Do investors care about the Quality of Sustainability reports? - The Relationship between Sustainability Reporting Quality and Firm Value and the Role of Analysts

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Abstract

This thesis investigates the relationship between the quality of sustainability reporting and firm value and the role of analysts in this relationship. A panel dataset of listed companies during the period 2012-2016, comprising 300 observations is used. The results show that having a higher level of sustainability reporting quality is negatively associated with firm value. However, most of the results regarding this relationship are insignificant and have to be interpreted with care. In addition, the results show that a higher level of analyst coverage has a strengthening effect on the relationship between sustainability reporting quality and firm value. These findings extend the literature on sustainability reporting quality and firm value by integrating the role of analysts in this relationship. This thesis has implications for management and investors as they can use the findings of this thesis in their decision making process.

Keywords Firm value – sustainability reporting quality – analyst coverage – panel study

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1 Introduction

Nowadays the world is threatened by substantial damage to or losses of many natural resources. Such as fisheries, lakes, forests and water resources, as well as significant reductions in biodiversity and the threat of climate change (Ostrom, 2009). For this reason, customers, employees, suppliers, governments and shareholders have emphasized the importance of corporate social responsibility (CSR) (McWilliams, 2000). Since businesses are involved in social and environmental issues, they have to be held accountable for their decisions (Montiel, 2008). Worldwide, consumers and investors make increasingly clear demands on how and to which extend companies have to deal with ecological and social problems (McWilliams & Siegel, 2006). Nine out of ten people are even be willing to boycott an organization that does not take its responsibilities seriously (Cone Communications, 2015). These factors show CSR becomes more important for businesses, consumers and investors.

In an attempt to maintain or restore trust in their performance on sustainability issues, firms disclose sustainability information to provide consumers and investors with information about their corporate sustainability performance (CSP) (Hummel & Schlick, 2016). Sustainability has become a concept that overlaps everything that has to do with social responsibility, environment, ecology and future oriented thinking (Ostrom, 2009). In previous literature two theories explain why to report about sustainability. On the one hand, there is voluntary disclosure theory which argues that a companies with good CSP disclose information to increase their market value (Deegan, 2002). On the other hand, legitimacy theory argues that companies with low a low level of CSP engage in sustainability disclosure to improve the public view of their sustainability performance (Deegan, 2002). In both cases, the goal of the disclosure is to improve the perception of consumers and investors about the firm. This is where a problem arises. When both low performing as high performing firms publish sustainability reports, how is this information perceived by investors and how is this information reflected in firm value? In other words, how can investors make a distinction between low and bad performing firms on the topic of sustainability, when both type of firms provide sustainability reports?

Instead of looking at the quantity of sustainability disclosures, this paper focuses on the quality of sustainability disclosures based on the papers of Hummel and Schlick (2016), Clarkson, Richardson and Vasvari (2008) and Dhaliwal, Radhakrishnan, Tsang and Yang (2012). Firms with a higher level of CSP tend to disclose sustainability reports that are of higher quality. Moreover, firms with a lower level of CSP tend to disclose sustainability reports that are of lower quality (Hummel & Schlick, 2016). Investors do want to punish large profitable firms with a low level of CSP (Lourenço, Branco, Curto & Eugénio, 2012). When we know that better performing firms provide higher quality sustainability reports, and investors do want to punish low performing firms, we should be able to find a relationship between the quality of CSR reporting and firm value. However, former studies never found an association between sustainability

disclosure quality and firm value (Clarkson, Fang, Li, & Richardson, 2013; Dhaliwal et al, 2012).

Despite the presence of information about CSR and the availability of corporate sustainability disclosures of organizations, such information comes in significant amounts and is complex to be understood by general investors (Luo et al., 2015). General investors are not certified as industry experts and are most often constrained by time and resources (Fombrun, Gardberg, & Barnett, 2000; Surroca, Tribo, & Waddock, 2010). This means that not all information that is available for general investors can be incorporated into firm value automatically (Godfrey, Merill, & Hansen, 2009). Security analyst, on the other hand, are experts skilled at obtaining information that is not readily accessible to general investors and are better to evaluate the value relevance of sustainability information (Ivkovic & Jegadeesh, 2004). Analysts do pay a great deal of attention to sustainability performance and factor it into stock recommendations (Luo et al, 2015). Suggesting that general investors are not capable enough to interpret the quality of sustainability disclosures, this study examines the role of analysts in the relationship between CSR and sustainability disclosure quality. To find an association between firm value and the quality of sustainability accounting and to investigate the role of analysts in this association the following research question is formulated: *'To what extent does the quality of sustainability reporting influence firm value and what is the role of analysts in this relationship?'*

To answer the research question 60 Dutch firms are examined during a five year period (2012-2016) leading to 300 company year observations. Data from the Transparency Benchmark and the Sustainability Disclosure Database of the Global Reporting Initiative are used as a measure for the quality of CSR reports. Through a panel data regression, the association between sustainability reporting quality and firm value is examined. In addition the effect of analysts on this relationship is tested. Results of the analysis show significant negative results regarding the association between sustainability reporting quality and firm value. This is inconsistent with the prediction that a higher level of sustainability reporting quality would lead to a higher level of frim value. However, in two out of five analyses it appears that analyst coverage does influence the relationship between the quality of sustainability reporting and firm value. Mixed and insignificant results are found for the association between other proxies of firm value and the quality of sustainability reporting. In addition, insignificant results are found for the effect of analyst coverage on the relationship.

This study contributes to the existing literature in three different ways. First, it fills a gap in the existing literature by investigating the relationship between sustainability reporting quality and firm value. The focus is on firm value as a dependent variable, because this thesis expects that general investors do want to punish firms that do have a low quality of sustainability reporting. Second, this study adds a new dimension to the literature by investigating the role of analysts in this before mentioned relationship. The addition of analyst coverage in this relationship could provide the solution for the mixed and insignificant

results in the previous literature that have been found when testing this particular relationship. Third, this study can provide information for managers, audit committees and shareholders. They can use the information provided in this study for decision making regarding sustainability reporting. This study is also useful for general investors. These investors can base their investment decisions on the information provided about the quality of sustainability reporting and the effect on firm value. They could also obtain advantage from information about the moderating role of analyst leading to better investment decisions.

The remainder of this paper is structured as follows. Section II reviews the related literature and develops the hypotheses. Section III explains the methodology and will focus on the measurement variables of the quality of sustainability disclosure and firm value. Section IV provides results and findings from the regression analyses and robustness checks. Section V concludes the paper.

2 Literature review and hypotheses development

2.1 Disclosure theories

When reviewing the previous empirical studies on the relationship between sustainability performance and sustainability disclosure, the conclusion can be drawn that nearly all of these studies are based on either voluntary disclosure theory or legitimacy theory (Al-Tuwaijri, Christensen & Hughes, 2004; Bewley & Li, 2000; Cho et al., 2012; Cho and Patten, 2007; Clarkson et al., 2008, 2011; De Villiers & van Staden, 2006; Patten, 2002). The voluntary disclosure theory originally referred to the voluntary disclosure of financial information. However, researchers have also applied it to clarify the voluntary disclosure of non-financial information (Bewley & Li, 2000; Clarkson et al., 2008; Li, Richardson, & Thornton, 1997). They argue that a company with superior sustainability performance voluntarily discloses non-financial information to expose the nature of its factual performance and to increase its market value (Clarkson et al., 2008).

Legitimacy theory offers a different theoretical explanation for the voluntary disclosure of non-financial information. Legitimacy is defined as a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions (Suchman, 1995). A firm's legitimacy can be endangered because its performance can be perceived as non-sustainable by stakeholders. When this happens the long-term survival of the firm is at risk (Davis, 1973). This could be due to poor image, customer dissatisfaction, hiring issues, litigation, and stricter regulation, among other factors (Ameer and Othman, 2012; Wood, 1991). The legitimacy theory argues that predominantly poorly performing firms use sustainability disclosure as a legitimation tactic to influence public perceptions regarding their sustainability performance (Deegan 2002; O'Donnovan, 2002; Sethi, 1978).

