# The relation between Corporate Social Responsibility ratings and investor decisions

## - A study into NASDAQ listed companies -

| | |
|---|---|
| **University:** | **Erasmus University Rotterdam – Erasmus School of Economics** |
| **Master:** | **Accounting & Audit** |
| **Author:** | **Maxime Noverraz** |
| **Student number:** | **s4856155** |
| **Supervisor:** | **prof. dr. J. P. M. Suijs** |
| **Second assessor:** | **dr. J. Garst** |
| **Date:** | **21 June 2021** |

ERASMUS UNIVERSITEIT ROTTERDAM

**Statement of Originality**

This document is written by student Maxime Noverraz who declares to take full responsibility for the contents of this document.

I declare that the text and the work presented in this document are original and that no sources other than those mentioned in the text and its references have been used in creating it.

The content of this thesis is the sole responsibility of the author and does not reflect the view of either the supervisor, second assessor, Erasmus School of Economics or Erasmus university.

**Abstract**

The primary purpose of this thesis is to research the informativeness of MSCI ESG ratings for investor decisions, decision of a current or future investors to keep, buy or sell a company share. A fixed effect regression model is performed on 704 NASDAQ listed companies for the period 2012 to 2018, in which the investor decision is operationalized by means of abnormal share return. The study finds that investors do take the CSR ratings in consideration, but value the information provided by the rating as negative. Secondly, of the single CSR aspects environmental, social, and governance, only the governance aspect has a significant, but negative impact on investor decisions. The main findings in this study are corrected for heteroskedasticity by using a robust standard error and the results are robust for various estimation windows.

Maxime Noverraz, s4856155

**Table of Contents**

**1. Introduction**

In the last decade the objectives of firms diversified from merely accomplishing a profit yearly, to operating in a more socially profiling manner. This additional objective became important through the constant pressure of outside stakeholders, employees, suppliers of goods and services and governmental bodies. This pressure has brought about that companies invested more in sustainable and socially responsible endeavors (Hartzmark & Sussman, 2019; McWilliams & Siegel, 2000). These sustainable and responsible endeavors are summarized under the term Corporate Social Responsibility, which is a way a firm ensures its stakeholder that it fulfills its obligations towards society and environment (Khan et al., 2012).

Nonetheless, investors differ in their opinion about the impact of CSR on companies. Several investors say that CSR investments in companies are a good innovation for companies. CSR investments are not seen from a social environmental way but seen as a new chance or opportunity to maximize the company's profit (Hartzmark et al., 2019; Lindgreen & Swaen, 2019). Others state that an increase in social environmental resources only provide more additional costs and withstand the primary goal of maximizing profits. A well-performing company in this decade, should invest in resources to help the environment and provide social resources. As a result, CSR has moved from ideology to reality according to certain research (Cho et al., 2015, Hartzmark et al., 2019).

More firms have started to report on their CSR activities. Research performed by Dhaliwal et al. (2011) showed that in the mid-1990, a few United States listed companies published a standalone CSR report, an annual report on the environmental, social and governance information of a company, alongside a financial report. Since that period forward, more and more United States listed companies made the step to publish standalone CSR reports. In 2007 10% of United States listed companies reported on their CSR activities. Ten year later this amount has increased fivefold. Although information in standalone CSR reports differs in format and amount of information, due to a lack of an enforced CSR reporting framework, the beginning of a more corporate socially responsible manner of reporting, is made (Perrini, 2005; Muslu et al., 2017; Dhaliwal et al., 2011).

Researchers question themselves what the impact of CSR reporting is on companies' capital or financial performance. Evidence shows that the reputation of companies can be harmed, because of poor CSR reporting or neglecting to report on CSR. The harmed reputation could lead to a decrease or slowdown of the financial performance growth of a company (Dhaliwal et al., 2011). For example, in 2015 Volkswagen neglected to report on their corporate environmental impact. Instead, Volkswagen used software to cover the real emission of the diesel engines, due to a strict time frame and budget to develop a diesel engine conform U.S. emission standards. The decision for not correct reporting on the corporate environmental issues, caused a decrease in transparency and accountability of the company towards its stakeholders (Li et al., 2018). Another example is Nike,

which struggled for years to regain its reputation after the child labor scandal in 1997. It cost Nike a great amount of financial resources to overcome this scandal. The short-term focus deteriorated the long-term performance of the company (Dhaliwal, 2011; Li et al., 2018). Reporting CSR facilitates improvement to transparency of a company and results in reduced information asymmetry between the company and stakeholders. Furthermore, most research that studied the effect of CSR, focused on the financial performance of a company. Dhaliwal et al. (2011) found a significant negative relation between CSR and firms cost of equity capital. Others found that CSR improves the accuracy of analyst forecast and reduces capital constraints, restrictions on capital spending, significantly (Dhaliwal et al., 2012; Cheng et al., 2014).

Less studies have investigated the relationship between CSR and the investors. Cheng et al. (2014) and Awaysheh et al. (2020) indicate that there is room for future research on the effect of CSR on decision making of stakeholders. Cho et al. (2015) performed a research to study whether the CSR disclosure is valued by market participants. They found that CSR disclosure is not valued by investors. As a limitation Cho et al. (2015) indicated that the research only focused on a specific industry. In this study the relation between CSR and investors decision is studied, whether CSR ratings provide useful information for investors. Different from prior literature, this thesis uses MSCI ESG ratings, instead of company's CSR disclosure and various industries, to provide results with higher external validity. This research will answer the following question:

*'To what extent does corporate social responsibility ratings have an impact on investor decisions?'*

The objective of this research is to study whether CSR ratings provide useful information for investors to make decisions about investments in the capital market. To answer the research question, an event study is performed in which the market reaction, for NASDAQ listed companies, is measured around the announcement date of the MSCI ESG ratings, for the period 2012 to 2018. The panel data consists of cumulative abnormal stock return and MSCI ESG ratings, which eventually led to a research sample of 704 NASDAQ listed companies. The research question is operationalized by measuring whether the information increase in MSCI ESG ratings is correlated with a change in cumulative abnormal stock returns. To mitigate the possibility of endogeneity concerns, a fixed effect model is used, in which company aspects are used as fixed effect.

The results of the fixed effect regression model indicates that investors do take the MSCI ESG ratings in consideration by making investment decisions for NASDAQ listed companies, but in a negative sense. Furthermore, the research tested also the single CSR aspects, environmental, social and governance, and found only a significant and negative effect of the governance aspect on

investor decisions. The environmental and social aspect are not valued as informative by the investors.

The study performed in this thesis will contribute to the existing literature in various ways. First, the subject of CSR is a much-discussed topic in the last decade, whether it is valuable for stakeholders. Most studies were performed on company's CSR reports (Dhaliwal et al. 2012; Sheehy, 2015; Chiu et al., 2020). In this study, CSR ratings are used as a way of CSR disclosure. CSR ratings are not produced by a company and it is a fast way to find out whether a company performs well on their CSR performance. It is a less studied CSR disclosure manner for providing information to stakeholders. Therefore, it contributes to the literature of CSR, by adding evidence about how valuable a CSR rating is. Secondly, most studies performed in prior years on CSR were focused on the capital market or financial performance of a company. For instance, research provided results that CSR improves the access to equity capital, reduces the cost of equity and provide new chances for financial performance growth (Dhaliwal et al., 2011; Chiu et al., 2020; Cheng et al., 2014). Other studies found that CSR negatively affected the financial performance of a company, because it unnecessarily raised firm's cost (Friedman, 1970). In this study the emphasis is on the informativeness of CSR towards the shareholders and future investors of the company and not on the financial performance or conditions of a company. It is a less studied subject, which uses research sample with companies from various industries, instead of focusing on a specific industry.

In the remainder of the thesis the following paragraphs are presented. Chapter 2 presents a literature review and the hypotheses. Chapter 3 describes the statistical method and sample selection. Chapter 4 presents the results and discussion of the analysis. Finally, chapter 5 presents the conclusion of the thesis and answers the research question.

**2. Literature review and hypotheses development**

The literature review discusses prior research to be able to understand the concept of CSR and to develop hypotheses which are used in the thesis. Firstly, it explains CSR more in depth. Secondly, it discusses the stakeholder engagement, a general approach, and the agency theory, solely focused on the shareholder. Afterwards, the investor decision concept is discussed and lastly, the hypotheses are substantiated.

**2.1 Corporate Social responsibility**

In 1929, the Dean of Harvard Business School, Walter B. Donham raised the point "that business have been long centuries before the dawn of history, but business nowadays is broadening its scope towards society significant" (Calderon, 2011). Until then, there was no clear idea if companies had an inherent responsibility towards society. Contemporary literature defines Corporate Social responsibility (CSR) in various ways, which led to different contributions of CSR in prior research (Khan et al., 2012).

Sriramesh et al. (2007) wrote in their article that in 1953 Bowen (1953) was one of the first who used the term CSR in his research. Before his research people referred to social responsibility or to corporate responsibility, instead of CSR. Bowen (1953) explained that the field around CSR evolved which led to various names of the concept. In 1970, CSR was often called corporate social responsiveness and in 1980 it was defined as corporate social performance. The evolution of the of the concept CSR indicated an increase in awareness, which proved that the earlier denominations, overlooked important areas of action and performance of CSR. Hopkins (2004) clarified that until 1970, business performed largely along a self-determined path, despite regulations and legislations. Businesses ignored critics from outsiders and listened only to the stakeholders, to whom it felt responsible. The decade following, 1980, was a period of enlightenment for many, in which people became more aware of the earths' fragile nature and became more cognizant of human rights (Khan et al., 2012). According to Ismail (2011), the roots of CSR were already formed during the Industrial Revolution, but the subject of CSR is still a questionable subject until today. It seems difficult to define a universally accepted definition of the concept and there is no overall agreement or consensus in the ideal meaning of CSR.

A simple definition, provided by Reinhardt et al. (2008), defines CSR as sacrificing profits in the interest of society. Therefore, a company goes beyond its contractual and legal obligations on a voluntary basis, to use generated profit to be more, for example, environment friendly, employee friendly or mindful of ethics. Reinhardt et al. (2008) discusses that CSR enables a company to create a business with better corporate behavior. Khan et al. (2012) provides an opposite opinion, in which he indicates that stakeholders could experience it as a waste of liquid assets, which could be used to

generate more profit in future years. According to Hopkins (2004) and Koestoer (2007) is CSR a way in which companies addresses various social issues in their operating areas and treating the stakeholders of the firm in a responsible and ethical manner. Sheehy (2015) describes it with an emphasis on the social aspect of a company. It is defined as a way of corporate conduct, in which social aspects of stakeholders are considered important (Sheehy, 2015). Additionally, Khan et al. (2012) describes CSR as a way in which a firm ensures its stakeholders that it is fulfilling its obligations towards society and environment. Kim et al (2011) concluded in their research that all the different descriptions of CSR have the definition of Bowen (1953), that defines CSR as a method used by corporations to pursue policies, decisions and actions for the social purpose and value, as their fundament. The central concern of a company in CSR is, in which manner it should react on the social and environmental demands of its shareholders, to perform with respect to social, environmental and governance issues. Besides, the extension of the focus on more issues than wealth creation for stakeholders, growth opportunities for corporations and yearly profit maximization, has created new opportunities to grow in a social sustainable manner (Miller & Guthrie, 2007; Khan et al. 2012; Hartzmark et al., 2019).

The important aspects of CSR are explained by John Elkington (1997), who believed that companies have to focus on social, environmental and governance issues, besides focusing on generating profit (Milne & Gray, 2011). Social aspects of CSR are issues related to the employees and stakeholders who are influenced by the firm. Stakeholders, including the shareholders, of a company require a firm to have a social system which is legitimate to operate (Deegan & Unerman, 2006). This means that the company is part of a wider societal system in which their value system functions. The social aspects could be seen from an explicit or implicit perspective. Explicit social aspects refer to company policies regarding their responsibility for the social interest. It contains strategies of corporations and voluntary programs to combine social and business value and address issues perceived as part of the social responsibility of a firm. For instance, policies regarding labor management and human capital development. The implicit societal aspects concern the role of the corporation in social interest of the stakeholders, within the wider formal and informal institutions. The implicit societal aspects could be seen as the expectations of company stakeholders, such as expectations that the company is good for their community relations and make responsible investments. These expectations result in unwritten policies and regulations for a company (Khan et al., 2012; Milne & Gray, 2006; Beerens, 2019). The environmental aspect is related to the impact of a company on the environment in which it performs. Examples of an environmental aspect of CSR are carbon footprint, water stress or renewable energy (Lindgreen & Swaen, 2010; Beerens, 2019). Lastly, the governance aspects contain mandatory and voluntary policies and regulations which

concerns the corporate governance of the company. For instance, the diversity of the board, ethics of a business or remuneration of the board (Beerens, 2019).

