

The relationship between the quality of CSR reporting and firm value. What is the role of analysts –Evidence from Europe



Radboud Universiteit Nijmegen

Abstract

Corporate social responsibility has become increasingly popular among firms and stakeholders in the last couple of years. As a result, many firms publish CSR reports to satisfy stakeholder needs. The goal of this thesis is to create a better understanding of the relationship between the quality of CSR reporting and firm value and the effect of analysts in this relationship, using a sample of 65 European companies between 2012 and 2016. Most of the results of this thesis have displayed insignificant and mixed findings. However, evidence has been found for a moderating negative effect for the number of analyst recommendations a firm receives on the relationship between CSR quality and firm value. This indicates that a high quality CSR report is translated to a lower firm value. This study extends current literature on the relationship between the quality of CSR reporting and firm value by examining the role of analysts in this specific relationship. Managers and investors can make use of this research gaining insight in how the portraying of a company through CSR reporting can influence the firm value of a company.

Name:	Jessica van Hoogstraten
Master:	Economics, Corporate Finance & Control
Student number:	s4799755
Supervisor:	D. Reimsbach
Second reader:	G.J.M. Braam
Date:	27-06-2018

Keywords: Firm value, quality of sustainability reporting, Clarkson quality index, analyst recommendations, panel data, moderating effect, mediating effect

Table of contents

1. Introduction	2
2. Literature review and hypotheses development	5
2.1 <i>Influence of the quality of reporting on firm value</i>	7
2.2 <i>Non-financial information and analyst recommendations and forecasting</i>	8
3. Research method	11
3.1 <i>Data collection</i>	11
3.2 <i>Dependent variables</i>	13
3.2.1 Firm value	13
3.3 <i>Independent variables</i>	14
3.3.1 Quality of CSR reporting.....	14
3.3.2 Total score of CSR reporting quality.....	16
3.3.3 Number of analyst recommendations	16
3.3.4 Analyst recommendations (1-5).....	16
3.4 <i>Moderating variable – Interaction effect</i>	16
3.5 <i>Mediating variable – Regression analyses</i>	17
3.6 <i>Control variables</i>	17
3.7 <i>The research models</i>	22
4. Results	25
4.1 <i>Multicollinearity analysis</i>	25
4.2 <i>Hausman-test</i>	28
4.3 <i>Breusch-Pagan Lagrange Multiplier test for random effects</i>	28
4.4 <i>Regression analysis</i>	29
4.4.1 Moderating effect regressions	29
4.4.2 Mediating effect regressions.....	32
5. Discussion and conclusion.....	36
6. Bibliography	39
7. Appendix	46

1. Introduction

The debate about Corporate Social Responsibility (CSR) has been ongoing since the 1950's. While CSR was at first limited to philanthropy (Ismail, 2009) the definition of CSR has been reshaped and reformed into what businesses can do to resolve environmental problems and social problems and take responsibility and providing accountability to all stakeholders for their actions (Lee, 2008; Secchi, 2005).

Nowadays, CSR has become a key factor in the reporting of businesses and prior research has linked the social performance of businesses to their market performance (Crowter & Aras, 2008; Asemah et al., 2013) but the list does not stop there. CSR has been linked to: an improvement in reputation and a company's public image, decreasing operating costs, less regulation from the government, a growing customer base, improved relationships with employees and better access to capital, as well as a stronger relation with stakeholders because of including them in the processes of the business (Asemah, Okpanachi, & Edegoh, 2013).

Apart from the fact that CSR is needed to decrease the production of waste and reduce global warming, it is also seen as an opportunity for businesses to bond with their stakeholders (Ortar, 2015). There has also been an increasing demand for disclosure about company CSR from external stakeholders and investors (Saka & Noda, 2014). Stakeholders are also able to apply market pressure into making firms adapt certain practices (Rosen-Zvi, 2011).

A research by Cone Communications (2017) has shown that "9 out of 10 consumers say they would boycott companies that are being irresponsible" and "more than half of consumers in 10 countries say they have refused to buy a product in the past year because of what they saw as bad corporate behavior" (2017) showing investors are willing to leave companies that do not make environmental and social responsible decisions.

A problem that arises here is: How do investors know everything displayed in a company's CSR report is true and that they have not used greenwashing practices to paint off the company better than it is? (Wehr, 2011). There are a lot of guidelines on how to compose CSR reports and what to disclose in these reports, but these are only guidelines, and not mandatory components of a CSR report (Global reporting, 2016). Firms frequently report disclosing certain information in their CSR reports and end up not disclosing them at all, as found by a sustainability research team from Vienna (Global Reporting, 2013). From this information we can conclude that not all CSR reports are of equal quality.

This thesis will take a look at the quality of corporate sustainability disclosure in relation to firm performance and firm value. Research has already been done about whether and how the quality of CSR reports influences the value of a company, but in this setting mixed results were found. Therefore in this research we will take a look at this 'black box' and examine the role of analysts in this contrast (Luo et al., 2015). Security analysts, as compared to general investors, are experts at obtaining information not available to investors and have more experience when it comes to evaluating CSR information (Ivkovic & Jegadeesh, 2004).

Analysts have confirmed the fact that they pay a lot of attention to CSR when it comes to giving advice to costumers and that it may influence the advice given to the investors (Luo et al., 2015). Therefore we expect a relationship between the quality of CSR reporting and firm value, with an influential role for the analyst in this case.

According to this theory, the following research question is formulated: *"Is there a relationship between the quality of CSR reporting and firm value, and to which extent is this relationship influenced by analysts?"*

To formulate an answer to the research question 65 randomly chosen European firms will be examined, using collected data from the Thomson Reuters Asset 4 data in a 5 year period dating from 2012 to 2016. This dataset covers more than 4,300 listed firms from big European stock markets, and uses more than 250 objective indicators to measure environmental and social performance (Thompson Reuters, 2012). The quality of the CSR reports will be tested by creating a handmade database, looking at each individual CSR report in the Sustainability Disclosure Database of the Global Reporting Initiative and creating dummies for meeting each guideline of Clarkson's CSR quality report guidelines accordingly (Clarkson et al., 2008). To check for the influence of analysts, the I/B/E/S database is used. This database contains data on analyst recommendations and forecasts for listed firms.

To figure out the role of analysts in this matter, we will look at the number of analyst recommendations and the analyst buy or sell recommendation mean for the chosen firms. The number of analyst recommendations will be a moderator in this case, because the forecasts will affect the direction and the strength of the relationship. In the case of a negative recommendation, investors may be less inclined to believe the (quality of the) CSR report, which could make the relationship weaker as well as change the direction from positive to negative, as if with disclosing a lot of information, a company is trying to help itself look better than it really is (Baron & Kenny, 1986).

The analyst buy or sell recommendation mean can be classified as a mediator for our research. This variable shows a value between 1 and 5, of which 1 is “strong sell” and 5 is “strong buy”. If the analyst gives a high recommendation on the scale from 1-5, this means the analyst has a positive opinion about the money-making opportunities of the company and as explained before, analysts include CSR performance in their recommendations. Therefore if an analyst recommends “strong buy”, “strong sell” or “hold” it says something about the relationship between the quality of CSR reporting and firm value.

To test the research question quantitative research will be used. To capture the relation between the quality of CSR reporting, firm value and analysts, a panel data set will be constructed. Panel data in this case is the most fitting manner to test our research question, because we would like to measure multiple entities over a multiple year time period. A period of only one year would not be sufficient, because it will not display any change in firm value over the years.

This study contributes to existing literature by creating a new measure of quality for CSR reports, by adding up all existing classification items for Clarkson’s measure of CSR quality reporting, and creating our own score. Secondly, this research adds to existing literature by looking at the influence of analysts in the relation between CSR reporting quality and firm value. Thirdly, a research on the influence on the quality of CSR reports, has never been performed on an European scale. As practical relevance, general investors will be able to see what the influence is of analysts on firm performance and what kind of influence the analysts advice has on the investors investments.

The remnant of this research is structured as follows. Section two discusses the underlying literature: the agency theory and the theories of voluntary disclosure and legitimacy, the influence of the quality of CSR reporting on the value of a firm and what previous research has found out about the influence of analyst recommendations and analyst forecasting. Section three illustrates the research method. Sections four illustrates the results of this research. Section five illustrates a final discussion and conclusion on the results found and the formed hypotheses.

2. Literature review and hypotheses development

According to many authors who wrote about Corporate Social Responsibility, the agency theory, the voluntary disclosure theory and the legitimacy theory are frequently used to explain the CSR phenomenon (Webb, 2005). These theories all offer different insights as for why firms have become eager to disclosure (non-)financial information to the public. Each theory will be explained and linked to CSR below.

Agency theory defines the relationship between agents (managers) and principles (shareholders). Jensen & Meckling (1976) define the theory as when looking at a firm with a vast amount of equity, the actions of managers will sometimes differ from the goals of shareholders. This difference in goals will sometimes cause the manager to make decisions that benefit his own cause and not those of the shareholder. When this happens, information asymmetry will arise and the agent will end up harming the principle. When an agency problem arises, this results in extra costs for the company.

To add to this Friedman (1970) in his article assumes the initiatives of managers who imbed social responsibility in their plans, are to design them to generate more profit. Agency problems emerge when it is difficult or expensive for the shareholders to determine the agents' operations (Eisenhardt, 1989). Firms move away from shareholder wealth maximization in order to meet the other demands of shareholders to contribute to society. Some managers might overinvest in CSR to satisfy their own goals and still get the reputation of making responsible decisions, at the cost of shareholders (Barnea & Rubin, 2005).

To reduce agency costs and information asymmetry, a company can publish a CSR report. The relationship between the content of CSR reports and information asymmetry has been proven to be negative provided companies that publish sustainability disclosures have smaller bid-ask spreads (Lu & Chueh, 2015) and shareholders display more trust and loyalty for these companies (EY; Boston College Center, 2013). Taking these and other factors in mind, sustainability reporting has been proven to be significant to firm value. Publishing a CSR report can increase the shareholders trust and increase or decrease their loyalty, which can lead to a significant change in firm value when shareholders decide to act towards their beliefs (Kuzey & Uyar, 2016).

When looking at the relationship between the quality of CSR reporting and firm value, we first have to look at previous research on the relationship between sustainability performance and sustainability disclosure. The research about performance and disclosure is mostly based on two theories: the voluntary disclosure theory and the legitimacy theory

(Patten, 2002; Al-Tuwaijri, Christensen, & Hughes, 2004; De Villiers & van Staden, 2006; Cho & Patten, 2007; Clarkson et al, 2008).

When firms have a good environmental performance, they will be more motivated to disclose non-financial information to stay ahead of their competitors. This is the essence of the voluntary disclosure theory (Liu et al, 2017). Legitimacy theory states that environmental disclosure is forced by governmental and social pressure. Firms will display a minimum of non-financial information to hide the fact that they lack in the area of environmental performance (Guidry & Patten, 2012).

Prior research, which has focussed on the relation between the level of environmental disclosure and corporate disclosure, has put forward indefinite results (Al-Tuwaijri, Christensen, & Hughes, 2004; Patten, 2002). Previous studies on this relationship have been mixed. This failure is due to problems in the used research designs (Patten, 2002).

