.0001034
_cons	.0701168	.0787218	0.89	0.376	-.0870564	.2272899

Table 11. Regression analysis of the negative CSR announcements

* significant at 10% level

** significant at 5% level

*** significant at 1% level