CSR has gained incomparable momentum during prior years in business and public debate and has become a strategic issue for companies in which manner they do business (Sharma et al., 2009). It became an irresistible worldwide trend to meet the needs of stakeholder and to disclose non-financial information (Chiu, Chen & Hu, 2020). Studies found that CSR unnecessarily raised a firm's cost, which led to a competitive disadvantage, compared to its competitors (Friedman, 1970). Others found that due to CSR, a company employs valuable firm resource, which results in significant managerial benefits rather than financial benefits to the shareholders (Brammer & Millington, 2008). In contrast, other research indicated that CSR has a positive effect on better access to valuable resources, attracting and retaining higher quality employees and creating unforeseen opportunities (Waddock & Graves, 1997; Cheng et al. 2014; Bernanke & Gertler, 1989). CSR contributes to improvement in social reputation, competitive advantages and brand image. These aspects give the company better chances to generate better performance, which could lead to higher financial results (Bowman & Haire, 1975). Although, other research indicates an inverse relation between CSR and financial performance. These conflicting results were due to several theoretical and empirical limitations, such as stakeholder mismatching or omitted variable bias (Cheng et al., 2014; Wood & Jones, 1995; Waddock & Graves, 1997). Furthermore, the CSR activities amplify the willingness and confidence of investors to invest in the company, which reduce the cost of equity capital (Chiu et al., 2020). Although, the percentage of companies reporting on CSR activities has five folded in 5-year time and certain regulations on non-financial information reporting were implemented, there is still much flexibility for companies in the way of reporting. This causes a discrepancy in the quality of CSR information between companies (Dhaliwal, 2012).

**2.2 Stakeholder engagement**

Economics show that CSR could be described conform several economic theories. The stakeholder engagement theory is one of the theories. The stakeholder theory is a general economic view, which is focused on capitalism. The interconnected relation between the company and all the company's stakeholders is central in the theory. Stakeholders consist out of investors, customers, suppliers, employees, communities and others who have a stake in the company (Jimena, 2018). Nowadays a company cannot exist solely to generate profit for their shareholders.  The aspirations of business reach beyond the financial dimension to encompass contribution to a larger set of societal goals, including goals focused on social responsibility and environmental imperatives (Jimena, 2008). To assess the impact of the activities, opportunities and the risk of the company's products, services and activities, a company must engage with all the stakeholders. By engaging with the stakeholders,

a company learns and understands the expectations and the needs of them (Cheng et al., 2014; Jimena, 2008). Besides, it understands what a stakeholder demands of a company.

CSR enables an organization to engage in a stakeholders' network and understand the potentially conflicting demands of the stakeholders. These conflicting demands are translated in CSR objectives and policies (Lindgreen & Swaen, 2010). To achieve a successful implementation of the CSR objectives, a key action has to be increasing the accountability of the company. Managers must build a bridge, through formal and informal dialogues and practices, with their stakeholders, to convince them to support organization's chosen strategic course (Andriof & Waddock, 2002). The increased accountability has a possibility to reduce the managers opportunities to pursue their own interest and increase the trust of the stakeholders in the company (Jimena, 2008). It is a possibility, because Cooper & Owen (2007) and Cheng et al. (2014) indicate that the incentives between the manager and the stakeholders could still be different. CSR could improve the accountability of a company towards its stakeholders, but it has no effect on aligning the incentives of the two parties. Furthermore, due to the increased accountability, the expectations and needs of stakeholders are known. Subsequently, managers should try to generate the greatest inclusivity, accountability to all stakeholders. It is of high value, because inclusivity concerns the reflection of the aspirations and needs of all stakeholders. Managers try to accomplish as many expectations and needs of stakeholders. Except from-self-interested managers, who only look at stakeholders with the same objectives, such as realizing financial results. The self-interested managers approach, use power to achieve their own objectives, that prevent the company from achieving accountability by discussion and dialogue (Cooper & Owen, 2007; Roberts, 1996; Weberman et al., 1992).

Therefore, CSR should reduce the power of managers and work as a device to retain the support of stakeholders and increase the inclusivity. Cheng et al. (2014) prove in their research that firms with better CSR performance face lower capital constraints, due to a better stakeholder engagement. The better stakeholder engagement limits the likelihood of a manager performing short term opportunistic behavior, to increase profit of a company. Besides, as result, it decreases the overall contracting costs (Jones, 1995). Secondly, it contributes to a long-term focus. Firms with better CSR performance are more likely to disclose their CSR activities, to differentiate from competitors and signal their long-term focus. CSR reporting increases the transparency around the social and environmental impact of companies and their governance structure (Cheng et al., 2014; Andriof & Waddock, 2002; Jones, 1995).

**2.3 Agency theory**

Another perspective in which CSR could be seen, is a more focused economic perspective, the agency theory, also called the principal-agent relationship (Sheehy, 2015). The agency theory addresses the agency relationship, a relation in which one or more persons engages another person to perform services on behalf of them. The principal is the person, who delegates to perform a service, but retains the ultimate decision power and authority. In this research the shareholders of a company are the principals. The agents are persons who perform services on behalf of the principals. In this study, the managers or board of directors of the companies are the agents (Hill & Jones 1992; Jensen & Meckling, 1976). The main issue in the agency theory is that the interest of the agent and principal differs. Baiman (1990) indicates that agents act solely in their own interest. The agents will perform actions beneficial for themselves, such as accomplishing objectives which contributes to compensations. The interest of the principal is profit maximization. Such an agency problem arises if the self-interested behavior of the agent, is not consistent with the behavior of the principals, which has incentives for group welfare maximization. (Baiman, 1990). The agency problem starts with one principal who deviates from the agent's behavior. Eventually more principals will follow, which leads to a discrepancy between the agent and the principals in a company. This problem between the two parties is also known as moral hazard (Müller & Brammertz, 1986; Baiman, 1990; Sheehy, 2015)). A situation in which an agent, with complete information, benefit over principals with incomplete information, due to more access to information. Most often it occurs in a risky situation, in which the manager is protected against the risk and the shareholders will incur the costs. It results in efficiency losses in the company.

The information asymmetry between the managers and the shareholders causes an increase in cost for the company. Due to the information asymmetry, principals lose their trust in the company and foresee an increased risk to invest in the company. As result, principals are willing to pay less for a company share or want to receive a higher return (Jensen & Meckling, 1976). Conform the agency theory, the principal tries to limit the divergence from his interests by establishing appropriate incentives for the agent, for instance by compensating the agent if certain objectives are achieved. Or by monitoring costs, cost to prevent an agent from performing opportunistic behavior (Jensen & Meckling, 1976; Hill & Jones, 1992). Furthermore, it could pay the agent to spend resources, such as financial assets, to guarantee that the agent will not take harmful actions for the principals (Hill & Jones, 1992). These resources are seen as the bonding costs. Ex-ante bonding costs arise when principals want to be appropriately compensated if an agent takes harmful actions (Hill & Jones, 1992). Despite the different methods to reduce the information asymmetry and the increased perceived risk to invest by the principal, a residual loss will remain (Hill & Jones, 1992). The total of

the principal's monitoring cost, the agent's bonding costs, and the remaining loss are the agency costs (Hill & Jones, 1992; Baiman, 1990).

Research indicated that an agent who use CSR disclosure, reduces the information asymmetry between the agent and the principal (Dhaliwal et al, 2011; Dhaliwal et al., 2012; Sheehy, 2015; Chiu et al., 2020). The disclosure of non-financial information, such as provided in CSR reporting, improves the transparency of the company. It reduces the information asymmetry between the agent and the principals, and it keeps shareholders informed of the strategy. A secondary result showed that the decreased information asymmetry, provide shareholders with more information to understand and predict firms' value and their capability in business sustainability. It adversely affects the shareholders perceived risk to invest (Sheehy, 2015). Furthermore, it contributes to regaining principal's confidence as agent. Principals receive more information about the performed actions of the agent and the possible consequences of the actions, which contributes to more trust in the actions of the agent. Research indicated that the provided information positively influences shareholders confidence that a certain investment is a proper investment (Chiu et al., 2020). Conform Chiu et al. (2020), the reduced agency problem leads to reduced cost of capital, cost of debt, as well as cost of equity. On the opposite, research (Bowman & Haire, 1975; Ullmann, 1985) argues that CSR damages the interest of shareholders and future investors, because CSR increases funding costs and corporate costs, which affects a company's profitability and competitive ability. It results in less willingness of shareholders, and future investors, to invest in the company (Chiu et al., 2020).

**2.4 Investor decisions**

An investor decision is the decisions of a current or future investor, whether it should keep, sell or buy a share in the company (Alhakami & Slovic (1994). The decision of an investor is mainly based on the relation between the perceived risk and the perceived benefit of investing in a company. Research (Dreman, 2004) found that the judgement of risk and benefit are correlated. For instance, if a company has a high risk, the company tries to tempt investors with a higher benefit. The lower the perceived risk, by an investor, the greater the perceived benefit. Additionally, Alhakami & Slovic (1994) proved that the relation between the perceived risk and perceived benefit of an activity was linked to the negative or positive affect linked to the activity. If an investor likes the activity, it is tended to decrease the risk and increase the benefit. If the activity is disliked by investors, it will affect their judgement of the situation, a higher risk and a lower benefit (Alhakami & Slovic, 1994). During the investors' life, the investors' situational perception is continually learning and develops images of possible, perceptual and symbolic representations, outcomes, which will be connected to positive or negative feelings about an activity. A negative feeling of an activity of a

company is linked with a negative image and affects negatively the risk and benefit relation. A positive feeling of an activity or company's direction is linked with a positive image, which positively affects the risk and benefit relation. Furthermore, investors could influence their judgments of risk and return on investment attitudes. An investment attitude is a future outlook of a company share. If stocks are perceived to have a good future outlook, investors think that the expected return would increase and the risk decrease. Vice versa, if future outlooks are not promising, investors expect lower returns and higher risks (Dreman, 2004; Alhakami & Slovic, 1994). The perceived risk is affected by the individual state of mind during the judgment. Dreman (2004) mentioned as well that the stock price should be considered. The stock price influences the benefits of a stock as well. If a stock price is relatively high, compared to the firm's risk, investors are not willing to buy the stock. The stock price will decrease until the benefits are aligned with the risk. In such situation's investors have less feeling that a company is overpriced and that there is less chance that the company, in which the investors invested, will collapse in future years.

Detailed CSR reporting potentially provides information which affects the perceived risk and benefit for investors. Voluntary disclosure of CSR information demonstrates firm's confidence in their CSR performance. It sends positive information to investors, about the non-financial information of a company. In case of poor CSR performing, it is an efficient way to provide explanation for the poor CSR performance, such as in the case of the 1997 child labor scandal of Nike (Dhaliwal, 2011).  A second effect of CSR information is that it could attract new investors to the company. Khan et al. (2012) indicates that CSR is a way of going further than only the standard operations and compliance, actions that are in interest of the company and required by corporate law. It is a way of positioning, to further develop the branding strategy. To show investors that the company takes the responsibility to develop the society by envisioning future plans for socio-economic justice and be conscious about their responsibility for the welfare of society around them. CSR should have lowered the perceived risk and increased the perceived benefit, due to future company plans, whereby investors will gather more trust in the company (Khan et al., 2012: Ismail, 2011).

Finucane et al. (2000) investigated the relation between risk and benefit under time restrictions and what the influence of non-financial information is on the judgement of the risk and benefit of an investment. They found that the inverse relation was stronger under time restrictions. It means that in a shorter time period, stakeholders make a judgment about the perceived risk and benefit using less non-financial information. The use of less non-financial information negatively affects the perceived risk by a stakeholder. Furthermore, Finucane et al. (2000) found a stronger inverse relation between perceived risk and perceived benefit, of an investment, under time pressure. This means that with a short time period to gather information, a greater negative correlation exists between perceived benefit and perceived risk. This indicates that in a longer time

period, investors take more non-financial information in consideration for their judgment about the perception of benefits and risks.

As indicated above, information could positively influence the perception of risks and benefits. However, Simon (1959) wrote in his article that information overload, i.e., more information than needed, could decrease decision making of investors, due to inability of humankind to effectively process large amounts of information. Dreman (2004) adds that professional and individual investors, in the stock market, suffer from information overload. Analysts provide information about companies, industries, markets and other financial and economic information, which saturate the stock market with available information. Eventually, information overload adversely impacts the decision making of investors, because investors cannot separate between useful and not useful information. Chiu et al. (2020) and Ullmann (1985) points out that CSR could be interpreted as extra information which causes overload of information. Yu et al. (2017) examines the market reaction on CSR information in mandatory CSR reports and find evidence of a negative significant effect on the stock returns. Rather those investors are positively influenced by the CSR information, investors anticipate greater costs than benefits of the CSR activities. Ullmann (1985) shows that CSR negatively affect the company's relationship with the stakeholders. Stakeholders could incorporate CSR as additional corporate costs, which affects and impedes the competitiveness of the firm.