Having a high sustainability performance has been proven to have a positive effect on the firm value of companies (Stekelenburg et al., 2015). In this case the market rewards companies that perform high on corporate social responsibility. This statement is strengthened by the voluntary disclosure theory (Dye, 1985; Verrecchia, 1983) which predicts a positive relation between the level of disclosure and the (environmental) performance of a company.

On the contrary, legitimacy theory, predicts a negative relationship between the level of disclosure and the (environmental) performance of a company (Patten, 2002). These predictions suggest that the level of disclosure is determined by the amount of social and political pressure a company needs to deal with. Companies who perform poorly on environmental performance have extra motivation to disclose more information regarding CSR to change their shareholders views about their company (Clarkson et al, 2008).

Wiseman (1982) in his research came to the same conclusion regarding information disclosure. The Wiseman index he developed focusses on the financial consequences of a bad environmental performance and puts more weight on the quantity of the report. In this case companies who perform bad on environmental activities should actually disclose more information in their CSR report. Greater disclosure is encouraged to reduce the uncertainty of stakeholders, by giving them more insight on future performance and hereby easing their doubts and decreasing estimation risk, and therefore decreasing the cost of equity and increasing firm value (Barry & Brown, 1985; Handa & Linn, 1993; Coles, Loewenstein, & Suay, 1995). Companies with a good sustainability performance disclose non-financial information

voluntarily to show the quality of their performance to a greater public and thus to increase its market value (Clarkson et al., 2008; Hummel and Schlick, 2016). However, it has been shown that “greenwashing”, when companies try to promote the perception that they excel at sustainability performance, does not provide the results companies want to achieve and often ends in consumers boycotting certain products and drops in stock prices (Mustiko Aji, 2014).

Recent research has studied if the voluntary disclosure theory and the legitimacy theory might actually be interdependent of each other. Both Hummel and Schlick (2016) and Clarkson et al. (2008) found evidence that a high sustainability performance leads to high qualitative CSR disclosure. This is in line with the voluntary disclosure theory; the companies with a high sustainability performance will be more motivated to disclose qualitative non-financial information to stay ahead of their competitors

Hummel and Schlick (2016) also conclude that there is a negative relationship between the amount of sustainability disclosure and the quality of this disclosure, showing support for the legitimacy theory as well. This shows that both theories are present in firms at the same time and that we cannot choose one theory and ignore the other. Both theories are complementary to each other. This shows that we need to move our focus on the quality of the sustainability disclosure to find the relationship between firm value, sustainability performance and the level of disclosure instead of exclusively researching the company disclosure.

This paragraph has shown that a superior sustainability performance can have a positive effect on the firm value of a company, but that the motives for the reporting of this performance can differ. The agency theory has made clear managers can prefer realising their own goals over those of their stakeholders. The two theories, voluntary disclosure theory and legitimacy theory, have shown that the relationship between sustainability performance and the level of information disclosure can be positive as well as negative and therefore produce mixed results. Therefore we need to look at another point of interest for determining firm value, namely the quality of the reported information in the CSR report.

2.1 Influence of the quality of reporting on firm value

Previous researchers drew the same conclusion about the inconsistencies in the research between information disclosure and sustainability performance and turned their interest to the quality of the reporting and its effect on firm value. Diamond and Verrecchia (1991) have shown in their research that a lack of information, meaning low quality information, can be

linked to investors filling in the blanks themselves and assuming bad news. The investors assume here the nondisclosed information is most likely deliberately left out. Therefore high-quality firms are motivated to display a lot of information, because that is associated with a lower cost of capital, higher firm value, higher consumer trust and better prices (Bachoo, Tan, & Wilson, 2013).

Contrary to this Plumlee et al. (2010) in their research found a positive relation between reporting quality and cost of equity, when a simple measurement of environmental disclosure is used. This does not follow the estimation risk argument explained in the previous paragraph, which argued that more qualitative information disclosure leads to decreasing doubts of investors. However, when the measure of the quality of the report is split between for example hard and soft disclosures and good and bad news, more qualitative soft disclosure information decreases a company's cost of equity and thus creates an increase in firm value.

The effect of reporting quality on the cost of equity of a company is also measured by Clarkson et al. (2010). Using U.S. firms in their sample, they use an index of quality of discretionary disclosure which measures certain hard and soft disclosures such as governance structure and credibility (hard) and vision and strategy and environmental initiatives (soft). In this research no significant relationship is found between the quality of reporting and the ex-ante cost of equity, including the firms in a controlled environmental performance setting.

Previous literature has found no concluding evidence for a positive or a negative relationship between the quality of CSR reporting and firm value (Clarkson et al., 2010; Plumlee et al., 2010; Bachoo, Tan, & Wilson, 2013). Therefore this thesis follows the predictions of Plumlee et al. (2010) and Clarkson et al. (2010) and predicts that a higher quality of CSR reports eases investors uncertainty and therefore decreases risk and increases firm value accordingly. The following hypothesis is formed:

Hypothesis 1: There is a positive relationship between the quality of CSR reporting and firm value.

2.2 Non-financial information and analyst recommendations and forecasting

As explained earlier in this chapter, a link between the quality of reporting and firm value has been proven, but the results of this link are not always consistent (Clarkson et al, 2010; Plumlee et al, 2010). This means there might be another influence from the outside, which has

not yet been researched. In this thesis the influence of analyst recommendations will be tested as the missing link.

There has been research on the effect of analysts in determining a company's financial and social performance, but not in this specific setting. Luo et al. (2015) measured the role of analysts to analyse the link between corporate social performance and corporate financial performance. Analysts are an important link in this relationship because information about corporate social responsibility which is available to the public is mostly too difficult to understand by general investors and could be interpreted wrong (Fomburn, Gardberg, & Barnett, 2000; Surroca, Tribo, & Waddock, 2010). Analysts on the other hand have access to more CSR information than the general public and have experience in interpreting this information (Ivkovic & Jegadeesh, 2004). Analysts have also confirmed that they pay a lot of attention to CSR when it comes to giving advice to investors (Luo et al., 2015) and that they would increase the stock price premium for companies who are actively socially responsible (CSR Europe, Deloitte, Euronext, 2003).

The influence security analysts have over the decision-making of investors has been researched and confirmed by other research as well (Nichols & Wieland, 2009; Schipper, 1991; Bercel, 1994; Walther, 1997). Investors rely on the expertise of analysts and incorporate their advice in their investment decisions (Kelly et al., 2012). Analyst recommendations may have a moderating effect on the quality of reporting and firm value, because they influence the strength of the relation between these two variables by advising investors.

Lang and Lundholm (1996) found in their research a positive relation between analyst forecasting accuracy and the analyst ratings of firm disclosure, meaning that if the quality of the report is good, the analysts are more likely to do accurate forecasts. Hope (2003) complements this research for a financial information setting by affirming that the quality of financial reporting disclosure has a positive relation to analyst forecast accuracy.

Dhaliwal et al. (2012) researched this effect while focusing on non-financial information and found that the issuing of stand-alone CSR reports is related to a lower forecasting error for analysts. In conclusion; multiple papers confirm that the quality of reporting is important, because this makes the forecasting of analysts more accurate.

Putting the assumptions of previous research together, this thesis expects that analysts will make above average recommendations for a specific firm, if this firm discloses a lot of qualitative non-financial CSR information. This thesis also predicts that more positive

analyst recommendations lead to an increase in the firm value of a company, because investors rely on analysts' advice to buy their stocks. There is also assumed that the number of analyst recommendations act as a moderator between the dependent and the independent variable, assuming that when the quality of the firm's reporting increases, there will be an increase in the number of analyst recommendations. If the number of analyst recommendations is high, more investors will buy the company stock and increase the firm value. The number of analyst recommendations will therefore strengthen the relationship between the quality of reporting and firm value.

The analyst buy or sell recommendation variable can be classified as a mediator for our research. This variable shows a value between 1 and 5, of which 1 is "strong sell" and 5 is "strong buy". If the analyst gives a high recommendation on the scale from 1-5 this means the analyst has a positive opinion about the money-making opportunities of the company and as explained before, analysts include CSR performance in their recommendations. Therefore if a analyst recommends "strong buy", "strong sell" or "hold" it explains a part of the relationship between the quality of CSR reporting and firm value. These predictions lead to the following hypothesis:

Hypothesis 2: The number of analyst recommendations acts as a moderator for quality of CSR reporting and firm value.

Hypothesis 3: The buy or sell analyst recommendations acts as a mediator for quality of CSR reporting and firm value.

3. Research method

3.1 Data collection

The data that is collected to test the hypotheses consists of 65 European firms, which are collected from the Asset 4 database of Thompson Reuters. The firms will be picked randomly to prevent selection bias. This sample will have necessary exclusion for countries that do not have data available or when the data that is given is incomplete. This is the case in general for countries which do not have a lot of inhabitants or countries which are less developed. Based on a lack of information we assume these countries do not publish many CSR reports and are therefore excluded from the sample. The number of companies picked per country, will be based on the weighted calculation of total of companies in the Asset4 database for Europe, resulting on a total of 65 firms, as specified per country in table 1. The data will be collected from 2012 to 2016, resulting in a total of 325 observations. The reason this time frame is chosen, is because it is the most recent CSR data that is available. It also contains the biggest CSR sample thus far, because CSR reporting by firms has been on the rise in last few years (Gilbert, 2015).

This thesis has chosen for a European sample to test the quality of CSR reports, because the European Commission promotes the usage of CSR by European companies, as well as incorporating CSR in European policy making (ec.Europa, 2018). This makes Europe suitable to collect data on the quality of CSR reports, because there are enough reports available from different countries and sources.

To determine the quality of the CSR reports of every individual firm, the index of quality of discretionally disclosure is used, which is constructed in the paper of Clarkson et al. (2008). This quality measure makes a distinction between seven categories; governance structure and manage systems, credibility, environmental performance indicators, environmental spending, vision and strategy, environmental profile and environmental initiatives and these categories are divided in hard disclosures and soft disclosures. The table showing the quality measures in more detail can be found in Appendix 1.

To measure the firm value of the companies Tobin's Q, return on assets (ROA), total shareholder return and market capitalisation will be used. More than one measure is taken, to serve as a robustness check in case one measure does not give us a significant effect. These dependent variables are based on previous research (Ching, Gerab, & Toste, 2017; Braam & Poutsma, 2015; Chung & Pruitt, 1994; Conheady et al, 2015; Matsumura, Prakash, & Vera-

Munoz, 2014). All measures are obtained via the Thompson One Asset 4 database. The number of analyst recommendations and the buy sell analyst recommendation variable are obtained from the I/B/E/S database. These variables cover company data from 2012 until 2016. The control variables, which are: firm size, industry, country, leverage and ROE, are obtained from the Thompson One Asset 4 database. The control variables are based on previous research (Connors & Gao, 2010; Hummel & Schlick, 2016; Dhaliwal et al, 2012; Reddy & Gordon, 2010).

Table 1. The number of European firms per country

Country	Companies
Belgium	2
Denmark	3
Finland	5
France	9
Germany	9
Great Britain	11
Greece	1
Hungary	1
Ireland	1
Italy	4
Luxembourg	1
Netherlands	6
Norway	1
Portugal	2
Spain	3
Sweden	2
Switzerland	3
Turkey	1
Total	65

Table 2. Breakdown of industries in sample

Diversification	Number of companies
Aviation	3
Energy	7
Financial services	8
Food and beverage	4
Manufacturing	11
Media	3
Mining	5
Other	14
Retail	5
Services	2
Telecommunications	3
Total	65

3.2 Dependent variables

3.2.1 Firm value

When picking our dependent variables, it is important to keep in mind that firm performance and value cannot be captured using only a single dependent variable (Snow & Hrebiniak, 1980; Ibrahim, Zolait, & Sundram, 2010; Abu-Shanab, Knight, & Haddad, 2015). Therefore in this research we will make use of multiple dependent variables, so that in case one of the dependent variables does not show any significant relationship, another dependent variable will still be present as a robustness check.