The voluntary disclosure theory and the legitimacy theory generate partly opposing predictions regarding the relationship between sustainability performance and sustainability disclosure. These opposing predictions are also supported by mixed empirical results from former studies investigating this relationship. Prior literature found a positive (Al-Tuwaijri et al., 2004; Clarkson et al., 2008), a negative (Cho & Patten, 2007; De Villiers & van Staden, 2006) and even a U-shaped non-linear relationship (Li, Zhao, Sun, & Yin, 2016; Trumpp & Guenther, 2015) between sustainability performance and sustainability disclosure.

Recent research questions whether these two theories are complementary (Clarkson et al., 2008; Hummel & Schlick 2016). A positive relationship between environmental performance and environmental disclosure is found by Clarkson et al. (2008), which implies evidence for the voluntary disclosure theory. However, they refer to the legitimacy theory to explain 'interesting patterns in the data'. Focusing on the reporting quality of 14 disclosure items in the environmental and social dimensions of sustainability Hummel & Schlick (2016) found, in accordance with voluntary disclosure theory, that higher sustainability

performance leads to higher quality sustainability disclosure. In addition, Hummel and Slick (2016) also build on legitimacy theory suggesting a negative relationship between sustainability disclosure and low-quality sustainability disclosure. Thus, the paper suggests that the two theories are two sides of the same coin by shifting the focus towards the quality of sustainability disclosure.

2.2 The value relevance of sustainability disclosure quality

Many research has been done on the relationship between sustainability performance and the value relevance of this performance. Hassel, Nilsson & Nyquist (2005) were among the first to investigate the relationship between market value and overall firm performance on sustainability. They found a negative relationship between sustainability performance and firm value. They argue that investors observe that sustainable performance is used for window dressing of book values and financial performance, that investors perceive that sustainable responsible activities are made at the expense of increased profits, and that the market is short-term oriented. This implies that investors do not contemplate long-term sustainability information when making investment decisions (Hassel, Nilsson & Nyquist, 2005). However, Hassel et al. (2005) were not the only researchers to investigate this relationship. Montabon, Sroufe & Narasimhan (2006), for example, found completely different results investigating this relationship. Their findings suggest a significant and positive relationship between sustainability performance and firm performance (Montabon, Sroufe & Narasimhan, 2006). The argumentation they use to explain the positive relationship is based on the 'win-win argument' by Porter (1991). Porter argues that government environmental standards are harmful to the competitiveness of the firm. He concludes that the benefits of environmental management are larger than the costs and tighter regulatory standards will in fact lead to innovation (Porter, 1991). In addition, Jacobs, Singhal & Subramanian (2010), found that although the market does not react significantly to environmental performance in general, for certain sub categories of environmental performance the market does react significantly (Jacobs, Singhal & Subramanian, 2010). These findings could provide an explanation for the contradicting results of Hassel et al. (2005) and Montabon et al. (2006).

The study of Lourenço et al. (2012) provides empirical evidence on how CSP is reflected in the market value of a company. The results show that CSP has significant explanatory power for stock prices. Their findings suggest that what investors really do is punish large profitable firms with a low level of CSP (Lourenço et al., 2012). However, the studies mentioned before in this paragraph do have contradicting outcomes and do only focus on CSP and not so much on sustainability disclosure.

Not taking sustainability disclosure into account could provide an explanation for the contradicting results of the before mentioned studies. As mentioned before, firms disclose information about their performance to influence the perception about their performance. This means that information about CSP is obtained by investors through the sustainability disclosures of those firms (Clarkson et al., 2013). This

would imply that that the investment choices of investors more likely to be based on sustainability disclosures than on real CSP. Therefore, this study focuses on sustainability disclosures rather than on CSP.

It is important for practitioners of sustainability reporting that the usefulness of sustainability disclosures and the source of this usefulness is recognized. Their task is to convince top management that such transparency is worthwhile in terms of increasing firm value (Clarkson et al., 2013). Support for this statement is provided by a quote from a report of the World Business Council for Sustainable Development and UNEP FI: 'Corporate sustainability managers can provide valuable expertise on the materiality of environmental, social and governance (ESG) factors to support the corporate communication processes involving the investment community. The risk of doing nothing could result in long-term value destruction for companies that do not manage material ESG factors responsibly and are consequently unable to reap the rewards of new market opportunities that directly address global sustainability issues' (UNEP FI, 2010, p.10).

The effect of voluntary sustainability disclosures on firm value can arise either from facilitating future financial performance prediction and/or cost of capital reduction. First they can facilitate future financial performance prediction because such disclosures are interpreted as credible by investors and convey information on top of what investors already know about the firms sustainability performance. Second such disclosures can lower the firm's cost of capital by reducing information asymmetry about sustainability performance. This effect can only arise when sustainability disclosures are viewed as credible and transmit incremental information. (Clarkson et al., 2013).

Studying the effect of sustainability disclosures on firm value, instead of the effect of sustainability performance on firm value, would only be relevant if such disclosures are incremental informative over current sustainability performance measures that are available to the public (Clarkson et al., 2013). There are several reasons why sustainability performance may provide incremental information over sustainability performance measures. First, where performance measures cannot reflect a firm's sustainability strategy, sustainability disclosure can provide insights in a firm's sustainability strategy and commitment for future sustainability protection. Second, performance measures are limited in scope, because they do not capture all dimensions of sustainability performance. Third, sustainability disclosures can provide information about a firm's participation in all kind of sustainability initiatives, all of which may lead to future competitive advantages (Clarkson et al., 2013).

Clarkson et al. (2013) and Dhaliwal et al. (2012) have conducted research on the value relevance of sustainability disclosure. Clarkson et al. (2013) found that a proactive sustainability strategy and the signaling of such a strategy to investors can enhance a firm's stock price. Dhaliwal et al. (2012) found that sustainability disclosures are significantly negatively associated with analysts' earnings forecast errors. These findings do imply that sustainability disclosure is value relevant, however, these studies do not

provide evidence for the relationship between sustainability disclosure and firm value which this paper will address.

In short, previous literature did try to find an association between sustainability disclosures and firm value, however, none of the former studies found such an association to exist. This paper tries to find this relationship by adding a new perspective to the debate. This thesis assumes that; (1) a higher quality of sustainability reporting provides more relevant information; (2) a higher level of sustainability reporting quality is positively associated with the level of sustainability performance; (3) Investors do want to punish firms with a low level of sustainability performance. Based on these assumptions this paper expects that an increase in sustainability disclosure quality leads to an increase in firm value, leading to the following hypothesis:

H_1: A higher quality of sustainability disclosure is positively associated with firm value.

2.3 Analyst coverage

As mentioned before, previous research found that sustainability disclosure is relevant in terms of value (Clarkson et al, 2013; Dhaliwal et al., 2012). However, these studies did not find the particular association between sustainability disclosure and firm value. A reason for this lack of association in their findings could be that these studies do not take the role of analysts in this relationship into account.

Despite the presence of information about sustainability performance and the availability of corporate sustainability disclosures of many organizations, such information comes in enormous amounts and is too complex to be directly understood by general investors (Luo et al., 2015). This is due to the fact that most general investors are not certified as industry experts and are regularly constrained by time and resources (Fombrun et al., 2000). This means that not all information that is available for general investors can be incorporated into firm value automatically (Godfrey et al., 2009).

Certified security experts, such as security analysts, are skilled at obtaining information that is not freely available for general investors. This makes them better able to assess the value relevance of sustainability disclosures and the quality thereof (Ivkovic & Jegadeesh, 2004). In addition, analysts invest a great deal of their time to corporate sustainability performance and disclosure, and they do factor this information into stock recommendations (Luo et al., 2015). In this way analyst can reduce the information asymmetry that is existent in the relationship between sustainability disclosures and general investors.