**2.5 Hypotheses**

In this study CSR is measured conform the rating of Morgan Stanley Capital International Environmental, Social and Governance index (hereafter: MSCI ESG). It produces a yearly rating of the CSR performance of listed companies. In order to measure investor decisions, this paper uses the measurement of Ball & Brown (1968). In their research investor decisions were operationalized by the abnormal stock return for listed companies. In an efficient market a company's stock price reflects the market's expectations of the discounted value of all future cash flows expected to flow to a company. The stock price will then reflect all available information related to the performance of the firm. Investors change their expectations about future performance of a company, when new information becomes public. This results in buying or selling stocks (Fama, 1970). Ball & Brown (1968) showed that income numbers of a company contain information valuable to investors, by researching the correlation between unexpected earnings and abnormal stock returns.

As discussed above, prior research indicated that CSR provides valuable information to the capital market (Dhaliwal et al., 2012; Sheehy, 2015; Cheng et al. 2014). The disclosure of non-financial information, such as provided in CSR reports, improves the transparency of the company. It keeps stakeholders informed of the strategy and allows shareholders to use the information in

understanding and predicting the firms' value and their capability in business sustainability (Sheehy, 2015). Besides, CSR improves the accountability of a company as well. Andriof & Waddock (2002) provided evidence that CSR disclosure enables formal and informal dialogues with stakeholders. It is a manner of convincing the stakeholders that the CSR reporting has increased the accountability and reduced the chance of managers to pursue their own interest. It increases the stakeholder's engagement and reduce the moral hazard between the company and, current and future stakeholders (Chiu et al., 2020; Bowman & Haire, 1975; Ullmann, 1985; Jimena, 2008; Dhaliwal et al., 2011; Dhaliwal et al., 2012).

CSR ratings can send positive information to investors, about the non-financial information of a company and it is able to attract new investors. It is a way of providing more current and future information about a company than is expected (Khan et al., 2012). Benlemlih et al. (2018) indicated that a CSR rating is a rapid manner to find out if a company has improved or deteriorated in its CSR performance, compared to prior year. Instead of reading a company's CSR report, all the information is bundled in a single rating, provided by MSCI ESG (MSCI ESG Research, 2018). Kim et al. (2012) provided evidence that a change in CSR rating affects the information asymmetry, tarnish the brand image of a company and impacts the perceived risk by an investor. Investors may prefer companies that put effort in their CSR performances, to provide more complete information, which could be used for a better CSR rating. Investors might take a socially responsible company, with a decreased information symmetry, in consideration, because it contributes to a lower perceived risk by an investor (Benlemlih et al., 2018). Companies with an increased CSR rating will decrease their financial risk and increase their investor base (Benlemlih et al., 2018). An increased investor base signifies that investors perceive less risk, which positively affect the investors' decisions (Simon, 1959). Hence, investor that focus on companies with an increased CSR rating, could have a portfolio that underperforms due to too less diversification between the various company shares. Investors are concerned about the risk return of a company share. The risk return could be optimized by diversification (Markowitz, 1952). Investors who focus on increased CSR ratings, reduce their diversification opportunities. To study whether investors value an increase in CSR rating in decision making or experience it as corporate 'greenwashing', unnecessary spending financial assets for creating an ecologic responsible company image that does not corresponds with reality (Khan et al. 2012), the research states the following hypothesis:

*H1: An increase in CSR rating has a positive impact on cumulative abnormal stock return.*

The research of Cheng et al. (2014) differentiates from others, due to the analysis in which the research looked at separate CSR components, environmental, social, and governance

performance, on capital constraint (Dhaliwal et al., 2011; Dhaliwal et al., 2012; Khan et al., 2012; Chiu et al., 2020; Ullmann, 1985). The individual effect of the three components is all significantly negative related to capital constraints. Added to that, Cheng et al. (2014) looked at the simultaneous effect of the three components and found that both environmental and social performance are significant and negative related to capital constraints. The governance component exhibits an insignificant relation to capital constraint. This insignificant relation could explain that governance is driven by variation in, nation level, institutional structures and the capital constraints are beyond company boundaries. Cheng et al. (2014) discuss that there is room for future research on the informativeness of the separate CSR components. In their opinion more research needs to be undertaken on how capital markets perceive, evaluate and reward or punish firms that engage in CSR initiatives. Another research, performed by Cho et al. (2015), studied if the informativeness of CSR disclosure has changed since 1970 until 2010. The research looked at the change in informativeness of CSR disclosure and studied the separate social and environmental disclosure. The results indicated that the information provision of social disclosure increased more during the time period, than the environmental disclosure. Patten & Zhao (2014) argues that a lot of companies rely on the GRI, Global Reporting initiative, guidelines, which empathically focus on the disclosure of environmental information. This caused that the initial reports contained more environmental information than social information and during the time period the social information became more important (Cho et al., 2015). Additionally, the research looked at the association between environmental and social disclosure with market value and found a significant different effect between environmental and social disclosure. The market values the social information provision better than the environmental information provision of the disclosure (Cho et al., 2015). A limitation of the study of Cho et al. (2015) is that the research takes only industrial firms in account for the sample and as such the results cannot be generalized to companies in other industries. In this research the informativeness of the single components of a CSR rating on investor decisions are studied, in a sample which contains companies from various industries. Therefore, the study uses the following hypothesis, which is divided in 3 sub-hypotheses:

*H2a: An increase in the environmental aspect of the CSR rating has an impact on cumulative abnormal stock returns.*
*H2b: An increase in the social aspect of the CSR rating has an impact on cumulative abnormal stock returns.*
*H2c: An increase in the governance aspect of the CSR rating has an impact on cumulative abnormal stock returns.*

**3. Research Methodology**

This paragraph describes the statistical model used in this thesis. Secondly, it presents the methods used for the calculation of the independent and dependent variables. Lastly, the data sources for the sample and adjustments to come to the final sample are discussed.

**3.1 Statistical Model**

To assess the influence of CSR rating on investor decisions, this thesis performs an event study, to analyze if stock returns of NASDAQ listed companies experience an abnormal trend around the announcement dates of CSR ratings. An event study is typically used to study a return behavior of a group of companies experiencing a certain event (Kothari & Warner, 2006). In the event study panel data is used. Panel data captures the behavior of entities across a period of time. With the panel data the abnormal return ($AR_{i,t}$) and the cumulated abnormal stock returns ($CAR_{i,t}$) were calculated. The research calculates $AR_{i,t}$ according to the equation (8), and $CAR_{i,t}$ according to the equation (9) to (11), presented in 3.2 measurement of the variables. Secondly, the event study research the abnormal stock returns around t = 0, the announcement of the CSR ratings, from year 2012 to 2018. Around t = 0, the research uses four different estimation windows to check the robustness of the results. The estimation windows are t = 0, t= -3 to t= +3, t = -5 to t = +5 and t= -10 to t= +30. The days before the announcement are included in the research to check whether investors already have expectations about the CSR ratings and use these expectations to make decisions. The days after the announcement are the days taken to capture the market reaction of the NASDAQ on the increase in CSR information. The smaller the estimation window, the stronger the results could indicate a causal relation between CSR ratings and cumulative abnormal stock returns change. A larger estimation window signifies an association between CSR ratings and cumulative stock abnormal returns, instead of a causality.

To study the information increase of CSR ratings, a traditional statistical method, in which the variation between units is estimated, would have the potential for heterogeneity and maximized omitted variable bias (Hill et al., 2020). In a fixed effect model the statistical approach only takes the variation within units, called within-variance, in consideration to minimize the potential of unobserved heterogeneity and omitted variable bias. A fixed effect model makes it possible to control for variables which cannot be measured or directly observed, but are constant for a certain sample (Allison, 2009; Hill et al., 2020). Keeping several variables constant over time, creates the possibility of a fixed effect model to study the effect of a variable that changes over time, CSR ratings (Allison, 2009; Hill et al., 2020). The regression equation used in this research is the following:

$$CAR_{i,t} = \beta_0 + \beta_1 INT\_CSR_{i,t} + \beta_2 COMP + \beta_3 ROA_{i,t} + \beta_4 ROE_{i,t} + \beta_5 MTB_{i,t} + \beta_6 DIV_{i,t} + \varepsilon$$

14

(1)

$INT\_CSR_{i,t}$ is a dummy variable with value 1 indicating an increase in CSR rating in regard to prior year. Value 0 indicates a decrease or a stagnation of $INT\_CSR_{i,t}$. In this research company (*COMP*) is used as fixed effect. *COMP* contains unobservable aspects as different type of industries or variation in company size, which are kept constant, so that the possible changes in this variable does not influence the effect of the independent variable $INT\_CSR_{i,t}$ on the dependent variable $CAR_{i,t}$. Besides, to test hypothesis 1, the analysis controls for three financial ratios; $ROA_{i,t}$, $ROE_{i,t}$ and $MTB_{i,t}$, and controls for $DIV_{i,t}$. These controls are further explained in section 3.3 sample selection. For the analysis of the second hypothesis, in which the effect of the single CSR components is analyzed, three fixed effect models are used as well. Although the single CSR aspects are rated independently and would not case multicollinearity, the thesis uses 3 separate fixed effect regression equations, to provide more clear results. In the fixed effect regression equations, the independent variables are the single CSR rating components dummies, environmental ($INT\_ENVR_{i,t}$), social ($INT\_SOCR_{i,t}$) and governance ($INT\_GOVR_{i,t}$). For hypotheses 2, the following regression equation is used:

$$CAR_{i,t} = \beta_0 + \beta_1 INT\_ENVR_{i,t} + \beta_2 COMP + \beta_3 ROA_{i,t} + \beta_4 ROE_{i,t} + \beta_5 MTB_{i,t} + \beta_6 DIV_{i,t} + \varepsilon$$

(2)

$$CAR_{i,t} = \beta_0 + \beta_1 INT\_SOCR_{i,t} + \beta_2 COMP + \beta_3 ROA_{i,t} + \beta_4 ROE_{i,t} + \beta_5 MTB_{i,t} + \beta_6 DIV_{i,t} + \varepsilon$$

(3)

$$CAR_{i,t} = \beta_0 + \beta_1 INT\_GOVR_{i,t} + \beta_2 COMP + \beta_3 ROA_{i,t} + \beta_4 ROE_{i,t} + \beta_5 MTB_{i,t} + \beta_6 DIV_{i,t} + \varepsilon$$

(4)

**3.2 Measurement of the variables**

As indicated by Fama (1970), in an efficient market the company's stock price reflects all available information related to the performance of a company. Investors shall only alter their expectations about a company, in which they invested, when unexpected information becomes available to the capital market (Fama, 1970). Ball & Brown (1968) used the assumption made by Fama (1970) to measure the unexpected change in information on investors decisions. In this thesis, the measurement of unexpected change by Ball & Brown (1968) is followed. To calculate the MSCI ESG rating, all the different binary datapoints of the key issues, for each firm, each year ($CSR_{n,i,t}$) are added. This is calculated according to the following equations:

$$T\_CSR_{i,t} = \sum_{n=1}^{29} CSR_{n,i,t}$$

(5)

$T\_CSR_{i,t}$ is the total score of all the underlying binary evaluations of $n$ key issues for firm $i$ in year $t$. $T\_CSR_{i,t}$ is used to analyze the informativeness of the CSR ratings for investment decisions. Therefore, the unexpected part of the CSR rating is calculated, according to the following equation:

$$CH\_CSR_{i,t} = T\_CSR_{i,t} - T\_CSR_{i,t-1} \tag{6}$$

$CH\_CSR_{i,t}$ is the unexpected part of the CSR rating, which is calculated by the total CSR rating minus the prior year total CSR rating. In the fixed effect model, it is used as a dummy variable ($INT\_CSR_{i,t}$). Value 1 indicates a positive $CH\_CSR_{i,t}$, which means that the CSR rating has increased compared to prior year and value 0 indicates a negative or neutral $CH\_CSR_{i,t}$, which means that the CSR rating has decreased or remained the same, compared to prior year. For the study regarding hypothesis 2, the separate key issues underlying the environmental ($ENVR_{i,t}$), social ($SOCR_{i,t}$) and governance aspect ($GOVR_{i,t}$), are summed up. This results in a separate total CSR score for the environmental ($T\_ENVR_{i,t}$), social ($T\_SOCR_{i,t}$) and governance aspect ($T\_GOVR_{i,t}$) of a NASDAQ listed company each year, which are calculated in the same manner as the $T\_CSR_{i,t}$ (3). $T\_ENVR_{i,t}$ consists of 10 key issues, $T\_SOCR_{i,t}$ of 12 key issues and $T\_GOVR_{i,t}$ of 7 key issues. Also, from the three separate total scores the unexpected change is calculated and afterwards a dummy variable is created ($INT\_ENVR_{i,t}$, $INT\_SOCR_{i,t}$ and $INT\_GOVR_{i,t}$), in which value 1 indicates an increase in the separate rating in regard to prior year and value 0 a stagnation or decrease in the separate rating.