To measure the value of a firm, it is important to make a distinction between market-based measures and accounting based measures and to make use of both, because accounting based information could be manipulated by the firm's management and owners while market based measures can be influenced by external factors over which the firm does not have any influence (Masa'deh et al, 2015). Using both methods will increase the trustworthiness of the data that is used (Ravichandran & Lertwongsatien, 2005).

The market based measures that will be used as a dependent variable are total shareholder return, which is calculated by adding all dividends to the market end year and dividing this by last year's market price -1 multiplied by 100% and market capitalisation, which is calculated by the price per share of a company's common stock multiplied by the number of shares at the end of calendar year t. The accounting based-measures that will be used are

return on assets (ROA), calculated by dividing net income by total assets multiplied by 100% and Tobin's Q, calculated by dividing the total market value of the firm by total asset value. All dependent variables have been used before in previous research (Braam & Poutsma, 2015; Matsumura, Prakash, & Vera-Munoz, 2014; Ching, Gerab, & Toste, 2017; Chung & Pruitt, 1994; Conheady et al, 2015). All formulas to calculate the variables, excluding the Tobin's Q formula which was derived from previous research, have been obtained via the Eikon database.

3.3 Independent variables

3.3.1 Quality of CSR reporting

To measure the quality of the CSR reports in our sample, the index of quality of discretionary disclosure is used, as has been used in the paper of Clarkson et al. (2008). This quality measure makes a distinction between seven categories; governance structure and manage systems, credibility, environmental performance indicators, environmental spending, vision and strategy, environmental profile and environmental initiatives and these categories are divided in hard disclosures and soft disclosures. Every category will be tested in the model by adding dummies for every measure, filling in a zero if the measure is missing and a one if the measure is present in the CSR report. The table which explains the quality measures in detail can be found in Appendix 1. Every category will be shortly explained below.

A1: Governance structure and manage systems

The first category focusses on the structure of the management systems in the firm. This category includes checking if the company has committees for environmental problems, stakeholder involvement in environmental issues and if executive compensation is linked to environmental performance. The first measure therefore measures if the company has their sustainability measures integrated in their everyday decisions.

A2: Credibility

This category focusses on the fulfilment of sustainability guidelines, providing certification on environmental performance and a company's involvement in (voluntary) environmental initiatives. Ergo, how much is the company really involved in sustainability performance and do they have the evidence to prove it. Criteria A2.8 is removed from this category, since this was a criteria that was specifically for US companies.

A3: Environmental performance indicators

This hard disclosure focusses on the actual emission and the environmental efficiency of the company. How much electricity, water, fossil fuels and other resources is the company using, do they handle these resources efficiently and responsibly and what is the impact of said emissions? This category will however be excluded in this research, because this measure is presented on a scale from 1 to 6, and would be a subjective measure if included in this thesis. Furthermore this research focusses on the quality of sustainability reporting and not the environmental performance of the company.

A4: Environmental spending

Category 4 focusses on the actual amount that the firm invests in environmental R&D, technologies and environmental issues and how much (if at all) these investments save the company money. Is spending money in environmental sustainability profitable for the company and do they disclose information about it to the public?

A5: Vision and strategy

This soft disclosures adds more detail to category A1 and measures if the company discloses statements about their environmental policy, values, strategy, goals and vision. Is environmental sustainability integrated in these statements? This category measures if sustainability is present at the very core of the firm.

A6: Environmental profile

For this category we measure if the firms have disclosed any information about their total environmental impact and if they use any environmental guidelines to shape their decision-making and the construction of their (environmental) report.

A7: Environmental initiatives

This soft disclosure measures if the firm does anything extra instead of following the mandatory guidelines such as award internal environmental awards, give donations to sustainable charities or give their employees opportunities to become more knowledgeable about CSR and follow extra employee training.

3.3.2 Total score of CSR reporting quality

The dummies of all categories above (excluding category A3) will be composed into a new score which displays the total quality of CSR disclosure according to Clarkson et al. (2008). Each individual firm will have a score between 0 and 34, of which 0 is seen as a CSR report of the lowest quality and a score of 34 is seen the most qualitative CSR report.

3.3.3 Number of analyst recommendations

The number of analyst recommendations is calculated as the number of recommendations per firm per year in our 5 year sample period. I/B/E/S does not categorize analyst recommendations as positive or negative recommendations, it only shows the number of recommendations per firm.

3.3.4 Analyst recommendations (1-5)

To further test analyst recommendations, another variable is added that is found in the I/B/E/S database. This variable shows a score for recommendations analysts give for shares between 1 and 5 for every company, in which 1 = sell immediately, 2 = sell in the near future, 3 = hold, 4 = buy in the near future and 5 = buy immediately. This gives more insight in the number of analyst recommendations variable named above, because it shows if analysts give the investors a negative or a positive recommendation about the company.

3.4 Moderating variable – Interaction effect

As discussed in previous paragraphs, it is assumed that the number of analyst recommendations has a moderating effect between the quality of CSR reporting and firm value. Therefore we need to include an interaction effect between the total score of reporting quality and the number of analyst recommendations. This interaction effect will show how the total score of reporting quality and analyst recommendations work together to influence the dependent variable “firm value”.

To create this interaction effect, both variables will be centered. With the interaction effect, the coefficients of the main effects of the previous named variables represent their value for the situation in which the other variable has value zero. This will cause a change in the intercept, but the used values of the model will be secured. In figure 1 a visualisation of the moderating effect is shown.

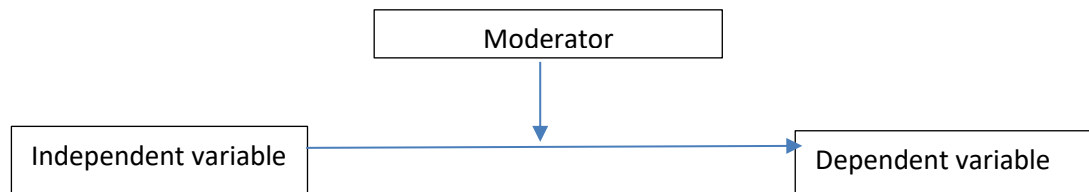


Figure 1: The standard model for a moderating effect

3.5 Mediating variable – Regression analyses

The aim of a mediation analysis is to understand if and to which extent the effect of the quality of CSR reporting on firm value is mediated by the advice of analysts to buy or sell a certain company's share. A visualisation of this mediating effect can be found in figure 2 below. To test for a mediation effect we follow the basic steps for mediation analysis suggested by Baron & Kenny (1986). The mediation analysis consists out of three regression analyses:

1. Quality of CSR reporting -> Firm value
2. Quality of CSR reporting -> Buy/sell recommendation
3. Quality of CSR reporting + Buy/sell recommendation -> Firm value

The research models for these regression analyses can be found in paragraph 3.7.

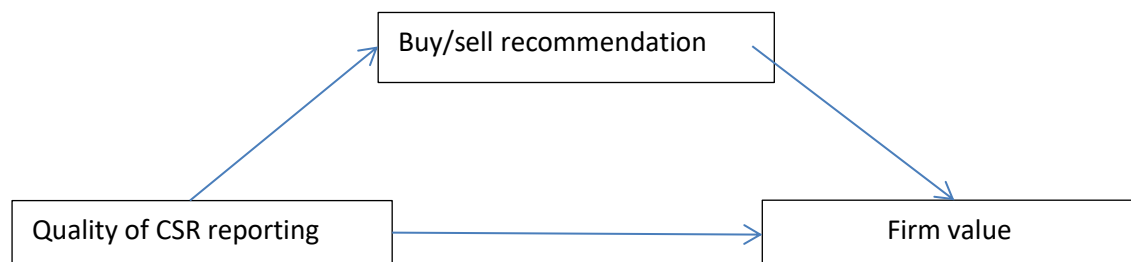


Figure 2: The standard model for a mediation effect

3.6 Control variables

Prior literature on the subject of measuring the influence of the quality of reporting on firm value has brought forward several control variables which are essential to use in our model. The control variables which will be used in our model are: firm size, industry, country, leverage and return on equity as a proxy for firm performance.

Firm size is calculated as a natural logarithm of total assets, as has been done before in previous research (Connors & Gao, 2010). According to legitimacy theory, researchers are “asserting that larger firms are under more public scrutiny, need more legitimacy, have a higher amount of resources and incur lower reporting costs” (2016, p. 29) and therefore firm size should be included as a control variable.

This research also includes leverage as a control variable (Connors & Gao, 2010). The link between CSR reporting and leverage can be connected to the agency theory. CSR has been found to reduce agency costs and highly leveraged companies choose to disclose more information to the public to reduce agency costs and with that, their capital costs (Jensen & Mecklink, 1976). Firms that have a high ratio of debt in their capital structure will need to reserve more money for the monitoring costs they make (Connors & Gao, 2010). Prior research has also indicated that stakeholders demand more disclosure about a firm's activities if a firm holds a fair share of debt capital (Clarkson, Overell, & Chapple, 2011). Leverage is calculated by dividing the total amount of debt by the total capital of the company plus short term and current long term debt.

Industry and country are included as control variables, based on prior research (Hummel & Schlick, 2016; Reddy & Gordon, 2010; Dhaliwal et al, 2012). By adding these dummies, we can differentiate between different countries and sectors, and see if the results might be influenced by some specific or unique country or sector effect.

As a proxy for firm performance return on equity (ROE) will be used, as has been done before in prior research (Farooq, Ahmed, & Saleem, 2015, Akbar, 2014). Return on equity is measured dividing net income by common equity.