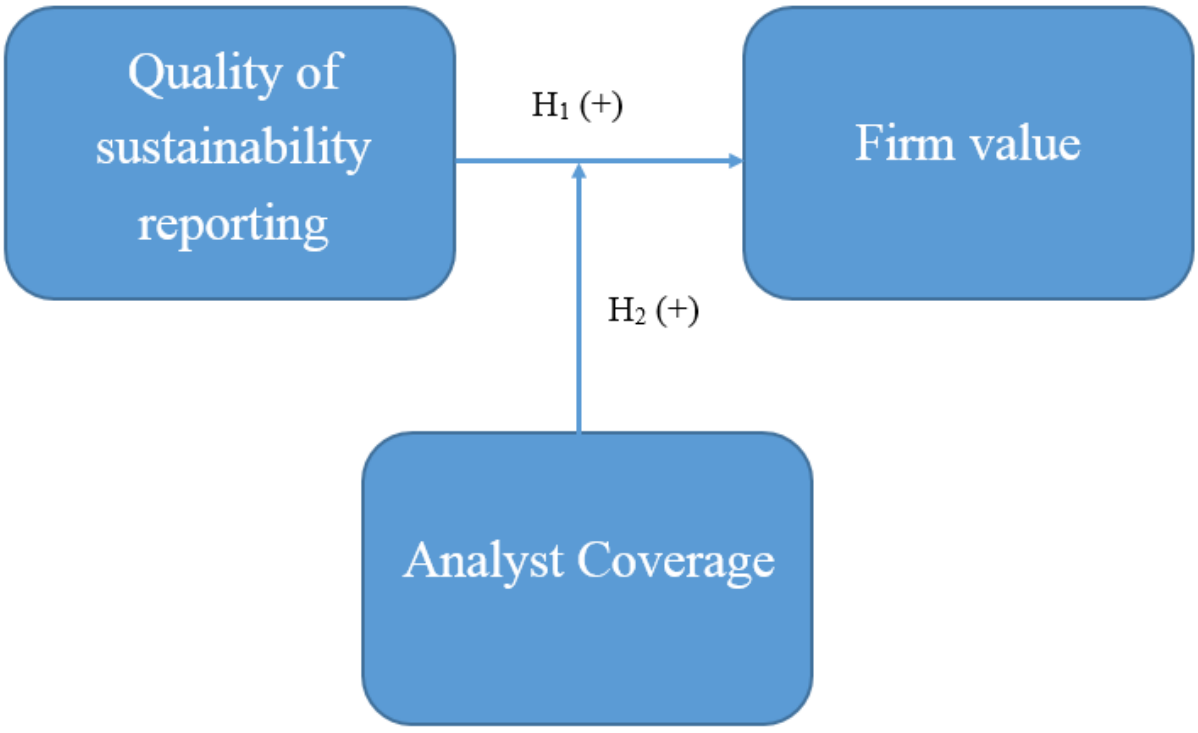
Because investors rely heavily on analyst recommendations (Barber et al., 2001; Womack, 1996), this paper suggests that the relationship between the quality of sustainability disclosure and firm value will be moderated by analyst coverage. This paper suggests that because general investors base their investment decisions on the recommendations of analysts, analysts have to viewed as a moderator in the relationship between sustainability disclosure and firm value. This insight, could provide a potential explanation why

the particular association between sustainability disclosure and firm value has not been found before.

This paper assumes (1) that investors are constrained in time and resources to understand sustainability disclosure directly, and therefore have to deal with a certain level of information asymmetry; (2) that analysts do factor sustainability information into stock recommendations, thereby decreasing the level of information asymmetry; and (3) that investors rely heavily on analysts stock recommendations. Based on these assumptions, this paper expects that an increase in the level of analyst coverage leads to a strengthening effect on the relationship between sustainability disclosure quality and firm value, leading to the following hypothesis:

H_2: A higher level of analyst coverage will have a strengthening effect on the relationship between sustainability disclosure and firm value.

2.4 Conceptual model



3 Research method

3.1 Data collection

In order to test the hypotheses, data is gathered from 60 Dutch listed firms, of which information is given in the Sustainability Disclosure Database (SSD) of the Global Reporting Initiative (GRI) or in the Transparency Benchmark (TB). By gathering data that covers a period of 5 years (2012-2016), the dataset contains 300 observations. The choice for Dutch firms is made because the Netherlands is one of the most progressive countries concerned with sustainability issues. This makes the Netherlands a well suited country to measure the influence of sustainability disclosure quality on firm value. The headquarters of both the GRI as the TB are located in the Netherlands (Global Reporting Initiative, 2004; Transparency Benchmark, 2016). The GRI settled in the Netherlands, because it would be the best environment for engaging the network and executing the work plan (Global Reporting Initiative, 2004). In addition, the rank of the Netherlands on the Country Sustainability Ranking is 6th out of 62 companies worldwide in 2016 (RobecoSam AG, 2016). These factors combined make the Netherlands a suitable country for the data collection (RobecoSam AG, 2016). To measure the quality of the sustainability disclosures, data from both the TB as the SSD are used.

This thesis investigated CSR reports from 2012 as starting year to 2016 as final year. This timeframe is chosen because this is the most recent data available. The CSR reports do have an assessment in the TB or the SSD database. To measure firm value this thesis used five different measures, because it is unlikely that all influence of the quality of sustainability disclosure could be captured in one single measure (Braam & Poutsma, 2015). The five measures that are obtained through the databases of Orbis and Thomson One are earnings per share (EPS), Tobin's Q, dividend yield, return on assets (ROA), and price/equity ratio (P/E Ratio), and are based on former literature (Braam & Poutsma, 2015; Villalonga & Amit, 2006; Chong 2007). To measure analyst coverage the i/b/e/s database is used. For every year the average number of analyst recommendations are calculated manually. Further, control variables are obtained through Orbis and Thomson One, and are based on prior literature (Hummel & Schlick 2016; Luo et al., 2015; Dhaliwal et al., 2012)

Table 1 shows the number of company-year observations for every sector. The largest industry group is manufacturing with 115 company-year observations. The second largest industry is Finance, insurance & Real estate including 70 company year observation. The smallest industries are mining and construction with 15 company-year observations. The sector categories are based on Standard Industrial Classification (SIC) codes, which are assigned by the U.S. government to identify the primary business of a company (SIC, n.d).

Number of company-year observations						
Sector	**Total**	**year**				
		2012	2013	2014	2015	2016
Mining	**15**	3	3	3	3	3
Construction	**15**	3	3	3	3	3
Manufacturing	**115**	23	23	23	23	23
Transportation & public utilities	**30**	6	6	6	6	6
Trade	**20**	4	4	4	4	4
Finance, insurance & real estate	**70**	14	14	14	14	14
Services	**35**	7	7	7	7	7
	300	**60**	**60**	**60**	**60**	**60**

Table 1: Summary statistics – Sector (2012-2016)

3.2 Variable measurement

3.2.1 Dependent Variable: Firm value

To measure firm value this thesis used five different measures, because it is unlikely that all influence of the quality of sustainability disclosure could be captured in one single measure (Braam & Poutsma, 2015). The five measures that are obtained through the databases of Orbis and Thomson One are earnings per share (EPS), Tobin's Q, dividend yield, return on assets (ROA), and price/equity ratio (P/E Ratio), and are based on former literature (Braam & Poutsma, 2015; Villalonga & Amit, 2006; Chong 2007). The five measures of firm value can be classified into two groups, which are accounting and market-based performance indicators and market based indicators. The accounting and market-based performance indicators are EPS, Tobin's Q, ROA and PE ratio. The market based indicator that is used is dividend yield. The difference in these measures is that with accounting and market-based performance indicators accounting measures can be more directly influenced by top management and employees, where on the other hand market-based measures are commonly affected by factors outside the direct control of top management and employees (Braam & Poutsma, 2015; Van der Laan et al. 2010).

The first measure earnings per share is calculated as earnings divided by total number of shares outstanding. The second measure is Tobin's Q which is calculated by dividing market capitalization by total assets. The third measure dividend yield is defined as annual dividends per year per share divided by price per share times 100%. The fourth measure ROA is calculated as net income divided by total assets times 100%. The final measure P/E ratio is defined as market value per share divided by earnings per share.

3.2.2 Independent variable: Quality of sustainability reporting

To determine the quality of firms' CSR reports two different measures are used. First, thesis used the score on the TB as an indicator for the quality of CSR reports. The calculation and definition of this score will be elaborated below. Additionally, the quality of CSR reports is measured by the applicability of several

guidelines. These guidelines combined are more extensive as a measure of quality of CSR reporting, involving more social, environmental, and economical aspects, than when only one of these guidelines was used. Dummy variables are developed to indicate whether the guidelines are applicable to the respective CSR report, which is given a score of zero when not applicable, and a score of one when the guidelines are applicable. A compound measure is created that measures the quality of CSR reporting on a more elaborate level.