According to the research of Ball & Brown (1968), the investment decision is operationalized as abnormal stock return, which is the difference between the actual return ($R_{i,t}$) and the expected return ($ER_{i,t}$) that investors earn on an asset. To calculate the abnormal stock return, the research follows the Capital Asset Pricing Model (hereafter: CAPM). The CAPM, developed by Sharpe, Treynor, Lintner and Mossin in the early 1960s, is a financial model which takes the relation between systematic risk and expected return, of a capital market, in consideration. The CAPM is based on the idea that not all risks affect the share price, especially a risk that can be diversified due to other investments in a portfolio, is not a risk essentially. This is called an unsystematic or specific risk. A systematic risk, a risk that cannot be diversified away from the whole capital market, has always an influence on the expected return of a company's share (Perold, 2004). The expected return is calculated as follows (Jeong & Yoo, 2015):

$$ER_{i,t} = R_{f,t} + \beta_i(ER_m - R_{f,t}) \tag{7}$$

$ER_{i,t}$ is the expected return for a share in company $i$ at the time $t$, which is in days. $R_{f,t}$ is the risk-free rate on time $t$, which accounts for the rate of return on an investment that would be

received with zero risk. $β_i$, is the coefficient which captures the sensitivity of asset $i$ on the security market, also described as the risk that an investment contains. $(ER_m − R_{f,t})$ is calculated by taking the equal weighted market return of the NASDAQ $(ER_m)$ minus the risk-free rate $(R_{f,t})$ on time $t$. It captures the market risk premium of the overall equity market. It determines the differences between the risk-free rate $(R_{f,t})$ and the expected return $(ER_{i,t})$. Secondly, the actual return $(R_{i,t})$ is calculated according to the following equation (Jeong & Yoo (2015):

$$R_{i,t} = \frac{P_{i,t} − P_{i,t−1}}{P_{i,t−1}} \tag{8}$$

$R_{i,t}$ is calculated by using the stock price of a company $i$ at time $t$, in days, $(P_{i,t})$ minus the stock price of a company $i$ at time $t - 1$ $(P_{i,t-1})$. It is divided $P_{i,t-1}$. The subsequent step is to calculate the abnormal share return, according to the following equation:

$$AR_{i,t} = R_{i,t} − ER_{i,t} \tag{9}$$

$AR_{i,t}$ is the abnormal stock return for company $i$ on time $t$, which is in days. $R_{i,t}$ is the actual return for firm $i$ on time $t$, in days. To be able to use the $AR_{i,t}$ with the CSR ratings, the research calculates the $CAR_{i,t}$. It is calculated for the various estimation windows according to the following equations (Jeong & Yoo, 2015):

$$CAR1_{i,t} = \sum_{t=0}^{0} AR_{i,t} \tag{10}$$

$$CAR3_{i,t} = \sum_{t=-3}^{3} AR_{i,t} \tag{11}$$

$$CAR5_{i,t} = \sum_{t=-5}^{5} AR_{i,t} \tag{12}$$

$$CAR10_{i,t} = \sum_{t=-10}^{30} AR_{i,t} \tag{13}$$

$CAR_{i,t}$ is the cumulative abnormal stock return for company $i$ in different estimation windows of; $t = 0$ (8), $t= -3$ to $t= +3$ (9), $t = -5$ to $t = +5$ (10) and $t= -10$ to $t= +30$ (11). On $t = 0$ the announcement of that year new CSR rankings is made. The exact date of the announcement differs for the period 2012 to 2018, but the announcement is made around the last weeks of October and the first weeks of November. $CAR_{i,t}$ is calculated for every separate estimation window, as the sum of the abnormal stock return $(AR_{i,t})$ of the days included in the time window.

**3.3 Sample selection**

To measure the relation between CSR ratings and the investor decisions, the research uses panel data. The first part of the panel data consists of the CSR ratings from Morgan Stanley Capital International Environmental, Social and Governance index (hereafter: MSCI ESG). MSCI ESG Index assess thousands of datapoints, analyzed by MSCI ESG and classified across 35 key issues, focusing on the intersection between a company's core business and the industry issues that create significant risks and opportunities for the company. Key issues are criteria's that MSCI ESG uses to analyze the CSR performance of a company (MSCI ESG Research, 2020). The datapoints are obtained by publicly available information from listed companies, such as 10-K reports, 8-K reports and sustainable reports. All the obtained data points are binary evaluated. Value 0 indicates neutral, the company is not performing bad on a specific key issue. Value 1 means that a company performs accordingly to the key issues (Awaysheh, 2020). For instance, for a carbon footprint key issue, value 0 indicates that the company has no policies or regulations to reduce the carbon footprint and value 1 indicates that the company has designed policies and regulations to reduce the carbon footprint of the company. Examples of other key issues are green building, reducing water pollution, no child labor or board diversity. MSCI ESG Research (2020) indicates that the MSCI ESG Ratings are created to help investors and future investors to understand the ESG risk and opportunities. Thereafter these factors are integrated into the investor's portfolio construction and management process. The MSCI ESG Rating is not fully available, but the underlying binary evaluations are available through Wharton Research Data service (hereafter: WRDS). Via WRDS the MSCI ESG KLD STATS, formerly known as the Kinder, Lydenberg and Domini databases, are accessible. The data from the NASDAQ listed companies, for the period 2012-2018, is extracted, which amounts in 198,940 key issue year observations. This contributes to 812 firms analyzed over 35 key issues. These 35 key issues are related the MSCI ESG Rating and other key issues of MSCI ESG KLD STATS are excluded in the research, conform Dhaliwal et al. (2011). For the other NASDAQ listed companies, no binary evaluations of the key issues were available in the MSCI ESG KLD STATS database for the period 2012 to 2018. Afterwards, this study uses a 70% binary score key issue benchmark. Key issues with more than 30% missing values were removed from the sample. 6 key issues did not meet the 70% binary score benchmark and were removed from the research sample. These key issues are; Recycling, Climate change vulnerability, Chemical safety, Community relations, Access to communication and Tax transparency. After removing the 6 key issues, the research consists of 812 NASDAQ listed firms evaluated over 29 key issues for the period 2012 to 2018. The total research sample consist of 164,836 key issue year observations. MSCI ESG has a significant number of missing values, due to not available information of the evaluated companies. The remaining missing values included in the total research sample were replaced by value 2, which were not included to count the total CSR rating. Eventually, for the

CSR data the actual dates of the press releases ($DatePR_{i,t}$) were added to the sample, in which MSCI ESG announced the CSR ratings for that specific year. The dates of the press releases are manually obtained from the website of MSCI ESG (MSCI ESG Research, 2020).

The second part of the panel data consist of the abnormal stock return ($AR_{i,t}$) of the NASDAQ listed companies. For the calculation of $AR_{i,t}$ (9), the underlying stock prices ($P_{i,t}$) were found in the Center for Research in Security Prices database (hereafter: CRSP), via WRDS. CRSP contains the most extensive database of security prices, volume data and returns for the leading stock markets. In this thesis the daily stock price is obtained for the sample of listed NASDAQ companies for the period 2012-2018, to calculate the actual daily stock return ($R_{i,t}$) (8). For the calculation of the expected daily stock return ($ER_{i,t}$) (7), the data of the risk-free rate ($R_{f,t}$), which are the T-bill rates for the NASDAQ, for CAPM formula is gathered as well from CRSP, the beta ($\beta_i$) is estimated for the NASDAQ based on the NASDAQ stock prices, which are gathered from Yahoo Finance. Afterwards, the missing values of companies $CAR_{i,t}$ were removed and merged the $CAR_{i,t}$ data with the CSR rating data ($INT\_CSR_{i,t}$, $INT\_ENVR_{i,t}$, $INT\_SOCR_{i,t}$ and $INT\_GOVR_{i,t}$), the sample consist of 812 NASDAQ listed companies .

To increase the internal validity of the research between CSR ratings ($T\_CSR_{i,t}$) and cumulative abnormal stock returns ($CAR_{i,t}$), the study uses several control variables. The research controls for market-to-book ratio ($MTB_{i,t}$), return on equity ($ROE_{i,t}$) and return on assets ($ROA_{i,t}$). $MTB$ is the measurement of the value of a stock, calculated by dividing the stock price by the book value of the stock. A higher $MTB$ has an inverse effect on stock returns. The $ROE$ is a performance measure of a company, which is the net income divided by total shareholders' equity. A higher $ROE$ is related to a higher stock return. The $ROA$, net income divided by the total amount of assets, shows how efficient a company can use its assets to generate profit. The higher the $ROA$, the higher the stock return (Chiu et al., 2020). The three financial control variables were gathered from CRSP/Compustat Merged. Furthermore, the research controls for dividend payout ratio paid by a company ($DIV_{i,t}$), percentage of profit paid by a company per share. At the time a dividend is paid to the shareholders, the stock price reduces and it will affect the actual stock return (Ball & Brown, 1968). The data of $DIV_{i,t}$ is gathered from CRSP/Compustat Merged. Besides the control variables, the research uses fixed effects. Fixed effects are used for variables which are not directly observable or measurable, but should be controlled for in the research to mitigate endogeneity. Company ($COMP$) is fixed to control for the changes in company related aspects. For instance, Lee & Wu (2015) proved that the market keeps more track on larger company's than on smaller companies. For $COMP$, total asset data is collected from Compustat. A dummy variable is created for $COMP$, with a different dummy for each company included in the research (Cho et al., 2015, Jeong & Yoo, 2015). Lastly, the $CAR_{i,t}$, CSR ratings, control variables and fixed effects data was merged in a sample of 704 NASDAQ listed companies with 3.078 observations. Only companies with data observations for every year included

in the research, 2012 to 2018, are kept in the final research sample. In the final sample six of the ten industries included in the NASDAQ, are in the sample. The sample is divided as follows; 341 companies in 'Technology', 137 companies in 'Consumer Service', 75 companies in 'Health Care', 57 companies in 'Financial Services', 55 companies in 'Industrial Services' and 39 companies in 'Consumer Goods'. Therefore, the results have a higher generalizability than previous studies, who focused on a single industry (Cho et al., 2015). 'Utility services', 'Telecommunication', 'Oil and Gas' and 'Basis Materials' are the not represented industries of the NASDAQ, due to incomplete binary CSR evaluations. In appendix 3 a table is included with all the used variables in the various fixed effect regression models.

**4. Results**

In this paragraph the results of the fixed effect regression model are discussed. First, in appendix 2, the correlation matrix is included for all the variables used in the fixed effect regression model, to test for multicollinearity. Secondly, in appendix 2 the descriptive statistics are presented, which are briefly discussed. Thirdly, table 1 is discussed, which contains the cumulative abnormal stock returns from 2012 to 2018 around the announcement date (t = 0) of the CSR ratings, for four different estimation windows. Table 2 contains the statistical results of the fixed effect regression model used to test hypothesis 1. Lastly, table 3, 4 and 5 are discussed which contains the statistical results for hypothesis 2a-c.

**4.1 Descriptive statistics**

In appendix 1 table 6 the descriptive statistics are presented. First, in panel B of table 6 the NASDAQ listed companies, included in the research sample, are presented. The research sample consist of 704 NASDAQ listed companies spread over six industries. 341 companies belong to the industry 'Technology', 137 companies to 'Consumer Service', 75 companies to 'Health Care', 57 companies to 'Financial Services', 55 companies to 'Industrial Services' and 39 companies to 'Consumer Goods'. Therefore, the found results in the fixed effect regression models are generalizable to six of the ten industries included in the NASDAQ. Secondly, in table panel A the descriptive statistics of the used variables are shown. The independent variables (*INT_CSR*, *INT_ENVR*, *INT_SOCR* and *INT_GOVR*) all have 3,983 observations. The mean for the independent variables is low, with values between 0.029 to 0.114. This signifies that the included companies in the research sample have an average CSR rating between 0.029 to 0.114. The means are low, because the research only looks to the increase in CSR rating or increase in a single CSR rating aspect, which has a much smaller range of values than looking to the total CSR rating or aspect of the CSR rating. This is conform the research of Cheng et al (2013), who also had a low CSR mean. Besides, the medians of the four independent variables are all 0.000, which is lower than the means. In this research it is probably caused by only a few companies with an increase in CSR rating or in an aspect of the CSR rating. These companies had a value 1 and the majority of the companies had no increase in CSR rating and got a value 0.