Table 3. Definition of all variables

Variable name	Definition
Dependent Variables	
Return on Assets	$\frac{(\text{Net Income} - \text{Bottom Line} + ((\text{Interest expense on Debt-Interest Capitalized}) * (1 - \text{Tax Rate})))}{\text{Average of Last Year's and Current Year's Total Assets}} * 100$
Total Shareholder Return	$\frac{((\text{Market Price Year End} + \text{Dividends Per Share} + \text{Special Dividend-Quarter 1} + \text{Special Dividend-Quarter 2} + \text{Special Dividend-Quarter 3} + \text{Special Dividend-Quarter 4}) / \text{Last Year's Market Price-Year End} - 1) * 100}{}$
Tobin's Q	Total Market Value of Firm / Total Asset Value, in which Total Market Value of Firm has been calculated by multiplying the Share Price of a company by the number of ordinary shares in issue and Total Asset Value represents the

	sum of Total Current Assets, Long Term Receivables, Investments in Unconsolidated Subsidiaries, Net Property, Plant and Equipment and other assets.
Market Capitalisation	The price per share of a company's common stock * the number of shares at the end of calendar year t
Independent Variables	
Total score of CSR reporting quality	34 separate dummy variables as explained in appendix 1 and Clarkson et al. (2008). When condition is applicable, dummy variable is 1. All dummies are added together to create a single Total Quality of CSR Reporting Score.
Number of analyst recommendations	The number of analyst recommendations per firm per year.
Analyst recommendation mean (1-5)	An analyst recommendation score between 1 and 5 for every company, in which for every company 1 = sell immediately, 2 = sell in the near future, 3 = hold, 4 = buy in the near future and 5 = buy immediately.
Control variables	
Firm Size	A natural logarithm of total assets.
Industry	A dummy per industry (industry categories are found in table 2).
Country	A dummy per country (a list of companies per country is found in table 1).
Leverage	$\frac{(\text{Long Term Debt} + \text{Short Term Debt} \& \text{ Current Portion of Long Term Debt})}{(\text{Total Capital} + \text{Short Term Debt} \& \text{ Current Portion of Long Term Debt})} * 100$
Return on Equity	$\frac{(\text{Net income} - \text{Bottom Line} - \text{Preferred Dividend Requirement})}{(\text{Average of Last Year's and Current Year's Common Equity})} * 100$

Table 4. Summary STATA – All variables

Variable name	Observations	Mean	Standard deviation	Min	Max
Number of firms	325	33	18.79059	1	65
Year	325	3	1.416394	2012	2016
Dependent Variables					
Return on Assets	325	4.962246	6.726765	-22.11	45.49
Total Shareholder Return	325	16.38428	37.46775	-94.44	287.38
Tobin's Q	325	1.1998355	1.198355	0.0003253	8.152783
Market Capitalisation	325	46328193	192830772	11954	2320602833
Independent Variables					
Total score of CSR reporting quality	325	16.19077	5.413225	3	29
Number of analyst recommendations	325	22.57231	8.647691	2	42
Analyst recommendation mean (1-5)	325	2.646492	0.4153089	1.56	3.77
Total score of reporting quality*Number of analyst recommendations	325	12.5339	41.87779	-93.89697	258.1738
Independent Variables – Category A1-A7					
A1.1	325	0.5661538	0.4963686	0	1
A1.2	325	0.4830769	0.5004841	0	1
A1.3	325	0.8123077	0.3910684	0	1
A1.4	325	0.2646154	0.4418084	0	1
A1.5	325	0.7384615	0.4401502	0	1
A1.6	325	0.2092308	0.4073867	0	1
A2.1	325	0.8461538	0.3613576	0	1
A2.2	325	0.0461538	0.2101417	0	1
A2.3	325	0.4738462	0.5000855	0	1
A2.4	325	0.0892308	0.2855161	0	1
A2.5	325	0.0615385	0.2406859	0	1
A2.6	325	0.7938462	0.4051661	0	1
A2.7	325	0.0153846	0.1232667	0	1

A2.9	325	0.5784615	0.4945669	0	1
A2.10	325	0.0615385	0.2406859	0	1
A4.1	325	0.1692308	0.3755338	0	1
A4.2	325	0.6492308	0.4779467	0	1
A4.3	325	0.4338462	0.4963686	0	1
A5.1	325	0.7753846	0.4179723	0	1
A5.2	325	0.8430769	0.3642891	0	1
A5.3	325	0.8061538	0.3959194	0	1
A5.4	325	0.7384615	0.4401502	0	1
A5.5	325	0.88	0.3254262	0	1
A5.6	325	0.5846154	0.4935481	0	1
A6.1	325	0.5015385	0.5007686	0	1
A6.2	325	0.2092308	0.4073867	0	1
A6.3	325	0.9230769	0.2668803	0	1
A6.4	325	0.0769231	0.2668803	0	1
A7.1	325	0.4369231	0.4967702	0	1
A7.2	325	0.1015385	0.3025062	0	1
A7.3	325	0.1476923	0.3553418	0	1
A7.4	325	0.5938462	0.4918712	0	1
A7.5	325	0	0	0	0
A7.6	325	0.7261538	0.4466186	0	1
Control variables					
Firm Size (Total assets)	325	16.82609	1.946719	12.18714	23.14875
Industry	325	5.815385	2.843079	1	11
Country	325	7.584615	4.488986	1	18
Leverage	325	42.5396	23.66658	0.02	106.99
Return on Equity	325	20.47135	132.7349	-225.7	1976.85

3.7 The research models

To test the hypotheses that were formed in the hypotheses development, a panel data regression will be used. With panel data, observations of a time series dimension and a cross-sectional dimension can be researched at the same time. Therefore it is possible to conduct research over a period of multiple years, as well as observe the unique differences between companies (Hsiao, 2008). To test the hypotheses formulated for the influence of CSR quality on firm value and to test the moderating effect of the number of analyst recommendations variable, the following panel data model is used:

$$\text{FIRM VALUE}_{i,j,t} = \beta_0 + \beta_1 \text{TOTCLARK}_{i,j,t} + \beta_2 \text{RECOM_MEAN}_{i,t} + \beta_3 \text{NUMREC}_{i,t} + \beta_5 \text{LEVER}_{i,t} + \beta_6 \text{INDUSTRY}_i + \beta_7 \text{COUNTRY}_i + \beta_8 \text{ROE}_i + \beta_9 \text{LNTOT_ASS}_i + \beta_{10} \text{TOTCLARK}_{i,j,t} * \text{NUMREC}_{i,t} + \varepsilon_{i,t}$$

Variable	Description
FIRM VALUE _{i,j,t}	The firm value of individual company i, measured by value indicator j, where j = Total shareholder return (TOT_INV); Tobin's Q (TOBINQ); Return on assets (ROA) or Market capitalisation (MC) measured at time t.
TOTCLARK _{i,j,t}	The total score of the Clarkson et al. (2008) measure of CSR reporting quality, consisting of a dummy for every quality criteria as shown in appendix 1 excluding category A3 and criteria A2.8, which is 1 if the CSR report meets the criteria and 0 if the company report does not meet the criteria.
RECOM_MEAN _{i,t}	Analyst recommendation in between values 1 to 5 for company i at time t, where 1 is sell immediately and 5 is buy immediately.
NUMREC _{i,t}	The number of analyst recommendations of company i at time t.
LEVER _{i,t}	The leverage of company i at time t.
INDUSTRY _i	A dummy variable for the sector of company i.
COUNTRY _i	A dummy variable containing the country for company i.
ROE _{i,t}	The return on equity of company i at time t.
LNTOT_ASSET _{i,t}	Firm size measured by a natural logarithm of company i at time t
TOTCLARK*NUMREC _{i,t}	An interaction effect of company i at time t to measure the moderating effect of the number of recommendations on firm value.

To test the mediating effect formulated in the third hypothesis, a different model will be created.

Regression 1:

$$\text{FIRM VALUE}_{i,j,t} = \beta_0 + \beta_1 \text{TOTCLARK}_{i,j,t} + \varepsilon_{i,t}$$

In the first four regressions we will test if variable β_1 has an effect on our dependent variable, checking each dependant variable separately. If there is no significant association between the total measure of CSR quality and firm value, we can still continue because a theoretical background about why this relationship can exist (explained in the theoretical framework), is also ground for a mediating effect to be present (Bommae, 2016; Shrout & N, 2002).

Regression 2:

$$\text{RECOM_MEAN}_{i,t} = \beta_0 + \beta_1 \text{TOTCLARK}_{i,j,t} + \varepsilon_{i,t}$$

In this single regression we test if β_1 has an effect on our dependent variable, the dependent variable in this case being the buy/sell analyst recommendation variable. In this regression the relationship between the mediating variable and the quality measure is measured. A mediation makes sense only if the total measure of quality affects the buy/sell analyst recommendation variable.

Regression 3:

$$\text{FIRM VALUE}_{i,j,t} = \beta_0 + \beta_1 \text{TOTCLARK}_{i,j,t} + \beta_2 \text{RECOM_MEAN}_{i,t} + \varepsilon_{i,t}$$

In this regression series we test if β_1 is non-significant or smaller than we have seen in the first regression series. If a mediation effect exists, the effect of β_1 on the dependent variable firm value will disappear or weaken when $\beta_2 \text{RECOM_MEAN}$ is included. If this is the case, $\beta_2 \text{RECOM_MEAN}$ acts as a mediating effect between the total quality CSR measure and firm value.

The variables will be tested on multicollinearity by using the variance inflation factors (VIF) (Table 5) and the Pearson correlation model (table 6) and will be tested with a Hausman-test to determine whether fixed effects or random effects is the best option to use our model.

Before performing these tests the total assets variable, which is the control variable for firm size, has been transformed by a logarithmic function, hereby making it normally

distributed. All continuous variables have been controlled at 1% and 99% of the distribution, to prevent outliers in the data influencing the results.

To test the hypotheses, 8 regressions will have to be made to test the moderating effect and 9 regressions to test the mediating effect, in which the dependent variables will be total shareholder value (TOT_INV), Tobin's Q (TOBIN_Q), return on assets (ROA) and market capitalisation. All regressions will be constructed with the total Clarkson quality score. To test the moderating effect, for each dependent variable one regression will contain the interaction effect and one will have the interaction effect left out.

4. Results

4.1 Multicollinearity analysis

The VIF test (table 5) displays multicollinearity between the Clarkson A1-7 variables and the total Clarkson quality variable. This is to be expected because the total quality score is composed out of the A1-7 variables. When the VIF test was run again while leaving out the Clarkson 1-7 variables, all VIF were smaller than 10 and thus no correlation between the variables is present anymore.

The Pearson correlation can be found in table 6. The guideline for Pearson correlations describes a moderate association between variables when the correlation is bigger than 0,5 or smaller than -0,5, and that variables should be omitted with a score higher than 0,8 or smaller than -0,8 (Laerd Statistics, n.d.). The Pearson correlation cannot be used to check the correlation between two dummies (Howitt & Cramer, 2008). Therefore the variables A1-A7 have been left out. Two variables that highly correlate are Tobin's Q and return on assets, but this is not a problem, since separate regressions will be made for every single dependent variable.

Table 5. VIF-test for multicollinearity (including and excluding Clarkson A1-7 variables)

Variable	VIF	1/VIF	Variable	VIF	1/VIF
TOTCLARK	7640.89	0.000131	LEVER	1.77	0.564089
A12	75.07	0.013321	LNTOT_ASSET	1.66	0.604171
A56	72.02	0.013886	TOBIN_Q	1.61	0.620108
A23	70.86	0.013886	MC	1.52	0.656325
A43	70.58	0.014168	NUM_REC	1.29	0.776235
A210	70.53	0.014179	INDUSTRY	1.26	0.793408
A29	69.26	0.014438	ROE	1.18	0.845941
A11	68.13	0.014679	TOTCLARK	1.18	0.846938
A61	65.68	0.015786	TOT_CLARK*NUM_REC	1.11	0.903675
A71	63.35	0.015796	COUNTRY	1.11	0.903675
A42	63.31	0.015796	TOT_INV	1.11	0.903765
A14	57.60	0.017360	RECOM_MEAN	1.04	0.959204
A74	56.95	0.017558			
A54	56.24	0.017780			
A15	55.43	0.018998			
A76	52.64	0.018998			
A53	48.62	0.020568			
A51	48.33	0.020692			
A26	45.96	0.021759			
A13	45.60	0.021930			
A16	44.62	0.022411			
A62	43.95	0.022411			
A21	36.55	0.027357			
A52	36.55	0.027360			
A41	31.00	0.032258			
A73	30.44	0.032258			
A55	30.42	0.032870			
A72	29.55	0.033843			
A25	28.06	0.035633			
A63	23.33	0.042855			
A64	20.27	0.049343			
A24	19.59	0.051058			
A22	16.70	0.059891			
LNTOT_ASSET	4.22	0.236993			
LEVER	2.82	0.355139			
TOBIN_Q	2.78	0.359758			
TOT_CLARK*NUM_REC	2.70	0.370866			
COUNTRY	2.50	0.399464			
NUM_REC	2.43	0.412061			
MC	2.21	0.453508			
INDUSTRY	2.06	0.484454			
ROE	1.75	0.570618			
RECOM_MEAN	1.48	0.674151			
TOT_INV	1.22	0.820624			

Table 6. Pearson correlations. ***, ** and * indicate significance at a 1%, 5% and 10% level. A moderate association (or more) between variables (bigger than 0.5 or smaller than -0.5) has been bolded.