3.2.2.1 Transparency Benchmark

The TB is performed each year and provides the Ministry of Economic Affairs in the Netherlands insight into the way in which Dutch companies report about their CSR activities. This research is performed on qualitative and quantitative development of corporate social reporting among the largest companies in the Netherlands. To qualify for participation in the Transparency Benchmark, a company has to be AEX or AMX-listed and/or has to be among the 500 largest Dutch companies that are obliged to follow Directive 400 of the Dutch Accounting Standards Board (DASB). Businesses that are not obliged to follow Directive 400 of the DASB can participate on voluntary base (Transparency Benchmark, 2016).

Companies that are part of the regular research group and have an annual report that is publicly accessible are requested to submit a self-assessment. Based on the questionnaire that is included within the self-assessment tool developed by the Ministry of Economic Affairs, the participating companies are able to evaluate themselves on their CSR performance. After the draft scores have been set, companies can comment on the score by using a tool, named e-tool. After this round of commentary, the external audit company will handle the comments and final scores will be determined by the ministry of Economic Affairs. This means that the final score of a company on the TB is the result of the self-assessment, the external auditor's analysis of the response on the questionnaire, and the final scores by the Ministry of Economic Affairs (Transparency Benchmark, 2016).

The final score consists out of 2 parts, the Content-oriented framework of standards and the quality-oriented framework of standards. For both parts a score of 100 can be obtained, which makes the maximum achievable score 200. These parts are divided in eight topics and these topics are under divided in subtopics. The eight topics are for the content-oriented framework of standards: (1) Company and Business model, (2) Policy and Results, and (3) Management approach, and for the quality-oriented framework of standards: (4) Relevance, (5) Clearness, (6) Reliability, (7) Responsiveness, and (8) Coherence. These criteria for the final score on the TB will be illustrated by figure 1.

The TB database consists partly of firms that are being part of the research group, but do have a score of zero on the TB. This score of zero can be due to several reasons. Firstly, reports that are not free of charge and not publicly available get a score of zero. Secondly, the report should be released timely. When the report is not released in time the report will get a score of zero on the TB. This also applies for

firms that have participated on voluntary base in the year before. Lastly, when a Dutch firm is part of a group that reports on group level, but did not mention this in the report of the Dutch entity this firm is rewarded with a score of zero (Ministerie van Economische Zaken, 2016). Because it cannot be known for what reason a firm is rewarded with a score of zero on the TB, firms with a score of zero are left out of the database.

Content-oriented Framework of Standards										**100**
1. Company and Business model	**33**	**2. Policy and Results**							**34**	**3. Management approach**	**33**
1A. Profile and value chain	**10**	2A. Policy and (self-imposed) obligations							**5**	3A. Governance en remuneration	**10**
1B. Proces of value creation	**10**	2B. Objectives							**5**	3B. Steering and Control	**8**
1C. Analysis of the operating context (including risks and opportunities)	**8**	2C. Economic aspects of business practice	**8**	2D. Environmental aspects business practice	**8**	2E. Social aspects of business practice	**8**			3C. Future expectations	**5**
1D. Strategic context	**5**									3D. Reporting criteria	**10**

Quality-oriented Framework of Standards									**100**
4. Relevance	**20**	**5. Clearness**	**20**	**6. Reliability**	**20**	**7. Responsiveness**	**20**	**8. Coherence**	**20**
Materiality	**8**	Clearness	**6**	Accuracy, Completeness and true view	**17**	Focus on stakeholders	**13**	Strategic focus	**5**
Scope and demarcation	**6**	Conciseness	**4**	Prudence	**3**	Contribution to social debate	**2**	Contextual coherence	**6**
Timeliness	**6**	Insightfull	**7**			Audacity	**5**	Integration	**8**
		Accesibility	**3**					Comparability	**3**

Figure 1: Criteria for the final score on the Transparency Benchmark (Ministerie van Economische Zaken, 2017)

3.2.2.2 Sustainability Disclosure Database of the Global Reporting Initiative

GRI is an international independent organization that helps businesses, governments and other organizations understand and communicate the impact of business on critical sustainability issues such as climate change, human rights, corruption and many others. Their vision is to create a future where sustainability is integral to every organization's decision making process. Their mission is to empower

decision makers everywhere, through their sustainability standards and multi-stakeholder network, to take action towards a more sustainable economy and world (Global Reporting Initiative, 2016).

One of the activities of the GRI is managing a large sustainability disclosure database (SSD). This advanced online application is the outcome of years of data collection by GRI. Database profiles give an overview of organizations and their reports, making sustainability information easily and freely accessible to everyone. The SSD also provides information about the quality of CSR reports, giving information about the applicability of general and assurance guidelines (Global Reporting Initiative, 2016). These measures of quality will be elaborated below. All the guidelines together create a more extensive measure of quality CSR disclosure. For every quality measure or guideline a dummy variable is created. CSR reports that are applicable to the guideline will be rewarded with a score of 1, and CSR reports that are not applicable to the guideline will be rewarded with a score of 0. In addition, this thesis will create a combined measure of all guidelines to provide an overall score on the quality of CSR for every CSR report. The guidelines are developed by significant global institutions such as the United Nations, International Organization for Standardization and the International Finance Corporation. In addition, these corporations cooperated to harmonize the international guidelines and the comparability between the different guidelines (Jarvie-Eggart, 2015). The five different CSR reporting guidelines will be elaborated below.

Carbon Disclosure Project (CDP)

The CDP is a reporting system that focuses on environmental issues. The climate Disclosure Standards Board (CDSB) wanted to develop a reporting system that helps to measure and to disclose about Greenhouse Gas Emissions, climate change risk and water strategies. The main focus of this reporting system is on how firms use natural resources and what the impact of this use is on the environment. In addition it helps organizations in decision making and strategy on CSR. In short, the main focus of the CDP is mostly protecting the environment and reducing climate change. In addition, the CDP emphasizes the importance of transparency regarding environmental impact and performance (CDP Worldwide, 2016).

International Finance Corporation (IFC) Performance Standards

The IFC is a member of the World Bank Group and is the largest global development institution that is focused exclusively on the private sector in developing countries. The IFC evaluates their clients' environmental, social and governance practices. The IFC evaluates those responsibilities according to their sustainability framework, which includes the Performance Standards (IFC, 2016)

OECD Guidelines

The OECD Guidelines for Multinational Enterprises are recommendations that are addressed by governments to multinational firms operating in adhering countries. These guidelines provide non-binding

principles and standards for responsible business conduct in a global context consistent with applicable laws and internationally recognized standards. The Guidelines aim to encourage positive contributions by firms to economic, environmental and social progress worldwide (OECD, 2011).

United Nations Global Compact (UNGC)

The UNGC aims to mobilize a global movement of sustainable firms and stakeholders to create a more sustainable world. To make this happen the UNGC supports companies to do business responsibly by aligning their strategies and operations with ten principles on human rights, labor, environment and anti-corruption. In addition they support firms to take strategic action to improve broader societal goals, such as the UNGC goals, with an accent on collaboration and innovation. Companies can join the UNGC and once they are member of the UNGC they have to act according to their principles. In addition, firms need to describe through their strategy and vision how they will implement the principles in their business, but also how they support other UN goals (UNGC, 2017).

International Organization for Standardization (ISO)

The ISO 26000 is an international guideline for the implementation of sustainable entrepreneurship in an organization. It provides firms with a normative framework to determine their own social responsibilities and comes with advices regarding the structural implementation of CSR policy. The ISO 26000 provides guidance on how businesses and organizations can operate in a socially responsible way. This includes acting in an ethical and transparent way that contributes to the health and welfare of society. The basic idea of the ISO 26000 is that an organization from a basic attitude, together with its environment, decides to work on certain social and environmental topics. The aim is that firms will translate the principles into effective actions for society (ISO, 2010).

Composite measure of CSR reporting guidelines

An additional measure is created to reflect the applicability of all of the before mentioned guidelines. Every company is rewarded with 1 point for every guideline the company is applicable to in a certain year. This means that the score on the composite measure for every company can range from 0 to 5 in a certain year.

Table 2 shows the summary statistics of all variables used in the analysis. In this table it can be seen that UNGC is with 57% the most applicable guideline in the sustainability reports used in the analysis. The other largely applied guideline is CDP with 41%. The least applicable guideline with 5% is IFC.