Lastly, the dependent variables (*CAR1*, *CAR3*, *CAR5* and *CAR10*) are calculated for 12.574 observations and have a slight positive mean for *CAR1* and *CAR5* and slight negative mean for *CAR3* and *CAR10*. The means of the different *CAR* are in line with the medians of the CAR estimations. This could indicate that the cumulative abnormal stock returns are properly estimated. This is according to the research of Chiu et al. (2020), who found a mean and median as well in line with each other

**Table 1: Cumulative Abnormal Stock Returns using various estimation windows**

| Estimation window Years | 1 day (%) | 3 days (%) | 5 days (%) | 10 days (%) |
|---|---|---|---|---|
| Complete sample | 0.023 (0.137) | -0.378 (0.413) | 0.312 (0.496) | -2.735** (1.262) |
| 2012 | -0.127 (0.850) | -2.678 (2.937) | 1.295 (3.641) | -6.535 (7.848) |
| 2013 | -0.677*** (0.095) | -1.394*** (0.293) | -1.851*** (0.345) | -2.878** (1.145) |
| 2014 | 0.022 (0.089) | 0.397 (0.701) | 0.733 (0.664) | -1.256 (0.811) |
| 2015 | -1.099*** (0.085) | -2.472*** (0.514) | -1.704*** (0.590) | 1.722 (5.000) |
| 2016 | 1.518*** (0.111) | 6.624*** (0.939) | 6.267*** (0.931) | 3.932** (1.608) |
| 2017 | 0.717 (0.539) | -0.885 (0.628) | -0.081 (0.692) | -3.269** (1.310) |
| 2018 | -0.431*** (0.094) | -2.692*** (0.322) | -2.418*** (0.609) | -10.275*** (1.719) |

Note: Table 1 presents the Cumulative Abnormal Stock Returns ($CAR_{i,t}$) for 812 NASDAQ listed companies from 2012 to 2018, with the standard error between parentheses. The $CAR_{i,t}$ is calculated according to the Capital Asset Pricing model (CAPM), explained in 3.2 Measurement of variables. $CAR_{i,t}$ is estimated for four different estimation windows to check the robustness of the results. $CAR_{i,t}$ is the dependent variable used in the fixed effect regression model, to study the impact of the increase in CSR ratings on investment decisions. The $CAR_{i,t}$ coefficient is presented with the standard deviation between parentheses, both as percentage (%). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

and around 0.000. Furthermore, as the estimated window for the *CAR* increases, the standard deviation and the range between the minimum and maximum value increase. This is according to the results of Chiu et al. (2020).

**4.2 Cumulative abnormal stock return**

In table 1 the estimations of cumulative abnormal stock returns ($CAR_{i,t}$) are presented. As the thesis looks to the complete sample, 2012 to 2018 included, there is only a significant $CAR_{i,t}$ for the estimation window of 10 days, which is t = -10 to t = +30 around the announcement date (t = 0). The $CAR_{i,t}$ has a coefficient of -2.735% with a p-value of p = 0.030, significant at 0.05 significance level (p < 0.05). This signifies an underperformance of the share, actual return lower than expected return (Jeong & Yoo, 2011), by -2.735% for the 10-day estimation window. For the other estimation windows, 1 day (t = 0), 3 days (t= -3 to t= +3) and 5 days (t= -5 to t= +5), there are no significant $CAR_{i,t}$ at a significance level of p = 0.1 (p < 0.1).

Furthermore, the thesis looks to the different estimations of $CAR_{i,t}$ for each separate year from 2012 to 2018. The results in table 1 show that only in 2012 and 2014 there were no

significant $CAR_{i,t}$. In all other years, $CAR_{i,t}$ is significant at significance level of 0.05 ($p < 0.05$) and 0.01 ($p < 0.01$). Every calculated significant $CAR_{i,t}$, for various estimation windows are negative, except for the $CAR_{i,t}$ calculated in year 2016. For the negative $CAR_{i,t}$ years, it may indicate that the expected return is fairly high, compared to the actual return, or that the actual return is quite low, compared to the expected return. The expected return is determined by the beta ($\beta$) and the market return, which may be driven by market optimism. This means that market expects that positive results will continue for an extended time period (Jeong & Yoo, 2011; Chiu et al., 2020), which increase the expected return. The actual return is influenced by company specific aspects, such as poor financial company performance or poor corporate governance (Dhaoui & Khraief, 2014). An explanation for the positive $CAR_{i,t}$ in 2016, is that the market return is influenced by a pessimistic market, which decreased the expected return. A pessimistic market is a market with more expectations for negative events than positive events (Dhaoui & Khraief, 2014). The actual return is influenced, such as for a negative $CAR_{i,t}$, by company specific aspects, but then positive aspects. Besides, in table 1 the most significant $CAR_{i,t}$ are found in the 3 smallest estimation windows. Lane & Jacobsen (1995) explain that this is an indication of a reasonably efficient market, in which the available information is captured in the stock price of a company share, in the days around the announcement.

**4.3 Total CSR rating**

In order to test hypothesis 1, an increase in CSR rating has a positive impact on cumulative abnormal stock returns, a fixed effect regression model is performed on 704 NASDAQ listed companies, in which the $CAR_{i,t}$ estimations from table 1 are used. The test of the $CAR_{i,t}$ calculation is insufficient to answer hypothesis 1, because it does not control for other variables that could influence the relation between CSR rating and $CAR_{i,t}$. A fixed effect regression model controls for other variables and endogeneity concerns, by only analyzing the within variance. Results of the test are presented in table 2. In table 2 the independent variable is the increase in CSR rating ($INT\_CSR_{i,t}$), which is tested for 4 models, with each another estimation window. $INT\_CSR_{i,t}$ is significant for the four models at a significance level of 0.05 ($p < 0.05$) or 0.01 ($p < 0.01$). The impact of $INT\_CSR_{i,t}$ on $CAR_{i,t}$ has a coefficient from -0.603%, for model 1 with a 1-day estimation window, to -1.689% for model 4 with a 10-day estimation window. This means that in all the four models, CSR ratings negatively impact $CAR_{i,t}$. Therefore, hypothesis 1, whether $INT\_CSR_{i,t}$ has a positive impact on $CAR_{i,t}$ is not accepted. There is a significant impact, but the impact is negative. The results could indicate that investors think that CSR ratings are a waste of liquid asset or 'greenwashing', creating an ecologic responsible company image that does not corresponds with reality, as Khan et al. (2012) called it. It may create skepticism among investors, in which they doubt companies' information. It

**Table 2: Fixed effects model explaining cumulative abnormal stock returns using an increase in the total CSR rating**

| Dependent = Cumulative abnormal stock return | Model 1<br>1 day Estimation Window | Model 2<br>3 days Estimation Window | Model 3<br>5 days Estimation Window | Model 4<br>10 days Estimation Window |
|---|---|---|---|---|
| **Key Independent variable:** | | | | |
| Increase in CSR rating (1=Yes) (%) | -0.603*** (0.134) | -1.062** (0.514) | -1.266*** (0.447) | -1.689*** (0.604) |
| **Control variables:** | | | | |
| Return on Assets (%) | -2.041 (2.394) | -2.186 (4.789) | -5.211 (4.160) | -11.010* (5.573) |
| Return on Equity (%) | -0.036 (0.107) | -0.185* (0.102) | -0.086 (0.095) | -0.884*** (0.132) |
| Market-to-Book (%) | -0.121 (0.351) | 2.499** (1.240) | 4.750*** (1.253) | 10.012*** (2.332) |
| Dividend Payout (%) | -0.003 (0.451) | -0.016 (0.000) | -0.048 (0.017) | -2.497 (1.738) |
| **Fixed effects:** | | | | |
| Company fixed effects | Yes | Yes | Yes | Yes |
| Within R squared | 0.009 | 0.006 | 0.015 | 0.028 |
| Between R squared | 0.002 | 0.003 | 0.004 | 0.000 |
| Overall R squared | 0.005 | 0.004 | 0.009 | 0.003 |
| Number of observations | 3,078 | 3,078 | 3,078 | 3,078 |
| Number of companies | 704 | 704 | 704 | 704 |

Note: Table 2 presents the fixed effect regression model for 704 NASDAQ listed companies from 2012 to 2018. The dependent variable is the Cumulative Abnormal Stock Return ($CAR_{i,t}$), calculated according the Capital Asset Pricing Model (CAPM) described in 3.2 Measurement of variables. The independent variable is the increase in CSR rating ($INT\_CSR_{i,}$), the total sum of 29 key issue binary evaluations from MSCI ESG relative to the prior year total sum of 29 key issue binary evaluations. The control variables are; Return on Assets ($ROA_{i,t}$), company's efficiency to use asset to generate profit, Return on Equity ($ROE_{i,t}$), performance measurement of a company, Market-to-Book ($MTB_{i,t}$), measures of stock value, and Dividend Payout ($DIV_{i,t}$), percentage of profit paid by a company per share. Company is used as a fixed effect, which controls for the unobservable changes in the variable company. The fixed effect regression coefficient is presented as a percentage, with the robust standard error between parentheses, both as percentage (%). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

will affect the company's stock price and as consequence the actual return decreases (Yu et al., 2017). Additionally, by wasting liquid assets, companies have higher CSR expenses and a lower profit, and therefore these companies are less attractive for investors, according to this thesis and Yu et al. (2017). Additionally, by wasting liquid assets, companies have higher CSR expenses and a lower profit, and therefore these companies are less attractive for investors, according to this thesis and Yu et al. (2017). Furthermore, the results are in line with Cheng et al. (2014) and Chiu et al. (2020). They indicate that firms have negative stock returns after the announcement of the CSR ratings. This leads to negative attitudes of investors, as they believe that expenses incurred for CSR activities after publication of the CSR ratings, may damage shareholders' equity (Chiu et al., 2020). The higher the rating, the more negative the effect of CSR rating is on abnormal return (Hartzmark & Sussman, 2019).

The results presented in table 2 are tested on the robustness by using various estimation window models. The results are robust, due to significant and negative results for all four models used, which could indicate effect stability and a reduced model uncertainty, whether there are mistakes made in the estimation models (Durlauf et al., 2012).

Besides, the company fixed effect, various control variables are included in the fixed effect regression model to test hypothesis 1. The financial control variables are according to the research of Chiu et al. (2020) and Cho et al. (2015). The Return on Assets ($ROA_{i,t}$) is only significant for model 4 at 0.05 significance level ($p < 0.05$), with a coefficient of -11.010% and a p-value of 0.049. This signifies that an increase in $ROA_{i,t}$ negatively effects the cumulative abnormal stock return by 11.010%. The Return on Equity ($ROE_{i,t}$) is for all four models negative, but only significant for model 2, at 0.1 significance level ($p < 0.1$), and model 4, at a 0.01 significance level ($p < 0.01$). This is not in line with Tsoutsoura (2004), who found that CSR increased the $ROE_{i,t}$. An increase in $ROE_{i,t}$, decrease the $CAR_{i,t}$ with -0.185%, for model 2, to -0.884%, for model 4. The last financial control variable is Market-to-Book ($MTB_{i,t}$), which is significant for model 2, model 3 and model 4. Model 2 is significant at a 0.05 significance level ($p < 0.05$) and has a $MTB_{i,t}$ coefficient of 2.499% with a p-value of 0.044. Model 3 and model 4 are both significant at a significance level of 0.01 ($p < 0.01$). Model 3 and model 4 have a positive coefficient of 4.750% and 10.012%. A greater $MTB_{i,t}$, provides a greater $CAR_{i,t}$. This is according to the research of Chiu et al. (2020). The control variable Dividend Payout ($DIV_{i,t}$) is not significant for one of the four models.

**4.4 Environmental Rating**

In table 3, the fixed effect regression model results are presented to test hypothesis 2a, an increase in the environmental aspect of the CSR rating has an impact on cumulative abnormal stock

**Table 3: Fixed effects model explaining cumulative abnormal stock returns using an increase in the environmental aspect of the CSR rating**

| Dependent = Cumulative abnormal stock return | Model 1<br>1 day Estimation<br>Window | Model 2<br>3 days Estimation<br>Window | Model 3<br>5 days Estimation<br>Window | Model 4<br>10 days Estimation<br>Window |
|---|---|---|---|---|
| **Key Independent variable:** | | | | |
| Increase in Environmental rating (1=Yes) (%) | -0.124<br>(0.241) | 1.469<br>(2.312) | -0.897<br>(0.958) | -0.107<br>(1.334) |
| **Control variables:** | | | | |
| Return on Assets (%) | -2.130<br>(2.476) | -2.514<br>(4.932) | -5.330<br>(4.257) | -11.281**<br>(5.634) |
| Return on Equity (%) | -0.025<br>(0.109) | -0.167<br>(0.106) | -0.061<br>(0.096) | -0.851***<br>(0.129) |
| Market to Book (%) | -0.198<br>(0.350) | 2.413*<br>(1.246) | 4.567***<br>(1.265) | 9.803***<br>(2.378) |
| Dividend Payout (%) | -0.002**<br>(0.001) | -0.015<br>(0.009) | -0.047***<br>(0.017) | -0.049<br>(0.022) |
| **Fixed effects:** | | | | |
| Company fixed effects | Yes | Yes | Yes | Yes |
| Within R squared | 0.002 | 0.004 | 0.012 | 0.026 |
| Between R squared | 0.001 | 0.003 | 0.005 | 0.000 |
| Overall R squared | 0.002 | 0.004 | 0.008 | 0.003 |
| Number of observations | 3,078 | 3,078 | 3,078 | 3,078 |
| Number of companies | 704 | 704 | 704 | 704 |

Note: Table 3 presents the fixed effect regression model for 704 NASDAQ listed companies from 2012 to 2018. The dependent variable is the Cumulative Abnormal Stock Return ($CAR_{i,t}$), calculated according the Capital Asset Pricing Model (CAPM) described in 3.2 Measurement of variables. The independent variable is the increase in environmental rating ($INT\_ENVR_{i,t}$), the total sum of 10 environmental key issue binary evaluations from MSCI ESG relative to the prior year total sum of 10 environmental key issue binary evaluations. The control variables are; Return on Assets ($ROA_{i,t}$), company's efficiency to use asset to generate profit, Return on Equity ($ROE_{i,t}$), performance measurement of a company, Market-to-Book ($MTB_{i,t}$), measures of stock value, and Dividend Payout ($DIV_{i,t}$), percentage of profit paid by a company per share. Company is used as a fixed effect, which controls for the unobservable changes in the variable company. The fixed effect regression coefficient is presented as a percentage, with the robust standard error between parentheses, both as percentage (%). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

returns. The relation between the independent variable, increase in environmental rating ($INT\_ENVR_{i,t}$), and $CAR_{i,t}$ is tested by using 4 different models to check the robustness of the results. These models are the same as for the statistical analysis of $INT\_CSR_{i,t}$. As indicated in table 3, $INT\_ENVR_{i,t}$ is not significant for either one of the four models at a significance level of 0.1 ($p < 0.1$).