	1	2	3	4	5	6	7	8	9	10	11	12	13
1.ROA	1												
2.TOT_INV	0.2955***	1.											
3.TOBIN_Q	0.8079***	0.1743***	1										
4. MC	-0.0426	0.0640	-0.0616	1									
5. RECOM_MEAN	-0.0751	-0.0232	0.0303	-0.0297	1								
6. NUM_REC	-0.1719***	-0.0336	-0.1842***	-0.0110	0.0012	1							
7. TOTCLARK	-0.1279**	-0.0150	-0.1621***	-0.0279	-0.0408	0.2686***	1						
8. COUNTRY	-0.0284	-0.0742	-0.1118**	0.0509	0.0545	-0.0063	0.0795	1					
9. INDUSTRY	0.3563***	0.1129	0.3082***	-0.1341	0.0498	-0.1102**	-0.1403**	0.0024	1				
10. logTOT_ASSET	-0.3027***	0.0101	-0.4097***	0.4919***	-0.0238	0.3795***	0.1931***	0.2018***	-0.3127***	1			
11. LEVER	-0.4419***	-0.1750***	-0.5242***	0.0436	-0.0049	0.1321**	0.2226***	0.0531	-0.2895***	0.4359***	1		
12. ROE	0.2027***	0.0651	0.0962*	-0.0026	-0.0944*	0.0169	0.1306**	-0.0253	0.1839***	-0.0138	0.1528***	1	
13. TOTCLARK x NUM_REC	-0.0974*	-0.1135**	-0.0611	-0.0215	0.1374**	-0.0737	-0.0235	-0.0968*	-0.0041	0.0633	0.1858***	-0.0614	1

4.2 Hausman-test

Before the regressions are conducted, a Hausman-test is used to decide if a random effects model or a fixed effects model will be the best fit for our data. Some of the variables that are used in our data: country, industry and the Clarkson total quality measure, are time invariant, and would be omitted by STATA when using the fixed effects model. Therefore a random effects model will be used for the panel data regressions.¹

4.3 Breusch-Pagan Lagrange Multiplier test for random effects

The Breusch-Pagan Lagrange Multiplier test is used to decide whether a random effects model or a pooled regression model is the best fit for our data. The null hypothesis in this case is that the variance across companies is zero. This is a requirement for the pooled regression model. The results of this test for all dependent variables is reported in table 7 .

Table 7. Breusch-Pagan Lagrange Multiplier test

Variables	Var	sd = sqrt(Var)	Variables	Var	sd = sqrt(Var)
ROA	45.24936	6.726765	TOT_INV	1403.833	37.46775
e	11.44404	3.382905	e	1240.845	35.22564
u	22.27451	4.719588	u	6.381028	2.52607
chibar2(01) = 245.27			chibar2(01) = 0.0000		
Prob > chibar2 = 0.0000			Prob > chibar2 = 0.4947		
Variables	Var	sd = sqrt(Var)	Variables	Var	sd = sqrt(Var)
TOBIN_Q	1.436056	1.198355	MC	3.72e+16	1.93e+08
e	.1676667	.4094712	e	4.47e+15	6.69e+07
u	.8201255	.9056078	u	2.34e+16	1.53e+08
chibar2(01) = 386.43			chibar2(01) = 424.21		
Prob > chibar2 = 0.0000			Prob > chibar2 = 0.0000		

For return on assets, Tobin's Q and market capitalisation the significance was below 5% and therefore we conclude that random effects is the appropriate model because this test shows there are significant differences between variances of individual companies. As a result, the pooled regression will be biased and will therefore not be useable. The right model to use is therefore the random effects model.

¹ As a robustness check the fixed effects model has been run for all dependent variables (including and excluding the interaction variable). The results of these regressions are not reported for parsimony.

4.4 Regression analysis

4.4.1 Moderating effect regressions

The results of the panel data regression models of firm value on the quality of sustainability reporting and firm value including all variables are reported in table 8.

The first hypothesis predicted a positive relationship between the quality of CSR reporting and firm value. Panel A, B and D show a negative and insignificant result between the quality of sustainability reporting and firm value. Panel C shows a positive but insignificant result between the quality of sustainability reporting and firm value. Due to insignificant results in all panels the first hypothesis is therefore not supported by the produced results.

The second hypothesis predicted the number of analyst recommendations to have a moderating effect between quality of CSR reporting and firm value. Panel A and B describe a positive but insignificant effect for the interaction effect TOTCLARK*NUM_REC and panel C and D describe a negative relationship for the interaction effect. Panel C reports a significance for the interaction effect in the 10% significance ratio. This indicates the number of analyst recommendations variable could have a moderating effect on relationship between the quality of CSR reporting and firm value. Panel A, B and D do not support the hypothesis and therefore the second hypothesis is only partially supported.

Panel A, B and D show a negative and insignificant relation for the buy/sell analyst recommendation variable. Panel C shows a positive but insignificant result for the buy/sell analyst recommendation variable. All panels report negative and insignificant results for the number of analyst recommendations variable.

All panels report negative and significant results for control variable leverage. This can be explained by the fact that a high company leverage can have a negative effect on firm value, because it will get increasingly more difficult for the company to lend more money and to use that money to increase company profitability.

Control variable ROE has positive relationships in all panels and is significant in Panel D with dependent variable return on assets. As a rule of thumb ROE increases when ROA increases, therefore this relationship is to be expected (Saragih, 2018).

Control variable country is significant in panel C, industry is significant in panel B and D and control variable firm size is significant in panel A, B, and C. A reason for this could be that the quality of CSR reporting differs due to different standards and guidelines between countries and industries and how important the reporting of CSR is in certain environments.

Table 8. Panel data regression models of firm value on the quality of sustainability reporting and firm value, number of analyst recommendations, buy or sell analyst recommendations, control variables and years

Panel A: Dependent variable Market capitalisation

$$\text{FIRM VALUE}_{i,j,t} = \beta_0 + \beta_1 \text{TOTCLARK}_{i,j,t} + \beta_2 \text{RECOM_MEAN}_{i,t} + \beta_3 \text{NUMREC}_{i,t} + \beta_5 \text{LEVER}_{i,t} + \beta_6 \text{INDUSTRY}_i + \beta_7 \text{COUNTRY}_i + \beta_8 \text{ROE}_i + \beta_9 \text{LNTOT_ASS}_i + \beta_{10} \text{TOTCLARK}_{i,j,t} * \text{NUMREC}_{i,t} + \varepsilon_{i,t}$$

	A		B	
TOTCLARK	-4629698	(-1.59)	-4584509	(-1.59)
RECOM_MEAN	-4619545	(-0.35)	-4348870	(-0.33)
NUM_REC	-1218338	(-0.81)	-1275090	(-0.85)
LEVER	-1126134**	(-2.51)	-1110836**	(-2.52)
INDUSTRY	-1835756	(-0.25)	-1746725	(-0.24)
COUNTRY	-1781151	(-0.40)	-1862702	(-0.42)
ROE	20340.05	(0.52)	19025.25	(0.622)
logTOT_ASSET	5.49e+07***	(5.13)	5.51e+07***	(5.18)
TOTCLARK*NUM_REC	56380.76	(0.24)		
YEAR	6753800**	(2.33)	6661209**	(2.32)
_Constant	-1.43e+10**	(-2.46)	-1.41e+10**	(-2.45)

***, ** and * indicate significance at a 1%, 5% and 10% level. Significant coefficients are bolded. A indicates the panel includes the interaction effect TOTCLARK*NUM_REC, B indicates the interaction effect has been left out.

Panel B: Dependent variable TOBIN'S Q

$$\text{FIRM VALUE}_{i,j,t} = \beta_0 + \beta_1 \text{TOTCLARK}_{i,j,t} + \beta_2 \text{RECOM_MEAN}_{i,t} + \beta_3 \text{NUMREC}_{i,t} + \beta_5 \text{LEVER}_{i,t} + \beta_6 \text{INDUSTRY}_i + \beta_7 \text{COUNTRY}_i + \beta_8 \text{ROE}_i + \beta_9 \text{LNTOT_ASS}_i + \beta_{10} \text{TOTCLARK}_{i,j,t} * \text{NUMREC}_{i,t} + \varepsilon_{i,t}$$

	A		B	
TOTCLARK	-.019299	(-1.09)	-.0191982	(-1.09)
RECOM_MEAN	-.0782026	(-0.94)	-.0774739	(-0.94)
NUM_REC	-.0051885	(-0.56)	-.0052535	(-0.57)
LEVER	-.0056954**	(-2.06)	-.0057109**	(-2.09)
INDUSTRY	.0763159*	(1.76)	.07633*	(0.077)
COUNTRY	-.0134363	(-0.50)	-.0135468	(-0.51)
ROE	.0003787	(1.56)	.0003771	(1.57)
logTOT_ASSET	-.1415717**	(-2.19)	-.1414256**	(-2.20)
TOTCLARK*NUM_REC	.000096	(0.07)		
YEAR	.075762***	(4.22)	.0756373***	(4.25)
_Constant	-148.6339***	(-4.13)	-148.3846***	(-4.15)

***, ** and * indicate significance at a 1%, 5% and 10% level. Significant coefficients are bolded. A indicates the panel includes the interaction effect TOTCLARK*NUM_REC, B indicates the interaction effect has been left out.

Panel C: Dependent variable Total shareholder return

$$\text{FIRM VALUE}_{i,j,t} = \beta_0 + \beta_1 \text{TOTCLARK}_{i,j,t} + \beta_2 \text{RECOM_MEAN}_{i,t} + \beta_3 \text{NUMREC}_{i,t} + \beta_5 \text{LEVER}_{i,t} + \beta_6 \text{INDUSTRY}_i + \beta_7 \text{COUNTRY}_i + \beta_8 \text{ROE}_i + \beta_9 \text{LNTOT_ASS}_i + \beta_{10} \text{TOTCLARK}_{i,j,t} * \text{NUMREC}_{i,t} + \varepsilon_{i,t}$$

	A		B	
TOTCLARK	.2742356	(0.67)	.2816802	(0.69)
RECOM_MEAN	.5218052	(0.10)	-.7089591	(-0.14)
NUM_REC	-.4029702	(-1.52)	-.3497555	(-1.32)
LEVER	-.3329393***	(-3.24)	-.3694099***	(-3.66)
INDUSTRY	1.24195	(1.56)	1.122662	(1.41)
COUNTRY	-.9538904**	(-2.01)	-0.8391182*	(-1.78)
ROE	.0209694	(1.29)	.0237755	(1.47)
logTOT_ASSET	3.7043***	(2.82)	3.563943***	(2.71)
TOTCLARK*NUM_REC	-.0928371*	(-1.82)		
YEAR	-2.839482**	(-1.98)	-2.733882*	(-1.90)
_Constant	5690.954**	(1.97)	5482.725*	(1.89)

***, ** and * indicate significance at a 1%, 5% and 10% level. Significant coefficients are bolded. A indicates the panel includes the interaction effect TOTCLARK*NUM_REC, B indicates the interaction effect has been left out.