3.2.3 Independent variable: Interaction effects

To measure analyst coverage the i/b/e/s database is used. For every year the average number of analyst recommendations are calculated manually. The variables in the interaction effects TB*AC and COMP*AC are centered before creating the interaction effect. This results in shifting the scale over, but the units are retained. The effect of this centering is that the interaction effect and the dependent variable will remain the same. However, the interpretation of the incept does change. The intercept will now define the pure intercept for the interaction effect when all predictors do have the value of zero.

3.2.4 Control variables

Based on former literature, five control variables which are associated with firm value are included in the model. (Braam & Poutsma, 2015; Hummel & Schlick, 2016; Dhaliwal et al., 2012; Luo et al., 2015; Chong 2007). The model contains five control variables, which are sector, a natural logarithm of total assets, leverage, return on equity and analyst coverage. The sector dummy variable is added to control for sector effects. Organizations are categorized based on the categories that are given by the TB. A natural logarithm for assets is used as a proxy for the size of the organization (Braam & Poutsma, 2015). We also include the financial leverage of a company as a proxy for the needs of a company's creditors. Financial leverage is measured as a firm's average total assets divided by the firm's average total equity (Hummel & Schlick). It is rational to assume that the monitoring demand for information by creditors of an organization increases with leverage (Branco & Rodrigues, 2008; Clarkson et al. 2011). In addition, capital structure is claimed to have an effect on firm value. Therefore, it is needed to be controlled for leverage in the model (Masulis, 1983). Because an interaction effect with analyst coverage is included in the model, analyst coverage as a single variable has to be included in the model too. It is reasonable to assume that analyst coverage will have an effect on firm value, because investors will have relatively more access to information about a certain organization (Luo et al., 2015). Summary statistics for all variables can be found in table 2.

Variable	observations	mean	Std. Dev.	Min	Max
Number of firms	300	30.5	17.34704	1	60
Year	300	3	1.415675	1	5
Dependent variables: Firm value					
EPS	294	1.650447	3.960587	-11.59	25.76
TOBINSQ	288	.9559568	1.325718	.01	11.96
DIVYIELD	193	3.744093	4.859143	.26	67.26
ROA	298	3.615994	8.05405	-38.93	48.63
PE	237	26.6765	40.63976	.81	503.58
Independent variables: CSR Quality					
CDP	210	.4117647	.4933637	0	1
IFC	210	.0539216	.2264185	0	1
OECD	210	.2696078	.4448477	0	1
UNGC	210	.5735294	.4957805	0	1
ISO	210	.1568627	.364566	0	1
COMP	210	1.465686	1.257019	0	5
TB-SCORE	300	119.0667	53.7825	5	199
TB*AC	300	250.8909	578.1999	-2777.201	1658.149
COMP*AC	210	3.405896	13.32682	-32.53564	51.99913
Control variables					
SECTOR	300	7.766667	3.553599	1	15
Total Assets	300	63450.34	197827.1	.4	1538672
LEVERAGE	300	1.288332	3.274507	27.04167	29.43518
ROE	300	10.66439	34.00274	-64.29	512.62
AC	300	15.54677	10.68343	1	41

Table 2: Summary statistics – all variables employed in the analysis. See table 4 for detailed descriptions of all variables.

3.3 The research model

To test the hypotheses panel data regression techniques are used. The advantage of such techniques is the incorporation of both the cross-sectional information reflected in the differences between the companies, and in addition the information in the time-series or within-subject information reflected in changes with companies that occur over time (Wooldridge, 2002).

To test the hypotheses, the following panel data model is used:

$$FIRM\ VALUE_{i,j,t} = \beta_0 + \beta_1 QCSR_{i,j,t} + \beta_2 \mathrm{QCSR}_{i,j,t} * AC_{i,t} + \beta_3 AC_{i,t} + \beta_4 \mathrm{LNTA}_{i,t} + \beta_5 \mathrm{LEVERAGE}_{i,t} + \beta_6 \mathrm{ROE}_{i,t} + \beta_7 \mathrm{YEAR}_t + \beta_1 \mathrm{FE}_{i,t} + \varepsilon_{i,t}$$

Where, $\mathrm{FIRMVALUE}_{i,j,t}$ = firm value of company i in year t measured by firm value indicator j; with j = Earnings per share (EPS); Tobin's Q (TOBINSQ); Dividend yield (DIVYIELD); Return on assets (ROA); PE ratio (PE). QCSR = Quality of corporate sustainability reporting of company i in year t measured by QCSR indicator j; with $\mathrm{TB\text{-}SCORE}_{i,t}$ = Score on the transparency benchmark of company i in year t variating from 1 to 200; $\mathrm{CDP}_{i,t}$ = dummy variable coded 1 if company i is applicable to CDP guideline in

year t; $IFC_{i,t}$ = dummy variable coded 1 if company i is applicable to IFC guideline in year t; $OECD_{i,t}$ = dummy variable coded 1 if company i is applicable to OECD guideline in year t; $UNGC_{i,t}$ = dummy variable coded 1 if company i is applicable to UNGC guideline in year t; $ISO_{i,t}$ = dummy variable coded 1 if company i is applicable to ISO guideline in year t; $COMP_{i,t}$ = combined measure of five guidelines resulting in a score from 1-5, awarded 1 point for every guideline the company i is applicable to in year t; $AC_{i,t}$ = average analyst coverage for company i in year t; $LNTA_{i,t}$ = company size measured by its natural logarithm of total assets of company i in year t; $LEVERAGE_{i,t}$ = leverage of company i in year t; $ROE_{i,t}$ = return on assets of company i in year t; $YEAR_{i,t}$ = a vector of year dummies; $FE_{i,t}$ = fixed effect of company i in year t with a fixed component that is a function of the firm fixed effect and time, making the model a fixed slope model.

To test the hypotheses we estimate models including both the direct effects of sustainability reporting quality and a different regression including the interaction effects. For every five measures of firm value two regressions have to be performed. One including the only direct effects and one with the interaction effects included. This means 10 different regression analyses will be performed. To compute the interaction terms a centered version of the variables is created. Therefore, the main effect can be interpreted as the average effect. All continuous variables are winsorized at the 1% and 99% percentiles of their distribution. Which prevents the results from being driven by outliers. The assumptions underlying the panel data regression model were tested for multicollinearity based on Person correlations and the variance inflation factors (VIF). VIF were smaller than 3 for each of the independent variables, which can be interpreted that no multicollinearity exists in the model. In addition, additional residual analysis did not reject normality and homoscedasticity. Pearson correlations can be found in table 3. Correlations between measures of sustainability are significant and high. However, this does not cause any problems, because these variables will not be included in the regression simultaneously. A separate regression will be run for every single measure of sustainability reporting quality. The five single dummy variables of GRI standards as a measure of sustainability reporting quality do not correlate in a problematic way. Hence, the five dummy variables can be included into one single regression model without any problems.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 EPS	1																
2 TOBINSQ	0.0916	1															
3 DIVYIELD	0.0653	-0.0135	1														
4 ROA	0.3379***	0.5681***	0.3838***	1													
5 ROE	0.1864***	0.3317***	-0.0020	0.3589***	1												
6 TB-SCORE	-0.0739	-0.1926***	-0.0141	-0.1116	-0.0166	1											
7 CDP	0.1116	-0.1105	-0.1075	-0.0800	0.0126	0.2347***	1										
8 IFC	0.0032	-0.1065	-0.0793	-0.0582	-0.0302	0.1820***	0.2061***	1									
9 OECD	-0.1010	-0.1005	-0.0498	-0.0495	0.0256	0.2696***	0.2661***	0.2529***	1								
10 UNGC	0.0918	-0.0339	-0.1305	-0.0476	0.0292	0.0866	0.2101***	0.1687**	0.3105***	1							
11 ISO	-0.0160	-0.1005	-0.0710	-0.1070	0.0701	0.1740**	0.1767**	0.2571***	0.2962***	0.0886	1						
12 COMPOSITE	0.0418	-0.1390 **	-0.1457**	-0.1080	0.0401	0.3025***	**0.6540***	**0.4878***	**0.7068***	**0.6434***	**0.5407***	1					
13 LNTA	0.2688***	-0.2778***	-0.0361	-0.1419**	0.0144	0.4090***	0.2795***	0.3076***	0.2691***	0.2288***	0.0924	0.3744***	1				
14 LEVERAGE	0.0468	-0.1923***	-0.0073	-0.1033	0.0407	-0.2004***	-0.0615	-0.0492	-0.0954	0.0665	-0.0733	-0.0607	0.1008	1			
15 AC	0.2482***	0.0206	0.0169	0.0467	0.1407**	0.4381***	0.2497***	0.0824	0.2803***	0.1563**	-0.0383	0.2611***	**0.7328***	-0.0092	1		
16 TB*AC	-0.2382***	-0.0780	0.0635	-0.0284	0.0078	0.0692	0.0052	0.1157	0.2088***	0.1112	-0.0964	0.1121	-0.0184	-0.0524	0.0915	1	
17 COMP*AC	-0.0563	-0.1147	-0.1456**	0.1243	0.0167	0.0250	0.2927***	0.3704***	0.4179***	0.2942***	0.1504**	0.4863***	0.0659	-0.0225	0.0222	0.1686	1

Table 3: Pearson correlations. *** and ** indicate statistical significance at the 1% and 5% level. Significant values above 0.5 are bold in type. See table 4 for detailed descriptions of all variables.