$INT\_ENVR_{i,t}$ has no effect on $CAR_{i,t}$ by 90% confidence interval. Therefore, hypothesis 2a is not accepted. Investors do not value the environmental aspect of the CSR rating as important for decision making. The results are not in line with the research of Cheng et al. (2014), who found a significant and negative effect of the environmental aspect. The results are in accordance with Cho et al. (2020). They found that investors do not value environmental aspects of CSR. A potential explanation is that the used fixed effect regression model does not control for the company's environmental performance in the research sample. Companies with higher environmental performance in the research time interval from 2012 to 2018, will have a less chance to have an increase in environmental aspect of the CSR rating. This reduces the chance for a significant effect (Patten, 2002). Furthermore, the results are in line with Hartzmark & Sussman (2019) who found a not significant effect of environmental ratings on investors. This may signify that in the research sample, the amount of interested investors in environmental ratings is too small or that investor already reacted on the environmental information in CSR reports or annual reports, disclosed by a company. MSCI ESG uses the company's disclosed environmental information to produce the environmental aspect of the CSR ratings (Khan et al., 2012).

Secondly, the influence of the control variables, in hypothesis 2a, on $CAR_{i,t}$ is according to the control variables regression results of hypothesis 1, presented in table 2. The results of the control variables only differ in the effect of Dividend Payout ($DIV_{i,t}$) on $CAR_{i,t}$. In the fixed effect regression model of $INT\_ENVR_{i,t}$ on $CAR_{i,t}$, the control variable $DIV_{i,t}$ is significant for model 1 and model 3. Model 1 is significant at a 0.05 significance level ($p < 0.05$), with an $INT\_ENVR_{i,t}$ coefficient of -0.002% and a p-value of $p = 0.039$ and model 3 is significant at a significance level of 0.01 ($p < 0.01$), with an $INT\_ENVR_{i,t}$ coefficient of -0.047% and a p-value of 0.007. This corresponds with the research of Ball & Brown (1968). At the time a dividend is paid, it reduces the actual return of a share.

## 4.5 Social rating

To test hypothesis 2b, an increase in the social aspect of the CSR rating has an impact on cumulative abnormal stock returns, a fixed effect regression model is performed on 704 NASDAQ listed companies with company as fixed effect. The impact of the independent variable, increase in social rating ($INT\_SOCR_{i,t}$), is studied on the dependent variable, $CAR_{i,t}$, by using 4 models as in the previous tests. Table 4 presents the results of the performed fixed effect regression model.

**Table 4: Fixed effects model explaining cumulative abnormal stock returns using an increase in the social aspect of the CSR rating**

| Dependent = Cumulative abnormal stock return | Model 1<br>1 day Estimation Window | Model 2<br>3 days Estimation Window | Model 3<br>5 days Estimation Window | Model 4<br>10 days Estimation Window |
|---|---|---|---|---|
| **Key Independent variable:** | | | | |
| Increase in Social rating (1=Yes) (%) | -0.298*<br>(0.160) | -0.764<br>(0.521) | -0.658<br>(0.594) | -0.502<br>(0.801) |
| **Control variables:** | | | | |
| Return on Assets (%) | -2.103<br>(2.472) | -2.263<br>(4.913) | -5.336<br>(4.271) | -11.226**<br>(5.638) |
| Return on Equity (%) | -0.027<br>(0.109) | -0.172<br>(0.107) | -0.068<br>(0.098) | -0.856***<br>(0.130) |
| Market to Book (%) | -0.172<br>(0.353) | 2.427*<br>(1.250) | 4.644***<br>(1.268) | 9.844***<br>(2.368) |
| Dividend Payout (%) | -0.002**<br>(0.001) | -0.197<br>(1.102) | -0.047***<br>(1.024) | -0.048<br>(1.760) |
| **Fixed effects:** | | | | |
| Company fixed effects | Yes | Yes | Yes | Yes |
| Within R squared | 0.003 | 0.004 | 0.013 | 0.026 |
| Between R squared | 0.001 | 0.003 | 0.005 | 0.000 |
| Overall R squared | 0.002 | 0.004 | 0.008 | 0.003 |
| Number of observations | 3,078 | 3,078 | 3,078 | 3,078 |
| Number of companies | 704 | 704 | 704 | 704 |

Note: Table 4 presents the fixed effect regression model for 704 NASDAQ listed companies from 2012 to 2018. The dependent variable is the Cumulative Abnormal Stock Return ($CAR_{i,t}$), calculated according the Capital Asset Pricing Model (CAPM) described in 3.2 Measurement of variables. The independent variable is the increase in social rating ($INT\_SOCR_{i,t}$), the total sum of 12 social key issue binary evaluations from MSCI ESG relative to the prior year total sum of 12 social key issue binary evaluations. The control variables are; Return on Assets ($ROA_{i,t}$), company's efficiency to use asset to generate profit, Return on Equity ($ROE_{i,t}$), performance measurement of a company, Market-to-Book ($MTB_{i,t}$), measures of stock value, and Dividend Payout ($DIV_{i,t}$), percentage of profit paid by a company per share. Company is used as a fixed effect, which controls for the unobservable changes in the variable company. The fixed effect regression coefficient is presented as a percentage, with the robust standard error between parentheses, both as percentage (%). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

*INT_SOCR$_{i,t}$* is only significant for model 1 at a significance level of 0.1 ($p < 0.1$). Model 1 has an *INT_SOCR$_{i,t}$* coefficient of -0.298% with a p-value of 0.063. As the social aspect of the CSR rating increases, the *CAR$_{i,t}$* decreases with 0.298%. The result of model 1 is conform the research of Cho et al. (2015), who found a significant and negative effect of the social aspect of CSR on the market return, which means that the market negatively values this information provision. The other three models are not significant and not in line with Cho et al. (2015). For the three models' social ratings, such as regulations for employees related to human capital development or labor management, do not influence the investor. Richardson & Welker (2001) indicate that only socially conscious investors are focused on the social performance of a company and are willing to pay a premium for a share of a socially responsible company. The used fixed effect regression models do not control for the social investors. Secondly, the same as for the environmental rating, a company reports on the social aspect already for several years. Therefore, an investor could already react on the disclosed social information in a company's CSR or annual report and then the CSR rating will not be informative for the investor.

The robustness of the results for the social aspect are rather in dispute, due to one model with significant results, compared to the other not significant results. This may indicate measurement error or the use of wrong data.

Furthermore, the used control variables in the fixed effect regression model are in line with the control variables presented in table 3. The same control variables are significant in the fixed effect regression model of *INT_ENVR$_{i,t}$*, as for the fixed effect regression model of *INT_SOCR$_{i,t}$* and the coefficients are comparable in strength. Therefore, the results are in line with Cho et al. (2020), Chiu et al. (2020) and Ball & Brown (1968).

## 4.6 Governmental rating

For hypothesis 2c, an increase in the governance aspect of the CSR rating has an impact on cumulative abnormal stock returns, a fixed effect regression model is performed on 704 NASDAQ listed companies, in which company is used as a fixed effect. The results of this fixed effect regression model are presented in table 5. The independent variable, increase in governance rating (*INT_GOVR$_{i,t}$*), is tested on the dependent variable, cumulative abnormal stock return (*CAR$_{i,t}$*). All four models are significant at a significance level of 0.01 ($p < 0.01$). The results show that the found significant effect is robust for the various estimation window models, which reduces the chance of biased results. Model 1 has an *INT_GOVR$_{i,t}$* coefficient of -0.883% with a p-value of 0.000. Model 2 has an *INT_GOVR$_{i,t}$* coefficient of -1.832% with a p-value of 0.000. Model 3 and model 4 have an *INT_GOVR$_{i,t}$* coefficient of -1.451% and -3.109% with a p-value of 0.005 and 0.001. The bigger the

**Table 5: Fixed effects model explaining cumulative abnormal stock returns using an increase in the governance aspect of the CSR rating**

| Dependent = Cumulative abnormal stock return | Model 1 1 day Estimation Window | Model 2 3 days Estimation Window | Model 3 5 days Estimation Window | Model 4 10 days Estimation Window |
|---|---|---|---|---|
| Key Independent variable: | | | | |
| Increase in Governance rating (1=Yes) (%) | -0.883*** (0.170) | -1.832*** (0.477) | -1.451*** (0.520) | -3.109*** (0.890) |
| Control variables: | | | | |
| Return on Assets (%) | -2.049 (2.454) | -2.170 (4.801) | -5.270 (4.214) | -10.964** (0.890) |
| Return on Equity (%) | -0.030 (0.111) | -0.177* (0.102) | -0.071 (0.095) | -0.871*** (0.133) |
| Market to Book (%) | -0.135 (0.346) | 2.495** (1.224) | 4.694*** (1.254) | 10.019*** (2.350) |
| Dividend Pay out (%) | -0.002** (0.001) | -0.015* (0.009) | -0.047*** (0.017) | -0.049** (0.021) |
| Fixed effects: | | | | |
| Company fixed effects | Yes | Yes | Yes | Yes |
| Within R squared | 0.013 | 0.007 | 0.014 | 0.031 |
| Between R squared | 0.001 | 0.003 | 0.005 | 0.000 |
| Overall R squared | 0.007 | 0.005 | 0.009 | 0.003 |
| Number of observations | 3,078 | 3,078 | 3,078 | 3,078 |
| Number of companies | 704 | 704 | 704 | 704 |

Note: Table 5 presents the fixed effect regression model for 704 NASDAQ listed companies from 2012 to 2018. The dependent variable is the Cumulative Abnormal Stock Return ($CAR_{i,t}$), calculated according the Capital Asset Pricing Model (CAPM) described in 3.2 Measurement of variables. The independent variable is the increase in governance rating ($INT\_GOVR_{i,t}$), the total sum of 7 governance key issue binary evaluations from MSCI ESG relative to the prior year total sum of 7 governance key issue binary evaluations. The control variables are; Return on Assets ($ROA_{i,t}$), company's efficiency to use asset to generate profit, Return on Equity ($ROE_{i,t}$), performance measurement of a company, Market-to-Book ($MTB_{i,t}$), measures of stock value, and Dividend Payout ($DIV_{i,t}$), percentage of profit paid by a company per share. Company is used as a fixed effect, which controls for the unobservable changes in the variable company. The fixed effect regression coefficient is presented as a percentage, with the robust standard error between parentheses, both as percentage (%). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

estimation window becomes, the greater the negative influence of $INT\_GOVR_{i,t}$ is on $CAR_{i,t}$. The results presented in table 5 indicate that hypothesis 2c is accepted for all four models. These results are in line with Chiu et al. (2020). They found negative stock returns on the announcement date of the governmental aspect of the CSR rating in various estimation windows. Cheng et al. (2014) found as well, for the governmental aspect, a highly significant and negative effect on share returns. The found results could be explained by the line of reasoning of Cremers & Nair (2006), who indicated that the government aspect consist of aspects, that investors perceive as internal and external governance aspects. External governance aspects are aspects, such as director independence and transparency. Investors perceive these aspects as important aspects to increase the company's transparency towards the stakeholders. The internal governance aspects are perceived by the investors as governance aspects in the interest of management and not in the interest of stakeholders (Cremer & Nair, 2006). Examples of internal governance aspects are board-remuneration or business ethics, in which a company has rules and policies in the favor of management to provide management with higher remuneration or ultimate power (Cremers & Nair, 2006). The internal governance aspect adversely affects the perceived risk by an investor. Therefore, as the governance aspect of the CSR rating increases and investors do not notice any improvement in a favorable relation with the company, investors may experience it as an increase in internal governance aspects. It negatively affects the perceived risk and eventually the actual return. The explanation of Cremers & Nair (2006) is conform this thesis that an increase in the governance aspect of the CSR rating, negatively affects the $CAR_{i,t}$. Secondly, Cremers & Nair (2006) found that political accountability, negatively affected $CAR_{i,t}$, because investors might experience political involvement as a disadvantage for the growth opportunity of a company. Therefore, the investors' reaction is negative.