Panel D: Dependent variable ROA

$$\text{FIRM VALUE}_{i,j,t} = \beta_0 + \beta_1 \text{TOTCLARK}_{i,j,t} + \beta_2 \text{RECOM_MEAN}_{i,t} + \beta_3 \text{NUMREC}_{i,t} + \beta_5 \text{LEVER}_{i,t} + \beta_6 \text{INDUSTRY}_i + \beta_7 \text{COUNTRY}_i + \beta_8 \text{ROE}_i + \beta_9 \text{LNTOT_ASS}_i + \beta_{10} \text{TOTCLARK}_{i,j,t} * \text{NUMREC}_{i,t} + \varepsilon_{i,t}$$

	A		B	
TOTCLARK	-.0123514	(-0.12)	-.0144584	(-0.14)
RECOM_MEAN	-.273076	(-0.42)	-.3207301	(-0.49)
NUM_REC	-.0494377	(-0.80)	-.0445416	(-0.72)
LEVER	-.1228025***	(-6.15)	-.1250537***	(-6.36)
INDUSTRY	.4828128**	(2.08)	.4727671**	(2.05)
COUNTRY	-.0116367	(-0.08)	-.0019714	(-0.01)
ROE	.0061785***	(3.19)	.0063778***	(3.32)
logTOT_ASSET	.0288861	(0.08)	.0109306	(0.03)
TOTCLARK*NUM_REC	-.0075252	(-0.72)		
YEAR	.1625308	(1.15)	.1724042	(1.23)
_Constant	-318.3511	(-1.12)	-337.9018	(-1.20)

***, ** and * indicate significance at a 1%, 5% and 10% level. Significant coefficients are bolded. A indicates the panel includes the interaction effect TOTCLARK*NUM_REC, B indicates the interaction effect has been left out.

FIRM VALUE_{i,j,t} = The firm value of individual company i, measured by value indicator j, where j = Total shareholder return (TOT_INV); Tobin's Q (TOBINQ); Return on assets (ROA) or Market capitalisation (MC) measured at time t.

TOTCLARK_{i,j,t} = The total score of the Clarkson et al. (2008) measure of CSR reporting quality, consisting of a dummy for every quality criteria as shown in appendix 1 excluding category A3 and A 2.8, which is 1 if the CSR report meets the criteria and 0 if the company report does not meet the criteria.

RECOM_MEAN_{i,t} = Analyst recommendation in between values 1 to 5 for company i at time t, where 1 is sell immediately and 5 is buy immediately.

NUMREC_{i,t} = The number of analyst recommendations of company i at time t.

LEVER_{i,t} = The leverage of company i at time t.

INDUSTRY_i = A dummy variable for the sector of company i.

COUNTRY_i = A dummy variable containing the country for company i.

ROE_{i,t} = The return on equity of company i at time t.

LNTOT_ASSET_{i,t} = Firm size measured by a natural logarithm of company i at time t

TOTCLARK*NUMREC_{i,t} = An interaction effect of company i at time t to measure the moderating effect of the number of recommendations on firm value.

4.4.2 Mediating effect regressions

To test if the buy/sell analyst recommendation variable has a mediating effect on firm value, a series of regressions will be conducted, as described earlier in paragraph 3.7.

Step 1:

In the first four regressions we will test if variable β_1 has a significant effect on our dependent variable, checking each dependent variable separately. The results for the first step of the regression analyses are reported in the four regressions below. Regression A and B show a significant negative association between the total CSR quality reporting measure and firm value. Regression C and D indicate a nonsignificant negative relationship.

Regression A: Dependent variable Tobin's Q

$$\text{FIRM VALUE}_{i,j,t} = \beta_0 + \beta_1 \text{TOTCLARK}_{i,j,t} + \varepsilon_{i,t}$$

TOTCLARK	-0.0358837***	(-2.95)
_Constant	1.621716***	(7.82)

***, ** and * indicate significance at a 1%, 5% and 10% level. Significant coefficients are bolded.

Regression B: Dependent variable Return on assets

$$\text{FIRM VALUE}_{i,j,t} = \beta_0 + \beta_1 \text{TOTCLARK}_{i,j,t} + \varepsilon_{i,t}$$

TOTCLARK	-.1589932**	(-2.32)
_Constant	7.536469***	(6.44)

***, ** and * indicate significance at a 1%, 5% and 10% level. Significant coefficients are bolded.

Regression C: Dependent variable Total shareholder return

$$\text{FIRM VALUE}_{i,j,t} = \beta_0 + \beta_1 \text{TOTCLARK}_{i,j,t} + \varepsilon_{i,t}$$

TOTCLARK	-.1036062	(-0.27)
_Constant	18.06175***	(2.75)

***, ** and * indicate significance at a 1%, 5% and 10% level. Significant coefficients are bolded.

Regression D: Dependent variable Market Capitalisation

$$\text{FIRM VALUE}_{i,j,t} = \beta_0 + \beta_1 \text{TOTCLARK}_{i,j,t} + \varepsilon_{i,t}$$

TOTCLARK	-992759.6	(-0.50)
_Constant	6.24e+07*	(1.85)

***, ** and * indicate significance at a 1%, 5% and 10% level. Significant coefficients are bolded.

Step 2:

In this single regression we test if β_1 has an effect on the dependent variable, the dependent variable in this case being the possible mediator: the buy/sell analyst recommendation variable. In this regression the relationship between the mediating variable and the quality measure is measured. A mediation makes sense only if the total measure of CSR quality affects the buy/sell analyst recommendation variable. The results of the regression are reported below. The CSR quality measure does not have a significant effect on the buy/sell analyst recommendation variable. A possible explanation for this could be that analysts in this case

based their recommendation on other factors or provided more weight in their advice to other factors than CSR quality.

Regression E: Dependent variable Buy/sell analyst recommendation

$$\text{RECOM_MEAN}_{i,t} = \beta_0 + \beta_1 \text{TOTCLARK}_{i,t} + \varepsilon_{i,t}$$

TOTCLARK	-0.0031264	(-0.73)
_Constant	2.697111***	(37.05)

***, ** and * indicate significance at a 1%, 5% and 10% level. Significant coefficients are bolded.

Step 3:

In this regression series we test if β_1 is non-significant or smaller than we have seen in the first regression series. If a mediation effect exists, the effect of β_1 on the dependent variable firm value will disappear or weaken when $\beta_2 \text{RECOM_MEAN}$ is included. If this is the case, $\beta_2 \text{RECOM_MEAN}$ has a mediating effect between the total quality CSR measure and firm value. The results of the regressions can be found below. In step 1 regression A and B showed a significant association between the total CSR quality reporting measure and firm value. The corresponding regressions including the mediating variable are regression F and G. With the buy/sell analyst recommendation variable included, the total quality of CSR reporting still shows a significant effect on the dependent variables ROA and TOBIN's Q. From this we can conclude that the buy/sell analyst recommendation variable cannot be seen as a mediating variable, because the effect $\beta_1 \text{TOTCLARK}$ has on firm value has not disappeared or been weakened by the inclusion of our predicted mediator. This means that hypothesis 3 is not supported.

Regression F: Dependent variable Tobin's Q

$$\text{FIRM VALUE}_{i,j,t} = \beta_0 + \beta_1 \text{TOTCLARK}_{i,j,t} + \text{RECOM_MEAN}_{i,t} + \varepsilon_{i,t}$$

TOTCLARK	-.0356694***	(-2.93)
RECOM_MEAN	0.0685587	(0.43)
_Constant	1.436805***	(3.02)

***, ** and * indicate significance at a 1%, 5% and 10% level. Significant coefficients are bolded.

Regression G: Dependent variable Return on assets

$$\text{FIRM VALUE}_{i,j,t} = \beta_0 + \beta_1 \text{TOTCLARK}_{i,j,t} + \text{RECOM_MEAN}_{i,t} + \varepsilon_{i,t}$$

TOTCLARK	-.1630665**	(-2.83)
RECOM_MEAN	-1.302846	(-1.46)
_Constant	11.05039***	(4.13)

***, ** and * indicate significance at a 1%, 5% and 10% level. Significant coefficients are bolded.

Regression H: Dependent variable Total shareholder return

$$\text{FIRM VALUE}_{i,j,t} = \beta_0 + \beta_1 \text{TOTCLARK}_{i,j,t} + \text{RECOM_MEAN}_{i,t} + \varepsilon_{i,t}$$

TOTCLARK	-.1103394	(-0.29)
RECOM_MEAN	-2.153671	(-0.43)
_Constant	23.87043	(0.158)

***, ** and * indicate significance at a 1%, 5% and 10% level. Significant coefficients are bolded.

Regression I: Dependent variable Market Capitalisation

$$\text{FIRM VALUE}_{i,j,t} = \beta_0 + \beta_1 \text{TOTCLARK}_{i,j,t} + \text{RECOM_MEAN}_{i,t} + \varepsilon_{i,t}$$

TOTCLARK	-1037660	(-0.52)
RECOM_MEAN	-1.44e+07	(-0.56)
_Constant	1.01e+08	(0.193)

***, ** and * indicate significance at a 1%, 5% and 10% level. Significant coefficients are bolded.

5. Discussion and conclusion

In this thesis, the relationship between the quality of CSR reporting and firm value has been researched and the role of analyst recommendations in this relationship. The data used originates from the period 2012-2016 and covers 65 companies and a total of 325 observations. This thesis aimed to add a new dimension to the mixed results prior research has found in the relationship between the quality of CSR reporting and firm value (Clarkson et al., 2008; Dhaliwal et al., 2012) by adding analyst recommendations as a possible moderating and mediating effect, based on the research of Luo et al. (2015).

The results of this thesis are mostly insignificant relationships, showing no significant results for the quality of CSR reporting measure of Clarkson et al. (2008) in relation to firm value. A small significance was found for the number of analyst recommendations as a moderator between the CSR quality measure and firm value in panel C. This means that it is still possible that the number of analyst recommendations has a moderating effect on firm value. The buy/sell analyst recommendation variable has been disproven to be a mediator, because of a lack of significant results throughout the testing process of the mediator. The lack of significant results in the predicted hypotheses can be explained by a number of reasons.

A reason for this could be the measure of CSR quality that has been chosen to test the relationship with firm value, which was inspired by the paper of Clarkson et al. (2008). To use this measure, environmental performance category A3 and measure A2.8 had to be excluded because of subjectivity and being a US-only applicable measure respectively. Therefore our quality measure as presented by Clarkson et al. was not complete. Another note on the quality measure is that Clarkson et al. was really focussed on certification and hard disclosures, which only a handful of company's mentioned in their CSR reports. Including important contemporary measures such as diversity on the workplace and including integrated reporting could be two examples that would make the quality measure more complete.