Variable name	Proxy	Measurement
Dependent variables		
EPS	Firm value	Earnings divided by total number of shares outstanding
TOBINSQ	Firm value	Market capitalization divided by total assets.
DIVYIELD	Firm value	Annual dividends per year per share divided by price per share times 100%
ROA	Firm value	Net income divided by total assets times 100%
PE	Firm value	Market value per share divided by earnings per share
Independent variable		
TB-SCORE	Sustainability reporting quality	Score on Transparency benchmark ranging from 1-200.
CDP	Sustainability reporting quality	Dummy variable rewarded with a score of 1 when applicable to CDP guideline.
IFC	Sustainability reporting quality	Dummy variable rewarded with a score of 1 when applicable to IFC guideline.
OECD	Sustainability reporting quality	Dummy variable rewarded with a score of 1 when applicable to OECD guideline.
UNGC	Sustainability reporting quality	Dummy variable rewarded with a score of 1 when applicable to UNGC guideline.
ISO	Sustainability reporting quality	Dummy variable rewarded with a score of 1 when applicable to ISO guideline.
COMPOSITE	Sustainability reporting quality	Compound measure generated by adding up the scores of the dummy variables for Sustainability reporting quality.
Control variables		
SECTOR	Sector	Sector dummy.
LNTA	Firm size	Natural logarithm of total assets
LEVERAGE	Leverage	Firm's average total assets divided by the firm's average total equity.
ROE	Profitability	Net income divided by total assets x 100%.
AC	Analyst coverage	Average Analyst coverage

Table 4. Description and overview of variables

4 Results

The results of the regression analyses for the hypothesized relationships between firm value and sustainability reporting quality, analyst coverage, firm size, year and fixed controls are reported in table 5.

Panel A of table 5 shows significant associations for several measures of sustainability reporting quality on firm value. H_1 predicted a positive association between sustainability disclosure and firm value. However, the associations that are found in panel A of table 5 indicate a negative association between sustainability disclosure and firm value. This finding indicates that companies with a higher level of sustainability disclosure quality are more likely to have a lower level of firm value. In all other panels in table 5 no significant associations between the quality of sustainability reporting and firm value are found. A possible explanation for the negative significant results in panel A could be that investors observe that sustainable reporting and performance is used for window dressing of book values and financial performance. In addition investors could perceive that sustainable responsible activities are being made at the expense of increased profits. And overall the stock market could be more short-term oriented than this thesis expected it to be (Hassel et. al., 2005). The insignificant results for H_1 In panel B-E are in line with the findings of Clarkson et al. (2013), Dhaliwal et al. (2012) and Jacobs et al. (2010). The results indicate that H_1 is not supported. The results indicate that a company with a higher level of sustainability disclosure quality is more likely to have a lower firm value.

H_2 predicts a higher level of analyst coverage will have a strengthening effect on the relationship between sustainability disclosure and firm value. Panel B and D show significant and negative associations for the interaction effect TB*AC and firm value. The score on the transparency benchmark had no significant association with firm value in both panel B and D in the regression model 1 without interaction effect. When testing for the interaction effect in regression model 2 with interaction effect, the interaction effect indicates that there is an association with firm value. This could imply that analysts do have a strengthening effect on the relationship between sustainability reporting quality and firm value. For panel A, C and E such a significant strengthening effect on the relationship cannot be found. This means that H_2 is partially supported.

Analyst coverage has a negative but insignificant association in four out of five regression panels. However, the association between analyst coverage and Tobin's Q in panel B is positive and significant. That would imply that a company with a higher level of analyst coverage is more likely to have a higher level of firm value. Since four out of five regression panels show an insignificant association between analyst coverage and firm value and point in the opposite direction, it does not seem reasonable to assume that a general association can be found. Control variable ROE is positively and significantly associated with EPS and ROA. This makes sense because they are expected to move in the same direction. Other control variables do not have a significant association with firm value.

Panel A: Dependent variable Earnings per share

$$FIRM\ VALUE_{i,j,t} = \beta_0 + \beta_1 QCSR_{i,j,t} + \beta_2 \mathrm{QCSR}_{i,j,t} * AC_{i,t} + \beta_3 AC_{i,t} + \beta_4 \mathrm{LNTA}_{i,t} + \beta_5 \mathrm{LEVERAGE}_{i,t} + \beta_6 \mathrm{ROE}_{i,t} + \beta_7 \mathrm{YEAR}_t + \beta_1 \mathrm{FE}_{i,t} + \varepsilon_{i,t}$$

	QCSR Indicators				
	TB-SCORE		**Composite measure of GRI Standard**		**Single measure of GRI standards**
	A1	**A2**	**B1**	**B2**	**C1**
N	292	292	203	203	203
Firm indicators[a]	Included	Included	Included	Included	Included
Sector Indicators	Excluded	Excluded	Excluded	Excluded	Excluded
Year indicators[a]	Included	Included	Included	Included	Included
TB-SCORE	-.0027539 (-0.37)	-.0031701 (-0.42)			
CDP					**-1.066176** (-2.22)**
IFC					-.0334015 (-0.03)
OECD					.0059202 (0.01)
UNGC					**-1.09062** (-2.20)**
ISO					-.1705574 (-0.30)
COMPOSITE MEASURE			**-.5706376*** (-2.89)**	**-.4717431** (-2.04)**	
ANALYST COVERAGE		.0394794 (0.51)		.0267512 (0.32)	
TB*AC		-.0003406 (-0.56)			
COMP*AC				-.0165691 (-0.81)	
LNTA	.1728166 (0.75)	.1934806 (0.84)	.043354 (0.15)	(.072123) (0.25)	.0135853 (0.05)
LEVERAGE	-.1584871 (-1.42)	-.165856 (-1.47)	-.1330555 (-1.14)	-.1398627 (-1.18)	-.1469021 (-1.24)
ROE	**.0198865*** (4.72)**	**.0196214*** (4.63)**	**.0191248*** (4.44)**	**.0193785*** (4.44)**	**.0185351*** (4.27)**
INTERCEPT	-.3279287 (-0.15)	-.39484 (-0.18)	1.01544 (0.38)	.546583 (0.20)	1.5571 (0.57

*,** and *** indicate statistical significance at the 10%, 5% and 1% level. 1 = regression model without interaction effects. 2 = regression model with interaction effects. See table 4 for detailed descriptions of all variables. Significant coefficients are in bold type.