Secondly, in the fixed effect regression model, to test hypothesis 2c, the same control variables are used. The statistical results are the same as in the previous tables. The only difference is for the Dividend Payout ($DIV_{i,t}$). $DIV_{i,t}$ is significant for all four models, as in the previous tables it was only significant for two of the four models. Although, the $DIV_{i,t}$ coefficient is in line with previous results. $DIV_{i,t}$ reduces the $CAR_{i,t}$ with 0.002% to 0.049%.

**5. Conclusion**

This study is motivated by the increased popularity that CSR has received the last decade, due to the constant pressure of stakeholders, governments, employees or suppliers. It is an attempt to contribute to the CSR literature, which is mainly focused on the relation to financial company performances. Therefore, in this thesis the impact of CSR ratings on investor decisions is studied. The research question answered is, to what extent does corporate social responsibility ratings have an impact on investor decisions? To provide an answer on the research question a fixed effect regression model is performed, in which the sample consists of NASDAQ listed companies for the period 2012 to 2018. The increase in total CSR rating, or single CSR aspect rating, is the independent variable and the cumulative abnormal stock return is the dependent variable.

The results in the study indicate that the CSR rating has a significant effect on investors' decisions, but in a negative way. This could mean that investors take the CSR rating in consideration, but consider increased CSR rated companies, as companies that unnecessarily increase their expenses, instead of generating a greater profit and realizing an improved actual return. The study of the single CSR rating aspects, environmental, social and governance, found only a significant, and negative, relation for the governance aspect on cumulative abnormal stock returns. Investors may experience companies with an increased governance score, as companies with increased focus on the internal aspect of governance, such as board remuneration, and not focus on external governance aspect, such as company transparency. Therefore, as the governance aspect of the CSR rating increases and investors do not notice any improvement in a favorable relation with the company, investors may experience it as an increase in internal governance aspects, which negatively affect the perceived risk by an investor. Furthermore, CSR ratings use underlying information which has been disclosed by companies earlier than the published CSR ratings and companies disclose on the environmental and social aspect already for years. Therefore, investors do not take the environmental and social information in consideration and only value the governance aspect of the CSR rating. The governance aspect is a newer CSR aspect on which companies disclose less years and this could mean that investors value this aspect more in the CSR rating, than other two aspects. Overall, based on this thesis, the CSR rating has a negative effect on the investors' decisions and investors only take the governance aspect in consideration to make a decision. The results have a reasonable external validity for the NASDAQ, due to six out of ten industries, included in the NASDAQ, represent in the research sample. The results are not generalizable to 'Utility services', 'Telecommunication', 'Oil and Gas' and 'Basis Materials' industries, included in the NASDAQ. On the other hand, the results are only generalizable for the NASDAQ. To be able to provide results with a higher external validity, industries from different capital indexes should be included, such as the Dow Jones or S&P500.

In the thesis a fixed effect model is chosen to control for as many possible aspects that could influence the relation between CSR rating and cumulative abnormal stock returns. Using a fixed effect regression model has certain limitations. A fixed effect model only looks at the within-variance. The focus on a smaller part of the research sample, reduces the total variance in the research. As a consequence, less variance of the research sample is explained in the study, which increases the standard error of the estimated beta's ($β$) and decreases the statistical power. For future research, a regression model with more variance included may improve the results. Secondly, the research focus on the time period 2012 to 2018, because this is the most recent time interval available for the MSCI ESG data. Unfortunately, the MSCI ESG data has a high number of missing values in this time interval. In upcoming years, the MSCI ESG will be capable to rate more companies, due to more companies disclosing on their CSR information. For future research a more recent time interval might provide results with higher external validity. Thirdly, the dependent variable 'investor decision', is operationalized by cumulative abnormal stock returns, estimated according to the Capital Asset Pricing Model. Using an estimation as dependent variable has a limitation that it is imperfect, a high possibility of measurement error. Therefore, for future research it is interesting to use a more accurate calculation of the dependent variable and compare the results of both studies.

Lastly, it is interesting to research the relation between CSR and the investors in the other reversed direction. Does an investor has influence on the disclosed CSR information of a company and to what extent?

## 6. Literature

Alhakami, A. S., and P. Slovic. "*A Psychological Study of the Inverse Relationship Between Perceived Risk and Perceived Benefit.*" Risk Analysis, 14, (1994), pp. 1085–1096.

Allison, P. D. (2009). *Fixed Effects Regression Models* (1ste ed.). SAGE Publications.

Andriof, J., Waddock, S., Husted, B., & Rahman, S. S. (2002). *Unfolding Stakeholder Thinking: Theory, Responsibility and Engagement (No. 1)* (1st ed., Vol. 2). Routledge.

Awaysheh, A., Heron, R. A., Perry, T., & Wilson, J. I. (2020). On the relation between corporate social responsibility and financial performance. *Strategic Management Journal*, *41*(6), 965–987. https://doi.org/10.1002/smj.3122

Baiman, S. (1990). Agency research in managerial accounting: A second look. *Accounting, Organizations and Society*, *15*(4), 341–371. https://doi.org/10.1016/0361-3682(90)90023-n

Ball, R., & Brown, P. (1968). An Empirical Evaluation of Accounting Income Numbers. *Journal of Accounting Research*, *6*(2), 159. https://doi.org/10.2307/2490232

Beerens, M. (2019). What Is ESG Investing? MSCI Ratings Provide The Answer. *Investor's Business Daily*, *1*(1), 1–4. https://search-proquest-com.eur.idm.oclc.org/docview/2316109982

Benlemlih, M., Jaballah, J., & Peillex, J. (2018). Does it really pay to do better? Exploring the financial effects of changes in CSR ratings. *Applied Economics*, *50*(51), 5464–5482. https://doi.org/10.1080/00036846.2018.1486997

Bernanke, B., & Gertler, M., 1989. Agency costs, net worth and business fluctuation. *American Economic Review 79*: 14-31.

Bowen, P. G., & Gond, J. P. (2013). *Social Responsibilities of the Businessman*. Amsterdam University Press.

Bowman, E.H. & Haire, M. A strategic posture toward corporate social responsibility. California. Management. Review. 1975, 18, 49–58.

Brammer, S., Millington, A. 2008. Does it pay to be different? An analysis of the relationship between corporate social and financial performance. *Strategic Management Journal, 29*(12): 1325-1343.

Calderon, M. (2011) "CSR in Latin America and South East Asia Analysis of the Corporate Communication of Top Local Companies", International Research Journal of Finance and Economics, Issue 73 (2011) Euro-Journals Publishing, Inc. 2011, http://www.eurojournals.com/finance.htm

Calmès, C., Cormier, D., Racicot, F. E., & Théorot, R. (2013). Firms' Accruals and Tobin's q. *The IEB International Journal of Finance*, *6*, 20–51. https://doi.org/10.1007/s11293-012-9362-y.pdf

Cheng, B., Ioannou, I., & Serafeim, G. (2013). Corporate social responsibility and access to finance. *Strategic Management Journal*, *35*(1), 1–23. https://doi.org/10.1002/smj.2131

Cho, C. H., Michelon, G., Patten, D. M., & Roberts, R. W. (2015) CSR disclosure: the more things change…? *Accounting, Auditing & accountability Journal, 28*(1), 14-35. hhtps://doi.org/10.1108/aaaj-12-2013-1549

Cooper, S. M., & Owen, D. L. (2007). Corporate social reporting and stakeholder accountability: The missing link. *Accounting, Organizations and Society*, *32*(7–8), 649–667. https://doi.org/10.1016/j.aos.2007.02.001

Chiu, A. A., Chen, L. N., & Hu, J. C. (2020). A Study of the Relationship between Corporate Social Responsibility Report and the Stock Market. *Sustainability*, *12*(21), 9200. https://doi.org/10.3390/su12219200

Cremers K.J.M. and Nair V.B. (2005), Governance Mechanisms and Equity Prices, Journal of Finance. 2859-2894.

Deegan, C., & Unerman, J. (2011). *Financial Accounting Theory* (2nd edition). McGraw-Hill Education.

Dhaliwal, D. S., Li, O. Z., Tsang, A., & Yang, Y. G. (2011). Voluntary Nonfinancial Disclosure and the Cost of Equity Capital: The Initiation of Corporate Social Responsibility Reporting. *The Accounting Review*, *86*(1), 59–100. https://doi.org/10.2308/accr.00000005

Dhaliwal, D. S., Radhakrishnan, S., Tsang, A., & Yang, Y. G. (2012). Nonfinancial Disclosure and Analyst Forecast Accuracy: International Evidence on Corporate Social Responsibility Disclosure. *The Accounting Review*, *87*(3), 723–759. https://doi.org/10.2308/accr-10218

Dhaoui, A., & Khraief, N. (2014). Sensitivity of trading intensity to optimistic and pessimistic beliefs: Evidence from the French stock market. *Arab Economic and Business Journal*, *9*(2), 115–132. https://doi.org/10.1016/j.aebj.2014.05.008

Dreman, D. (2004). The Influence of Affect on Investor Decision-Making. *Journal of Behavioral Finance*, *5*(2), 70–74. https://doi.org/10.1207/s15427579jpfm0502_1

Durlauf, S. N., Fu, C., & Navarro, S. (2012). Assumptions Matter: Model Uncertainty and the Deterrent Effect of Capital Punishment. *American Economic Review*, *102*(3), 487–492. https://doi.org/10.1257/aer.102.3.487

Elkington, J. (1997). Cannibals with forks: The triple bottom line of 21st century business. Oxford: Capstone

Fama, E.F. (1970) Efficient capital markets: a review of theory and empirical work. Journal of Finance, 25(2), pp. 383–417.

Finucane, M. L., Alhakami, A., Slovic, P., & Johnson, S. M. (2000). The affect heuristic in judgments of risks and benefits. *Journal of Behavioral Decision Making*, *13*(1), 1–17. https://onlinelibrary-wiley-com.eur.idm.oclc.org/doi/pdfdirect/10.1002

Fleming, R. A., & Ledbetter, A. M. (2020). Making Mandatory Sustainability Disclosure a Reality. *Environmental Law Institute*, *8*, 1–3. https://www.sec.gov/files/making-mandatory-sustainability-disclosure-a-reality-white-paper.pdf

Friedman, M. (1970). The social responsibility of business is to increase its profits. *New York Time Magazine, (13),* 122-126

Hartzmark, S. M., & Sussman, A. B. (2019). Do Investors Value Sustainability? A Natural Experiment Examining Ranking and Fund Flows. *The Journal of Finance*, *74*(6), 2789–2837. https://doi.org/10.1111/jofi.12841

Hill, C. W. L., & Jones, T. M. (1992). Stakeholder-agency theory. *Journal of Management Studies,* *29*(2), 131-154. https://doi.org/10.1111/j.1467-6486.1992.tb00657.x

Hopkins, Michael (2004) "Corporate social responsibility: an issues paper" Policy Integration Department, Working Paper No. 27 World Commission on the Social Dimension of Globalization International Labor Office Geneva, May 2004, Copyright © International Labour Organization 2004

Ismail, T. N. T. (2011) "Corporate Social Responsibility: The Influence of the Silver Book", International Journal of Business And Management Studies, Vol 3, No 2, 2011, pp. 371-383,

Jensen, M. C., & Meckling, W. H. (1998). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *SSRN Electronic Journal*, 164–231. https://doi.org/10.2139/ssrn.94043

Jeong, J., & Yun Yoo, C. (2011). Deceptive advertising and abnormal stock returns. *International Journal of Advertising*, *30*(3), 509–535. https://doi.org/10.2501/ija-30-3-509-535

Jimena, J. (2008). Stakeholder engagement, the experience of Holcim. *Canadian Mining Journal*, *129*(2), 1–2. https://search-proquest-com.eur.idm.oclc.org/docview/230213174

Khan, M. T., Khan, N. A., Ahmed, S., & Ali, M. (2012). Corporate Social Responsibility (CSR) – Definition, Concepts and Scope (A Review). *Universal Journal of Management and Social Sciences*, *2*(7), 41–53. https://my.uopeople.edu/pluginfile.php/57436/mod_book/chapter/121630/BUS%205115%2 0Unit%208%20CSR%20Definitions%20and%20Concepts.pdf

Kim, J., Chung, S., & Park, C. (2013). Corporate Social Responsibility and Financial Performance: The impact of the MSCI ESG Ratings on Korean Firms. *Journal of the      Korea Academia-Industrial Cooperation Society*, *14*(11), 5586–5593. https://doi.org/10.5762/kais.2013.14.11.5586

Kim, Y., M. Park, and B. Wier. 2012. "Is Earnings Quality Associated with Corporate Social Responsibility?" *Accounting Review, 87*, 761–796.

Kothari, S., & Warner, J. B. (2004). The Econometrics of Event Studies. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.608601

Koestoer, T. T. (2007). Corporate Social Responsibility in Indonesia building internal corporate values to address challenges in CSR implementation. *Center for international private enterprise.* 1-5

Lee, H.Y.; Wu, S.C. (2005) Analysis on information impact and transmission in Taiwan stock market. Fu Jen   Management Review, 12, 71–94.