The results regarding hypothesis 1 between the quality of CSR reporting and firm value are insignificant and mixed, including both positive and negative relationships. This is in line with previous research, which also failed to find a significant relationship (Clarkson et al., 2010; Plumlee et al., 2010; Bachoo, Tan, & Wilson, 2013; Dhaliwal et al., 2012). The first hypothesis is therefore not supported by the produced results. Previous literature has found several explanations for these findings.

A negative relationship between the quality of sustainability reporting and firm value can be caused by investors mistrusting companies that display a lot of information. This has to

do with the fact that companies who perform poorly on environmental performance are encouraged to disclose more information regarding CSR to change their shareholders views about their company (Clarkson et al, 2008).

A positive relationship can indicate that investors place trust in companies that are transparent in their sustainability disclosure and display a lot of qualitative sustainability information (Diamond & Verrecchia, 1991).

For hypothesis 2, which predicted a moderating effect between the quality of CSR reporting and firm value, a significance in the 10% significance ratio was found for the number of analyst recommendations as a moderating variable in panel C. These results are similar to the results found in Luo et al. (2015) who found this relationship between the corporate performance and future stock return. This means that it is still possible that the number of analyst recommendations has a moderating effect on firm value.

For hypothesis 3 no significant result could be found when testing the effect of the CSR quality measure on the buy/sell analyst recommendation variable. The effect of the CSR quality measure did also not lessen or disappear when including the mediator variable. A possible explanation for this could be that analysts in this case based their recommendation on other factors or provided more weight in their advice to other factors than CSR quality.

A limitation for this thesis could be the sample size. The sample that is used is picked by hand by reading CSR reports from companies and checking them for 34 quality indicators as designed by Clarkson et al. (2008). It is possible that a study on this topic with a larger sample size could yield positive results. Another limitation is the languages in which the CSR reports were written. Some countries have been excluded from the sample because there were not enough CSR reports available or because they were not written in Dutch or English. Further research should be done in a couple of years, when even more companies will write CSR reports, which is still becoming increasingly popular and more required by law (Kani Khan, Moniruzzaman, & Ani Khan, 2013).

Another limitation is the lack of an endogeneity test. The research of Al-Tuwarijri et al (2004) has shown that in previous research, endogeneity has not been handled well in testing the relationship between environmental disclosure and performance and economic performance. Research centered on corporate disclosure is likely to contain a self-selection

bias, because firms that have the biggest disclosure are also likely to have contemporaneous earnings performance (Lang & Lundholm, 1993; Healy & Palepu, 2001).

Further research should include a bigger sample size, more European countries as well as a research team that is able to cover more languages to prevent bias and collect a more diverse CSR report sample. Further research should also focus more on corporate social and environmental performance as is shown in Luo et al. (2015). Including more different factors can help us find the decisive factor for the relationship between the quality of CSR reporting and firm value.

This study has brought forward several implications. Even though the effect was not significant, 3 out of 4 panels showed a negative relationship between the quality of sustainability reporting and firm value. For the company management, this suggests that the voluntary disclosure theory might not work for CSR reports and disclosing too much information might actually have an adverse effect on firm value. The number of analyst recommendations is shown to have a positive as well as a negative effect as a moderating effect between quality of CSR reporting and firm value, with one panel showing a modest significance for a negative effect. This means when the number of analyst recommendations for a company is high, it is likely to have a lower firm value. This can be important for the decision making process of the investors.

The conclusion of this study is that including a high quality standard into a company's CSR report could actually have a disadvantageous result, which is translated in a lower firm value. Perhaps for the future, companies should look over their CSR reporting policies and wonder if CSR reporting is as good for the company profits as is advertised and include less information which is not mandatory to report for CSR reporting standards.

6. Bibliography

- Abu-Shanab, E., Knight, M., & Haddad, M. (2015). Critical succesfactors for ERP-implementation: The case of jordan. *The international Arab Journal of e-Technology*, 4(1), pp. 1-7.
- Akbar, A. (2014). Corpoate Governance and Firm performance evidence from the textile sector of pakistan. *Journal of Asian business strategy*, 200-207.
- Al-Tuwaijri, S., Christensen, T., & Hughes, K. (2004). The relations among environmental disclosure, environmental performance and economic performance: a simultaneous equations approach. *Account. Organ. Soc.*, 29(5-6), 447-471.
- Asemah, E. S., Okpanachi, R. A., & Edegoh, L. O. (2013). Business Advantages of Corporate Social Reponsibility Practice: A Critical Review. *New Media and Mass Communication*, 18, 2224-3275.
- Bachoo, K., Tan, R., & Wilson, M. (2013). Firm value and the quality of sustainability reporting in Australia. *Australian Accounting Review*, 64(23), 67-87.
- Barnea, A., & Rubin, A. (2005). *Corporate social responsibility as a conflict between owners*. Working paper: Simon Fraser University.
- Baron, R., & Kenny, D. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173-1182.
- Barry, C., & Brown, S. (1985). Differential information and security market equilibrium. *Journal of financial and quantitative analysis*, 20(4), 407-422.
- Bercel, A. (1994). Consensus expectations and international equity returns. *Financial analyst journal*, 50, 76-80.
- Bommae, K. (2016, April 18). *Introduction to mediation analysis*. Retrieved from Data library of Virginia: <http://data.library.virginia.edu/introduction-to-mediation-analysis/>
- Braam, G., & Poutsma, E. (2015). Broad-based financial participation plans and their impact on financial performance: evidence from a Dutch longitude panel. *The Economist*, 163(2), pp. 177-202.
- Ching, H. Y., Gerab, F., & Toste, T. H. (2017). *The uality of sustainability repts and corpoarate financial perfomance: evidence from Brazilian Listed Companies*. SAGE Open.
- Cho, C., & Pattern, D. (2007). The role of environmental disclosures as tools of legitimacy: a research note. *Account. Organ. Soc.*, 32(7-8), 639-647.
- Chung, K., & Pruitt, S. (1994). A simple approximalisation of Tobin's Q. *Financial management*, 23(3), pp. 70-74.

- Clarkson, P., Fang, X., Li, Y., & Richardson, G. (2010). *The relevance of environmental disclosures for investors and other stakeholder groups: are such disclosures incrementally informative?* Social science research network.
- Clarkson, P., Li, Y., Richardson, G., & Vasvari, F. (2008). Revisiting the relation between environmental performance and environmental disclosure: an empirical analysis. *Account. Organ. Soc.*, 33(4-5), 303-327.
- Clarkson, P., Overell, M., & Chapple, L. (2011). Environmental reporting and its relation to corporate environmental performance. *Abacus*, 47(1), 27-60.
- Coles, J., Loewenstein, U., & Suay, J. (1995). On equilibrium pricing under parameter uncertainty. *Journal of financial and quantitative analysis*, 30(3), 347-364.
- Cone Communications. (2017, May 5). *2017 Cone Communications CSR Study*. Retrieved Marth 13, 2018, from Conecomm.com: <http://www.conecomm.com/news-blog/2017/5/15/americans-willing-to-buy-or-boycott-companies-based-on-corporate-values-according-to-new-research-by-cone-communications>
- Cone Communications. (2017, May 17). *Americans Willing To Buy Or Boycott Companies Based On Corporate Values, According To New Research By Cone Communications*. Retrieved Marth 13, 2018, from Conecomm.com: <http://www.conecomm.com/news-blog/2017/5/15/americans-willing-to-buy-or-boycott-companies-based-on-corporate-values-according-to-new-research-by-cone-communications>
- Conheady, B., McIlkenny, P., Opong, K., & Pignatel, I. (2015). Board effectiveness and form performance of canadian listed firms. *Br. Account. Rev.*, 47(3), pp. 290-303.
- Connors, E., & Gao, L. (2010). *Corporate Environmental Performance, Disclosure and Leverage: An integrated approach*.
- Crowter, D., & Aras, G. (2008). *Corporate social responsibility*. Ventus Publishing ApS.
- CSR Europe, Deloitte, Euronext. (2003). *Investing in responsible businesses*. Retrieved Marth 20, 2018, from <https://www.cgov.pt/CGOV/images/pdf/ISR-2003.pdf>.
- De Bondt, W., & Thaler, R. (1990). Stock market volatility: Do security analysts overreact? *American Economic Review*, 80(2), 52-57.
- De Vielliers, C., & van Staden, C. (2006). Can less environmental disclosure have a legitimising effect? Evidence from Africa. *Account. Soc. Org.*, 31(8), 763-781.
- Dhaliwal, D. S., Radhakrishnam, S., Tsang, A., & Yang, Y. G. (2012). Non financial disclosure and analyst forecast accuracy: international evidence on corporate social responsibility disclosure. *The accounting review*, 87(3), 732-759.

- Diamond, D., & Verrecchia, R. (1991). Disclosure, liquidity and the cost of capital. *Journal of finance*, 46(4), 689-721.
- Dye, R. (1985). Disclosure of non-proprietary information. *Journal of Accounting research*, 23(2), 123-145.
- ec.Europa. (2018, March 21). *Corporate Social Responsibility (CSR)*. Retrieved March 21, 2018, from ec.Europa: http://ec.europa.eu/growth/industry/corporate-social-responsibility_pl
- Eisenhardt, K. (1989). Agency Theory: An Assessment and Review. *Academy of Management Review*, 57-74.
- EY; Boston College Center. (2013). *Value of sustainability reporting*. Ernst&Young, Boston College Center.
- Farooq, S., Ahmed, S., & Saleem, K. (2015). Overinvestment, growth opportunities and firm performance evidende from Singapore stock market. *Corporate Ownership & Control*, 12(3), 454-467.
- Fomburn, C., Gardberg, N., & Barnett, M. (2000). Opportunity platforms and safety nets: corporate citizenship and reputational risk. *Business and society review*, 105(1), 85-106.
- Friedman, M. (1970, September 13). The social responsibility of business is to increase its profits. *The New York Times magazine*.
- Gilbert, K. (2015, July 28). *CSR Reporting Is on the Rise, and So Is Its Impact*. Retrieved from Institutional Investor: <https://www.institutionalinvestor.com/article/b14z9xbdpk9ypp/csr-reporting-is-on-the-rise-and-so-is-its-impact>
- Global Reporting. (2013, January 10). *Taking responsibility: A discussion about report quality*. Retrieved Marth 13, 2018, from Global Reporting: <https://www.globalreporting.org/information/news-and-press-center/Pages/Taking-responsibility-a-discussion-about-report-quality.aspx>
- Global reporting. (2016, July 1). *G4 sustainability reporting guidelines*. Retrieved Marth 13, 2018, from Globalreporting.org: <https://www.globalreporting.org/information/g4/Pages/default.aspx>
- Guidry, R. P., & Patten, D. M. (2012). Voluntary disclosure theory and financial control variables: an asessment of recent environmental disclosure research. *Accounting forum*, 36, 81-90.
- Handa, P., & Linn, S. (1993). Arbitrage pricing with estimation risk. *Journal of financial and quantitative analysis*, 28(1), 81-100.