[a] Results on firm effects, year effects and fixed effects are not reported for parsimony

Panel B: Dependent variable Tobin's Q

$$FIRM\ VALUE_{i,j,t} = \beta_0 + \beta_1 QCSR_{i,j,t} + \beta_2 \mathrm{QCSR}_{i,j,t} * AC_{i,t} + \beta_3 AC_{i,t} + \beta_4 \mathrm{LNTA}_{i,t} + \beta_5 \mathrm{LEVERAGE}_{i,t} + \beta_6 \mathrm{ROE}_{i,t} + \beta_7 \mathrm{YEAR}_t + \beta_1 \mathrm{FE}_{i,t} + \varepsilon_{i,t}$$

	QCSR Indicators				
	TB-SCORE		**Composite measure of GRI Standard**		**Single measure of GRI standards**
	A1	**A2**	**B1**	**B2**	**C1**
N	292	292	203	203	203
Firm indicators[a]	Included	Included	Included	Included	Included
Sector Indicators	Excluded	Excluded	Excluded	Excluded	Excluded
Year indicators[a]	Included	Included	Included	Included	Included
TB-SCORE	-.007575 (-0.66)	-.0009885 (-0.88)			
CDP					-.0524527 (-0.63)
IFC					.0684913 (0.44)
OECD					-.0556608 (-0.55)
UNGC					.1261081 (1.47)
ISO					-.0022165 (-0.02)
COMPOSITE MEASURE			.006765 (0.20)	.021911 (0.56)	
ANALYST COVERAGE		**.0292213** (2.48)**		**.0336277** (2.36)**	
TB*AC		**-.0002037** (-2.21)**			
COMP*AC				-.0016753 (-0.48)	
LNTA	-.0154414 (-0.43)	-.0016441 (-0.05)	-.0045261 (-0.09)	.0068064 (0.14)	-.0007674 (-0.02)
LEVERAGE	-.0175834 (-1.02)	-.0229842 (-1.35)	-.015456 (-0.77)	-.02311513 (-1.15)	-.0119488 (-0.58)
ROE	**.0011833* (1.81)**	0.001009 (1.56)	.0010995 (1.48)	.0009913 (1.34)	.0011457 (1.53)
INTERCEPT	**.9485043*** (2.81)**	**.8872385*** (2.66)**	.7159733 (1.55)	.4231367 (0.89)	.6452723 (1.38)

*,** and *** indicate statistical significance at the 10%, 5% and 1% level. 1 = regression model without interaction effects. 2 = regression model with interaction effects. See table 4 for detailed descriptions of all variables. Significant coefficients are in bold type.

[a] Results on firm effects, year effects and fixed effects are not reported for parsimony

Panel C: Dependent variable Dividend Yield

$$FIRM\ VALUE_{i,j,t} = \beta_0 + \beta_1 QCSR_{i,j,t} + \beta_2 \mathrm{QCSR}_{i,j,t} * AC_{i,t} + \beta_3 AC_{i,t} + \beta_4 \mathrm{LNTA}_{i,t} + \beta_5 \mathrm{LEVERAGE}_{i,t} + \beta_6 \mathrm{ROE}_{i,t} + \beta_7 \mathrm{YEAR}_t + \beta_1 \mathrm{FE}_{i,t} + \varepsilon_{i,t}$$

	QCSR Indicators				
	TB-SCORE		**Composite measure of GRI Standard**		**Single measure of GRI standards**
	A1	**A2**	**B1**	**B2**	**C1**
N	292	292	203	203	203
Firm indicators[a]	Included	Included	Included	Included	Included
Sector Indicators	Excluded	Excluded	Excluded	Excluded	Excluded
Year indicators[a]	Included	Included	Included	Included	Included
TB-SCORE	-.0036948 (-0.27)	-.0064109 (-0.47)			
CDP					-.7823241 (-0.76)
IFC					-2.032103 (-0.87)
OECD					.4049028 (0.32)
UNGC					-.4589275 (-0.43)
ISO					.1955559 (0.16)
COMPOSITE MEASURE			-.3148242 (-0.75)	-.3347797 (-0.68)	
ANALYST COVERAGE		-.1038586 (-0.73)		-.1373745 (-0.77)	
TB*AC		-.0015029 (-1.36)			
COMP*AC				-.0005105 (-0.01)	
LNTA	.0495619 (0.12)	.0693499 (0.16)	-.017007 (-0.03)	-.0537674 (-0.09)	.001238 (0.01)
LEVERAGE	.0108002 (0.05)	.0275425 (0.13)	.0044107 (0.02)	.0355165 (0.14)	.0093978 (0.04)
ROE	-.0020966 (-0.27)	-.0020831 (-0.27)	-.0015229 (-0.17)	-.0009166 (-0.10)	-.0020112 (-0.22)
INTERCEPT	2.863064 (0.72)	3.620425 (0.90)	3.268448 (0.57)	4.350866 (0.73)	3.290898 (0.56)

*,** and *** indicate statistical significance at the 10%, 5% and 1% level. 1 = regression model without interaction effects. 2 = regression model with interaction effects. See table 4 for detailed descriptions of all variables. Significant coefficients are in bold type.

[a] Results on firm effects, year effects and fixed effects are not reported for parsimony

Panel D: Dependent variable Return on Assets

$$FIRM\ VALUE_{i,j,t} = \beta_0 + \beta_1 QCSR_{i,j,t} + \beta_2 \mathrm{QCSR}_{i,j,t} * AC_{i,t} + \beta_3 AC_{i,t} + \beta_4 \mathrm{LNTA}_{i,t} + \beta_5 \mathrm{LEVERAGE}_{i,t} + \beta_6 \mathrm{ROE}_{i,t} + \beta_7 \mathrm{YEAR}_t + \beta_1 \mathrm{FE}_{i,t} + \varepsilon_{i,t}$$

	QCSR Indicators				
	TB-SCORE		**Composite measure of GRI Standard**		**Single measure of GRI standards**
	A1	**A2**	**B1**	**B2**	**C1**
N	292	292	203	203	203
Firm indicators[a]	Included	Included	Included	Included	Included
Sector Indicators	Excluded	Excluded	Excluded	Excluded	Excluded
Year indicators[a]	Included	Included	Included	Included	Included
TB-SCORE	-.0247317	-.0299738			
	(-1.26)	(-1.52)			
CDP					-.001564
					(-0.01)
IFC					1.108413
					(0.35)
OECD					.5867237
					(0.34)
UNGC					-1.926821
					(-1.32)
ISO					-1.46286
					(-0.86)
COMPOSITE MEASURE			-.535636	-.6660934	
			(-0.93)	(-0.99)	
ANALYST COVERAGE		-.0147432		-.0830887	
		(-0.07)		(-0.34)	
TB*AC		**-.0032707****			
		(-2.02)			
COMP*AC				.0204615	
				(0.34)	
LNTA	.3424803	.4397896	.3791073	.329945	.2654485
	(0.56)	(0.72)	(0.46)	(0.40)	(0.32)
LEVERAGE	-.2146319	-.2156237	-.1070858	-.0873376	-.1607033
	(-0.72)	(-0.72)	(-0.31)	(-0.25)	(-0.46)
ROE	**.0403812*****	**.0395116*****	**.0380835*****	**.037987*****	**.0382077*****
	(3.59)	**(3.51)**	**(3.02)**	**(2.97)**	**(2.99)**
INTERCEPT	2.623753	3.472158	-.8664812	.1097833	.4763922
	(0.45)	(0.59)	(-0.11)	(0.01)	(0.06)

*,** and *** indicate statistical significance at the 10%, 5% and 1% level. 1 = regression model without interaction effects. 2 = regression model with interaction effects. See table 4 for detailed descriptions of all variables. Significant coefficients are in bold type.