Li, L., McMurray, A., Xue, J., Liu, Z., & Sy, M. (2018). Industry-wide corporate fraud: The truth behind the Volkswagen scandal. *Journal of Cleaner Production*, *172*, 3167–3175. https://doi.org/10.1016/j.jclepro.2017.11.051

Lindgreen, A., & Swaen, V. (2010). Corporate Social Responsibility. *International Journal of Management Reviews*, *12*(1), 1–7. https://doi.org/10.1111/j.1468-2370.2009.00277.x

Markowitz, H. 1952. "Portfolio Selection." *Journal of Finance, 7* (1), 77–99.

McWilliams, A., & Siegel, D. (1997). The role of money managers in assessing corporate social responsibility research. *Journal of Investing, 6*(4): 98-107

McWilliams, A., & Siegel, D. (2000). Corporate Social responsibility and Financial performance: Correlation or Misspecification? *Strategic Management Journal 21*. 200, 603-609

Miller, J. I. & Guthrie, D. (2007) "The Rise of Corporate Social Responsibility: An Institutional Response to Labor, Legal, and Shareholder Environments", Institutional Determinants of CSR, Stern School of Business, New York University, 40 W. 4th St., 7-22, New York, NY   10012

Milne, M. J., & Gray, R. (2012). W(h)ither Ecology? The Triple Bottom Line, the Global Reporting Initiative, and Corporate Sustainability Reporting. *Journal of Business Ethics*, *118*(1), 13–29. https://doi.org/10.1007/s10551-012-1543-8

MSCI ESG Research. (2020, december). *MSCI ESG RATINGS METHODOLOGY* (Nr. 1). https://www.msci.com/documents/1296102/4769829/MSCI+ESG+Ratings+Methodol ogy+-+Exec+Summary+Dec+2020.pdf/15e36bed-bba2-1038-6fa0-2cf52a0c04d6?t=1608110671584

Muslu, V., Mutlu, S., Radhakrishnan, S., & Tsang, A. (2017). Corporate Social Responsibility Report Narratives and Analyst Forecast Accuracy. *Journal of Business Ethics*, *154*(4), 1119–1142. https://doi.org/10.1007/s10551-016-3429-7

Patten, D.M. (2013), "Lessons from the third wave: a reflection on the rediscovery of corporate social responsibility by the mainstream accounting research community", Financial Reporting, Vol. 2 No. 2, pp. 9-26

Patten, D. M. & Zhao, N. (2014). Standalone CSR reporting by US retail companies. *Accounting Forum, 2*(2), 9-26.

Perold, A. F. (2004). The Capital Asset Pricing Model. *Journal of Economic Perspectives*, *18*(3), 3–24. https://doi.org/10.1257/0895330042162340

Perrini, F. (2005). Building a European portrait of corporate social responsibility reporting. *European Management Journal, 23*(6), 611-627.

Reinhardt, Forest L.; Stavins, Robert N. and Vietor, Richard H.K. (2008) "Corporate Social Responsibility Through an Economic Lens" Resources for the Future, April 2008, RFF - DP 08-12, 1616 P St. NW Washington, DC 20036, 202-328-5000 www.rff.org

Richardson, A.J., Welker, M. (2001). Social disclosure, financial disclosure and the cost of equity capital. *Accounting, Organization and Society. 26*, 597–616.

Roberts, J. (1996). From discipline to dialogue: individualizing and socializing forms of accountability. InR. Munro & J. Mouritsen (eds), Accountability, Power, ethos & technologies of managing. London: International Thomson

Sharma S., Sharma J. and Devi A. (2009) "Corporate Social Responsibility: The Key Role of Human Resource Management", Business Intelligence Journal, January 2009

Sheehy, B. (2015). Defining CSR: Problem and Solutions. *Journal of Business Ethics*, *131*(3), 625–650. https://doi.org/10.1007/s10551-014-2281-x

Simon, H. (1959) Theories of Decision Making in Economics and Behavioural Sciences. *American Economic Review, 69* (2), 273-286

Sriramesh, K., Chew W. N., Soh T. T. & Luo. W. (2007). Corporate Social Responsibility and Public
Relations: Perceptions and Practices in Singapore, July 3 - 5, 2007

Tsoutsoura, M. (2004). Corporate Social Responsibility and Financial Performance, Haas School of
Business

Ullmann, A.A. Data in search of a theory: A critical examination of the relationships among social
performance, social disclosure, and economic performance of U. S. firms. Acad. Manag. Rev.
1985, 10, 540–557.

Waddock, A. W. & Graves, S. B., 1997. The corporate social performance-financial performance link.
*Strategic Management Journal 18*(4): 303-319.

Wood, D. J. & Jones. R. A., 1995. Stakeholder ismatching: a theoretical problem in empirical research
on cororate social performance. *International Journal of Organizational Analysis, 3*:229-267.

Weberman, D., Habermas, J., Lenhardt, C., Nicholsen, S. W., & McCarthy, T. (1992). Moral
Consciousness and Communicative Action. *The Philosophical Review*, *101*(4), 924.
https://doi.org/10.2307/2185962

Yu, L. H., Tseng, S. C., & Liu, C. C. (2017). Market reaction to the mandatory adoption of CSR report:
Evidence from Taiwan. *Review of Account and Audit Studies*, *7*, 1–22.
https://doi.org/10.3390/su12219200

**Appendix 1. Descriptive statistics**

**Table 6: Descriptive statistics for the used variables in the analysis**

Panel A: Descriptive statistics

| Variable | Observations | Mean | Std. Dev. | Median | Min | Max |
|---|---|---|---|---|---|---|
| INT_CSR | 3,983 | 0.192 | 0.394 | 0,000 | 0 | 1 |
| INT_ENVR | 3,983 | 0.029 | 0.170 | 0.000 | 0 | 1 |
| INT_SOCR | 3,983 | 0.114 | 0.318 | 0.000 | 0 | 1 |
| INT_GOVR | 3,983 | 0.101 | 0.301 | 0.000 | 0 | 1 |
| ROA | 22.945 | 0.016 | 0.335 | 0.080 | -13.093 | 2.668 |
| ROE | 22.013 | 0.160 | 36.531 | 0.077 | -293.71 | 5303.745 |
| MTB | 22,261 | 0.799 | 1.152 | 0.596 | 0.001 | 50.151 |
| DIV | 16,087 | 1.282 | 20.673 | 0.117 | -5.988 | 1409.727 |
| CAR1 | 12.573 | 0.001 | 0.153 | 0.0005 | -1.967 | 10.764 |
| CAR3 | 12.574 | -0.004 | 0.463 | -0.001 | -11.915 | 15.596 |
| CAR5 | 12.575 | 0.003 | 0.556 | 0.002 | -9.384 | 15.465 |
| CAR10 | 12.579 | -0.027 | 1.415 | -0.010 | -23.423 | 87.249 |

Panel B. Sample distribution across Industries

| SIC code | | Number of companies |
|---|---|---|
| 1 | Technology | 341 |
| 2 | Consumer service | 137 |
| 3 | Health care | 75 |
| 4 | Financial service | 57 |
| 5 | Industrial service | 55 |
| 6 | Consumer goods | 39 |
| | **Total** | **704** |

Note: Panel A of table 6 contains the descriptive statistics for the used variables in the fixed effect regression models. *INT_CSR* is the dummy variable of the increase in CSR rating, compared to prior year. *INT_ENVR* is the dummy variable of the increase in environmental rating, compared to prior year. *INT_SOCR* is the dummy variable for the increase in social rating, compared to prior year. *INT_GOVR* is the dummy variable for the increase in governance rating, compared to prior year. Furthermore, the control variables are included in table 7. *ROA* is the Return on Assets; how efficient a company uses its assets to generate profit. *ROE* is the Return on Equity, how well a company performance. *MBT* is the Market-to-Book, which captures the valuation of the share. Lastly, *DIV* is the Dividend Payout, percentage of profit paid by the company on each share. The dependent variables are cumulative abnormal stock return for the various estimation windows (*CAR1, CAR3, CAR5 and CAR10*). All the variables provide the number of observations, mean, standard deviation (how much variance the variable contains), median (the middle value of the observations), minimum value and the maximum value. Panel B of table 6 contains the industries, of the NASDAQ, included in the research sample. The research sample, used in the fixed effect model regressions, consist of 704 NASDAQ listed companies, which are spread over 6 of the 10 possible industries included in the NASDAQ index.

## Appendix 2. Correlation matrix

**Table 7: Pairwise correlation of all the used variables**

|  | CAR 1 | CAR 3 | CAR 5 | CAR 10 | INT_ CSR | INT_ ENVR | INT_ SOCR | INT_ GOVR | ROA | ROE | MTB | DIV |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CAR1 | 1.000 | | | | | | | | | | | |
| CAR3 | 0.524*** | 1.000 | | | | | | | | | | |
| CAR5 | 0.454*** | 0.857*** | 1.000 | | | | | | | | | |
| CAR10 | 0.235*** | 0.393*** | 0.443*** | 1.000 | | | | | | | | |
| INT_CSR | -0.065*** | -0.033** | -0.034** | -0.023 | 1.000 | | | | | | | |
| INT_ENVR | -0.002 | 0.008 | -0.010 | -0.007 | 0.249*** | 1.000 | | | | | | |
| INT_SOCR | -0.010 | -0.016 | -0.014 | -0.001 | 0.629*** | -0.021 | 1.000 | | | | | |
| INT_GOVR | -0.065*** | -0.033** | -0.027 | -0.033** | 0.553*** | -0.004 | -0.007 | 1.000 | | | | |
| ROA | 0.010 | 0.004 | 0.006 | 0.038*** | 0.019 | 0.057*** | 0.004 | -0.003 | 1.000 | | | |
| ROE | -0.001 | 0.002 | 0.003 | 0.016 | -0.010 | -0.016 | 0.011 | -0.011 | 0.019*** | 1.000 | | |
| MTB | -0.006 | 0.003 | 0.013 | -0.012 | 0.007 | -0.027 | 0.008 | 0.005 | -0.010 | -0.004 | 1.000 | |
| DIV | -0.044*** | -0.013 | -0.002 | -0.037*** | -0.017 | -0.004 | -0.011 | -0.0145 | 0.001 | -0.001 | 0.00 | 1.000 |

Note: Table 7 contains the pairwise correlation of all variables used in the fixed effect regression model. The dependent variables are cumulative abnormal stock return for the various estimation windows (*CAR1, CAR3, CAR5 and CAR10*). *INT_CSR* is the dummy variable of the increase in CSR rating, compared to prior year. *INT_ENVR* is the dummy variable of the increase in environmental rating, compared to prior year. *INT_SOCR* is the dummy variable for the increase in social rating, compared to prior year. *INT_GOVR* is the dummy variable for the increase in governance rating, compared to prior year. Furthermore, the control variables are included in table 7. *ROA* is the Return on Assets; how efficient a company uses its assets to generate profit. *ROE* is the Return on Equity, how well a company performance. *MBT* is the Market-to-Book, which captures the valuation of the share. Lastly, *DIV* is the Dividend Payout, percentage of profit paid by the company on each share. The correlation coefficient is presented and the * indicates whether it is significant. * $p < 0.1$, ** $p < 0.05$ and *** $p < 0.01$.

**Appendix 3. Variable overview**

**Table 8: Explanation of all the used variables in the various regression models**

| Variable Type | Variable Name | Label | Description | Source |
|---|---|---|---|---|
| **Main variables** | | | | |
| Independent | *INT_CSR* | Total CSR rating | Dummy (1 = unexpected information in the CSR rating by the increase in CSR rating) | MSCI ESG KLD STATS |
| Independent | *INT_ENVR* | Total environmental rating | Dummy (1 = unexpected information in the environmental aspect of the CSR rating by the increase in the environmental aspect of the CSR rating) | MSCI ESG KLD STATS |
| Independent | *INT_SOCR* | Total social rating | Dummy (1 = unexpected information in the social aspect of the CSR rating by the increase in the social aspect of the CSR rating) | MSCI ESG KLD STATS |
| Independent | *INT_GOVR* | Total governance rating | Dummy (1 = unexpected information in the governance aspect of the CSR rating by the increase in the governance aspect of the CSR rating) | MSCI ESG KLD STATS |
| Dependent | *CAR* | Cumulative abnormal stock return | Sum of abnormal stock returns for the estimation window | CRSP |
| **Control variables** | | | | |
| Control | *ROA* | Return on Assets | Net income divided by total assets | CRSP/Compustat |
| Control | *ROE* | Return on Equity | Net income divided by total shareholders' equity | CRSP/Compustat |
| Control | *MTB* | Market-to-Book | Stock price divided by book value per share | CRSP/Compustat |
| Control | *DIV* | Dividend Payout | Total dividend divided by net income | CRSP/Compustat |
| **Fixed effect** | | | | |
| Fixed effect | *COMP* | Company size | Total Assets | Compustat |