- Healy, P., & Palepu, K. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of accounting and economics*, 31, 405-440.
- Hope, O. (2003). Disclosure practices, enforcement of accounting standards, and analysts forecast accuracy. *Journal of accounting research*, 41(May), 235-272.
- Howitt, D., & Cramer, D. (2008). *Introduction to SPSS in Psychology: For version 16 and earlier*. Harlow: Pearson education.
- Hsiao, C. (2008). *Panel Data Analysis — Advantages and Challenges*. Sociedad de Estadística e Investigación Operativa.
- Hummel, K., & Schlick, C. (2016). The relationship between sustainability performance and sustainability disclosure - reconciling voluntary disclosure theory and legitimacy theory. *Journal of accounting and public policy*, 1-22.
- Hunt, A., & Wheeler, B. (2018, March 18). *Brexit: All you need to know about the UK leaving the EU*. Retrieved March 21, 2018, from bbc.com: <http://www.bbc.com/news/uk-politics-32810887>
- Ibrahim, A., Zolait, A., & Sundram, V. (2010). Supply chain management practices and firm performance: An empirical study of the electronics industry in Malaysia. *International Journal of Technology Diffusion*, 1(3), pp. 48-55.
- Ismail, M. (2009). Corporate social responsibility and its role in community development: an international perspective. *The Journal of International Social Research*, 2(9), 199-209.
- Ivkovic, Z., & Jegadeesh, N. (2004). The timing and value of forecast and recommendation revisions. *Journal of financial economics*, 73(3), 1083-1124.
- Ivkovic, Z., & Jegadeesh, N. (2004). The timing and value of forecast and recommendation revisions. *Journal of finance*, 73(3), 1083-1124.
- Jensen, M., & Mecklink, W. (1976). Theory of the firmL managerial behavior, agency costs and ownership structure. *Journal of financial economics*, 305-360.
- Kani Khan, K., Moniruzzaman, M., & Ani Khan, A. (2013). The popularity of Corporate Social Responsibility: A strategic review. *IOSR Journal of Business and Management*, 12(2), 19-24.
- Kelly, K., Low, B. M., Tan, H.-T., Tan, & Seeth-Koh. (2012, September 1). Investors' Reliance on Analysts' Stock Recommendations and Mitigating Mechanisms for Potential Overreliance. *Contemporary Accounting Research*, 9(3), 991-1012.

- Kuzey, C., & Uyar, A. (2016). Determinants of sustainability reporting and its impact on firm value: Evidence from the emerging market of Turkey. *Journal of cleaner production*, pp. 27-39.
- Laerd Statistics. (n.d.). *Pearson Product-Moment Correlation*. Retrieved May 16, 2018, from statistics.laerd.com: <https://statistics.laerd.com/statistical-guides/pearson-correlation-coefficient-statistical-guide.php>
- Lang, M., & Lundholm, R. (1993). Cross-sectional determinants of analyst ratings of corporate disclosures. *Journal of accounting*, 31(2), 2455-3271.
- Lang, M., & Lundholm, R. (1996). Corporate disclosure policy and analyst behavior. *The accounting review*, 71(4), 467-493.
- Lee, M. (2008). Review of the theories of corporate social responsibility: its evolutionary path and the road ahead. *International journal of management reviews*, 10(1), 53-73.
- Liu, Z., Liu, T., McConkey, B., & Li, X. (2017). Empirical analysis on environmental disclosure and environmental performance level of listed steel companies. Evidence from China. *Human and ecological risk assessment: An international journal*, 23(2), 323-339.
- Lu, C.-W., & Chueh, T.-s. (2015). Corporate Social Responsibility and Informaion Assymetry. *Journal of applied finance and banking*, 5(3), pp. 105-122.
- Luo, X., Wang, H., Raithel, S., & Zheng, Q. (2015). Corporate social performance, analyst stock recommendations, and firm future returns. *Strategic Management Journal*, 36(1), 123-136.
- Mahmood, Z., Ahmad, Z., Ali, W., & Ejaz, A. (2017). Does Environmental Disclosure Relate to Environmental Performance? Reconciling Legitimacy Theory and Voluntary Disclosure Theory. *Pakistan Journal of commerce and social sciences*, 11(3), 1134-1152.
- Masa'deh, R., Tayeh, M., Al-Jarrah, I. M., & Tarhini, A. (2015). Accounting vd. Marketbased measures of firm performance related to information technology investments. *International review of sicoal sciences and humanities*, 9(1), pp. 129-145.
- Matsumura, E. M., Prakash, R., & Vera-Munoz, S. C. (2014). Firm-value effects of carbon emissions and carbon disclosures. *The accounting review*, 89(2), 695-724.
- Mustiko Aji, H. (2014). *Green washing and its consequences*.
- Nichols, C., & Wieland, M. (2009). *Do firms' non-financial disclosures enhance the value of analyst services?* Cornell university.
- Ortar, L. (2015). *Climate Change and CSR: Can Voluntarism Pay?* Israel: The corporate Social Responsibility Institute, The college of law and business.

- Parsons, C., & Titman, S. (2008). Capital structure and Corporate Strategy. In *Handbook of corporate finance: Empirical Corporate Finance*. Noord-Holland: Elsevier.
- Patten, D. (2002). The relationship between environmental performance and environment disclosure: a research note. *Account Organ Soc.*, 27(8), 763-773.
- Plumlee, M., Brown, D., Hayes, R., & Marshall, R. (2010). Voluntary environmental disclosure quality and firm value further evidence. *Social science research network*, Working paper.
- Ravichandran, T., & Lertwongsatien, C. (2005). Effect of information system resources and capabilities on firm performance: A resource-based perspective. *Journal of management information systems*, 21(4), pp. 237-276.
- Reddy, K., & Gordon, L. W. (2010, December). The effect of sustainability reporting on financial performance: an empirical study using listed companies. *Journal of Asia entrepreneurship and sustainability*, 6(2), 19-42.
- Rosen-Zvi, I. (2011). You are too soft! WHAT can Corporate Social Responsibility do for Climate Change? *Minnesota Journal of Law, Science & Technology*, 12(2), 527-570.
- Saka, C., & Noda, A. (2014). *The effects of stakeholders on CSR disclosure: evidence from Japan*. Tokyo.
- Saragih, J. L. (2018). The Effects of Return on Assets (ROA), Return on Equity (ROE), and Debt to Equity Ratio (DER) on Stock Returns in Wholesale and Retail Trade Companies Listed in Indonesia Stock Exchange. *Human journals*, 8(3), 348-367.
- Schipper, K. (1991). Commentary on analysts forecasts. *Accounting horizons*, 5, 105-121.
- Secchi, D. (2005). The Italian experience in social reportingL An empirical analysis. *Corporate Social Responsibility and Environmental Management*, 9(4), 347-373.
- Shrout, P., & N, B. (2002, December). Mediation in experimental and nonexperimental studies: new procedures and recommendations. *Pschol Methods*, 7(4), 422-445.
- Snow, C., & Hrebiniak, L. (1980). Strategy, distinctive competence and organizational performance. *Administrative Science Quarterly*, 25, pp. 317-336.
- Statista. (2018). *EU member states: total population in 2017 with a forecast for 2050, by country (in million inhabitants)*. Retrieved Marth 21, 2018, from Statista: <https://www.statista.com/statistics/253383/total-population-of-the-eu-member-states-by-country/>
- Surroca, J., Tribo, J., & Waddock, S. (2010). Corporate responsibility and financial performance: the role of intangible resources. *Strategic management journal*, 31(5), 463-490.

- Thompson Reuters. (2012). *Asset 4 ESG Data*. Retrieved from Thompsonreuters.com:
<https://www.thomsonreuters.com/content/dam/openweb/documents/pdf/tr-com-financial/fact-sheet/esg-data-fact-sheet.pdf>
- Van Stekelenburg, A., Georgakopoulos, G., Sotiropoulou, V., Vasieiou, K. Z., & Vlachos, I. (2015). The relationship between sustainability performance and stock market returns: an empirical analysis of the Dow Jones sustainability index Europe. *International journal of Economics and Finance*, 7(7), 74-88.
- Verrecchia, R. (1983). Discretionary disclosure. *Journal of accounting and economics*, 5, 179-194.
- Walther, B. (1997). Investor sophistication and market earnings expectations. *Journal of accounting research*, 35(2), 157-179.
- Webb, E. (2005). Agency costs, leverage, and corporate social responsibility: a test of causality. *Financial Decisions*, 1-19.
- Wehr, K. (2011). *Green Culture: An A-to-Z guide*. SAGE Publications.
- Williams, C., & Aguilera, R. (2008). Corporate social responsibility in comparative perspective. In A. Crane, A. McWilliams, D. Matten, J. Moon, & D. Siegel, *Oxford handbook of corporate social responsibility* (pp. 452-472). Oxford, UK: Oxford University Press.
- Wiseman, J. (1982). An evaluation of environmental disclosures made in corporate annual reports. *Accounting, organizations and society*, 7(1), 553-563.

7. Appendix

Appendix 1. Environmental disclosure used in Clarkson et al. (2008)

Hard disclosures

(A1) Governance structure and manage systems

1. Existence of a Department for pollution control and/or management positions for environmental management (0-1)
 2. Existence of an environmental and/or public issues committee in the board (0-1)
 3. Existence of terms and conditions applicable to suppliers and/or customers regarding environmental practices (0-1)
 4. Stakeholder involvement in setting corporate environmental policies (0-1)
 5. Implementation of ISO 14001 at the plant and/or firm level (0-1)
 6. Executive compensation is linked to environmental performance (0-1)
-

(A2) Credibility

1. Adoption of GRI sustainability reporting guidelines or proof of a CERES report (0-1)
 2. Independent verification/assurance about environmental information disclosed in the EP report/web (0-1)
 3. Periodic independent verifications/audits on environmental performance and/or systems (0-1)
 4. Certification of environmental programs by independent agencies (0-1)
 5. Product Certification with respect to environmental impact (0-1)
 6. External environmental performance awards and/or inclusion in a sustainability index (0-1)
 7. Stakeholder involvement in the environmental disclosure process (0-1)
 9. Participation in industry specific associations/initiatives to improve environmental practices (0-1)
 10. Participation in other environmental organizations/associations to improve environmental practices (0-1)
-

(A4) Environmental spending

1. Summary of Dollar/Euro savings arising from environmental initiatives for the company (0-1)
 2. Amount spent on technologies, R&D and/or innovations to enhance environmental performance and/or efficiency (0-1)
-

3. Amount spent on fines related to environmental issues (0-1)

Soft disclosures

(A5) Vision and strategy

1. CEO statement on environmental performance in letter to stakeholders and/or shareholders (0-1)
2. A statement of corporate environmental policy, values and principles or environmental codes of conduct (0-1)
3. A statement about formal management systems regarding environmental risk and performance (0-1)
4. A statement that the firm undertakes periodic reviews and evaluations of its environmental performance (0-1)
5. A statement of measureable goals in terms of future environmental performance (0-1)
6. A statement about specific environmental innovations or new technologies (0-1)

(A6) Environmental profile

1. A statement about the firm's compliance (or lack thereof) with specific environmental standards (0-1)
2. An overview of the environmental impact of the industry (0-1)
3. An overview of how the business operations and/or products and services impact the environment (0-1)
4. An overview of corporate performance relative to industry peers (0-1)

(A7) Environmental initiatives

1. A substantive description of employee training in environmental management and operations (0-1)
2. Existence of response plans in case of environmental accidents (0-1)
3. Internal environmental awards (0-1)
4. Internal environmental audits (0-1)
5. Internal certification of environmental programs (0-1)
6. Community involvement and/or donations related to environment (if not awarded under A1.4 or A2.7) (0-1)