[a] Results on firm effects, year effects and fixed effects are not reported for parsimony

Panel E: Dependent variable Price Equity Ratio

$$FIRM\ VALUE_{i,j,t} = \beta_0 + \beta_1 QCSR_{i,j,t} + \beta_2 \mathrm{QCSR}_{i,j,t} * AC_{i,t} + \beta_3 AC_{i,t} + \beta_4 \mathrm{LNTA}_{i,t} + \beta_5 \mathrm{LEVERAGE}_{i,t} + \beta_6 \mathrm{ROE}_{i,t} + \beta_7 \mathrm{YEAR}_t + \beta_1 \mathrm{FE}_{i,t} + \varepsilon_{i,t}$$

	QCSR Indicators				
	TB-SCORE		**Composite measure of GRI Standard**		**Single measure of GRI standards**
	A1	**A2**	**B1**	**B2**	**C1**
N	292	292	203	203	203
Firm indicators[a]	Included	Included	Included	Included	Included
Sector Indicators	Excluded	Excluded	Excluded	Excluded	Excluded
Year indicators[a]	Included	Included	Included	Included	Included
TB-SCORE	-.0273736	-.0287547			
	(-0.21)	(-0.22)			
CDP					2.113478
					(0.22)
IFC					-1.110457
					(-0.05)
OECD					-6.633491
					(-0.56)
UNGC					-11.15754
					(-1.12)
ISO					-.2242977
					(-0.02)
COMPOSITE MEASURE			-3.717587	-7.525826	
			(-0.94)	(-1.65)	
ANALYST COVERAGE		-2.258934		-2.613077	
		(-1.67)		(-1.57)	
TB*AC		.0036306			
		(0.34)			
COMP*AC				.591822	
				(1.46)	
LNTA	-5.926637	**-6.618833***	-7.142256	-8.621375	-7.267871
	(-1.49)	**(-1.66)**	(-1.28)	(-1.54)	(-1.28)
LEVERAGE	1.499204	1.903367	1.842409	2.461153	1.615233
	(0.77)	(0.97)	(0.79)	(1.05)	(0.68)
ROE	.0084986	.0191453	.0357365	.0338527	.0312338
	(0.12)	(0.26)	(0.42)	(0.39)	(0.36)
INTERCEPT	**79.89047*** **	**87.56189*** **	**99.20186***	**129.1046** **	**102.48***
	(2.11)	**(2.29)**	**(1.85)**	**(2.34)**	**(1.88)**

*,** and *** indicate statistical significance at the 10%, 5% and 1% level. 1 = regression model without interaction effects. 2 = regression model with interaction effects. See table 4 for detailed descriptions of all variables. Significant coefficients are in bold type.

[a] Results on firm effects, year effects and fixed effects are not reported for parsimony

$FIRMVALUE_{i,j,t}$ = firm value of company i in year t measured by firm value indicator j;
with j = Earnings per share (EPS); Tobin's Q (TOBINSQ); Dividend yield (DIV_Yield);

Return on assets (ROA); PE ratio (PE).
$QCSR_{i,j,t}$ = Quality of corporate sustainability reporting of company i in year t measured by QCSR indicator j;
With j = $TB\text{-}SCORE_{i,t}$ = Score on the transparency benchmark of company i in year t variating from 1 to 200;
$CDP_{i,t}$ = dummy variable coded 1 if company i is applicable to CDP guideline in year t;
$IFC_{i,t}$ = dummy variable coded 1 if company i is applicable to IFC guideline in year t;
$OECD_{i,t}$ = dummy variable coded 1 if company i is applicable to OECD guideline in year t;
$UNGC_{i,t}$ = dummy variable coded 1 if company i is applicable to UNGC guideline in year t;
$ISO_{i,t}$ = dummy variable coded 1 if company i is applicable to ISO guideline in year t;
$COMP_{i,t}$ = combined measure of five guidelines resulting in a score from 1-5, awarded 1 point for every guideline the company i is applicable to in year t;
$AC_{i,t}$ = average analyst coverage for company i in year t;
$LNTA_{i,t}$ = company size measured by its natural logarithm of total assets of company i in year t;
$LEVERAGE_{i,t}$ = leverage of company i in year t;
$ROE_{i,t}$ = return on assets of company i in year t;
$YEAR_{i,t}$ = a vector of year dummies;
$FE_{i,t}$ = fixed effect of company i in year t with a fixed component that is a function of the firm fixed effect and time.

Table 5: Regression models: panel data regression of firm value on the quality of sustainability reports, analyst coverage, firm size, year and fixed controls

5 Conclusion and discussion

This thesis investigates the relationship between sustainability reporting and firm value and the moderating effect of analysts coverage on this relationship for the period of 2012-2016, comprising 300 observations. Based on the papers of Hummel and Schlick (2016), Clarkson, Richardson and Vasvari (2008) and Dhaliwal, Radhakrishnan, Tsang and Yang (2012), this thesis focuses on the quality of sustainability disclosure. Based on Luo et al. (2015), this study integrates the role of analyst in the relationship. The two insights combined could lead to a solution for the mixed and insignificant results in previous research investigating the relationship between sustainability reporting and firm value.

The results show mostly insignificant relationships between the quality of sustainability reporting and firm value and the moderating effect of analyst coverage on this relationship. The significant results regarding the relationship between the quality of sustainability reporting and firm value show a negative and significant relationship. This results indicate that companies with a higher level of sustainability disclosure quality are more likely to have a lower level of firm value. The relationship that has been found is contradictory with H_1 and it could be due to several reasons.

First, investors could observe that sustainable performance is used for window dressing of book values and financial performance. Investors could also perceive that sustainable responsible activities are made at the expense of increased profits, and because the market is short-term oriented, investors do not take in mind the long-term sustainable information when making investment decisions (Hassel et al., 2005). This would imply that sustainable information would lead to a lower firm value for firms that report about sustainability issues.

Second, the insignificant results could be due to the modest sample size of this study. Because this thesis only focused on Dutch listed companies and because some cases had to be deleted because they were influential, the sample size is modest. Further research could investigate this particular relationship by gathering a larger data sample and testing data from different countries.

Third, all companies in the data sample were covered by at least one analyst. This means that all observations in the data sample are covered by analyst. It could be that the effect of analyst coverage is not so much in the number of analysts, but rather in being covered or not. Further research could investigate the effect of analyst coverage by including companies without analyst coverage in their data sample. This would imply that a dummy variable is made for analyst coverage with a 1 for when at least one analyst is covering the company, and a 0 for when no analyst are covering the company.

H_2 is supported by the results in panel B and D. The results indicate that having a higher level of analyst coverage leads to a strengthening effect on the relationship between sustainability disclosure quality and firm value. This is in line with what this thesis expected based on the papers of Hummel & Schlick (2016) and Luo et al. (2015). The mixed and insignificant results that the results show for most of the

variables are also found in other studies (Clarkson et al., 2013; Dhaliwal et al., 2012; Jacobs et al. 2010).

The main theoretical contribution of this thesis is that the results indicate that analyst coverage does have an effect on the relationship between the quality of sustainability reporting and firm value. This thesis is the first that analyses the role of analysts in the relationship between sustainability reporting quality and firm value. In addition, this thesis could not support previous literature on the relationship between sustainability reporting quality and firm value that expects a positive relationship (Hummel & Schlick, 2016; Clarkson et al., 2013). The results of this thesis suggest that there is a significant negative relationship between sustainability reporting quality and firm value. However, this relationship becomes more clear and significant when the level of analyst coverage is higher for a company that provides sustainability reports. This is in line with the theoretical explanation of Luo et al. (2015) that states that investors are constrained in time and resources to understand sustainability disclosure directly, and therefore have to deal with a certain level of information asymmetry. This explains the mostly insignificant results that we find for H_1 which indicates that an association between sustainability reporting quality and firm value cannot be found. However, analysts do factor this sustainability information into stock recommendations, thereby decreasing the level of information asymmetry for investors, while investors rely heavily on this analysts stock recommendations (Luo et al., 2015). This could provide the theoretical explanation for the significant results of the interaction effect in Panel B and D in table 5. Analysts will decrease the information asymmetry for investors, which makes investors be able to value the quality of sustainability information better and make investment decisions based on this information.

A limitation of this study is the small sample size as mentioned before. Due to the small sample size results can be insignificant whereas they would be significant if a larger sample size had been used. Further research should gather a larger sample size to increase the explanatory power of the model. In addition, follow up research could focus on different countries to decrease the influence of one single country in the regression analysis. Further research could also take actual sustainability performance into account. A distinction can be made between high and low performing firms on sustainability issues, as well as a distinction can be made between high and low quality of sustainability disclosures. The effect of the quality of sustainability disclosure could become more clear when an interaction is made between actual performance and disclosure quality.

Implications of this study are twofold. For top management, this study suggests that disclosing high quality sustainability reports could be more harmful to the company as one might think. At the same time it suggests that for firms with low analyst coverage the impact of sustainability disclosure is lower than for firms with high analyst coverage. For investors, this study suggests that firms with a higher level of sustainability disclosure quality and a higher level of analyst coverage do have a lower level of firm value. Investors could make their investment decisions based on this information. Despite the growing attention

on sustainability issues and clear demands on this issues by consumers and investors, it cannot be concluded that investors actually will punish firms with a lower level of sustainability disclosure quality. The question that we can ask ourselves is: Do we really care about our future or do we consider short-term profits more important?

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