Assurance of Corporate Social Responsibility (CSR) reports and capital market benefits in a European setting

Radboud University Nijmegen

Nijmegen School of Management

Master Corporate Finance and Control

Author: Frank Pennings (s4198522)

Thesis supervisor: D. Reimsbach

Radboud University

Abstract

Companies increasingly face pressure by their stakeholders to inform them about the firm's sustainability practices, which has led to a rising supply of corporate social responsibility (CSR) reports and external assurance on these reports. Due to its voluntary nature, lack of regulation and absence of generally accepted guidelines, the effectiveness of assurance is often criticized. Early evidence however does suggest that assurance may be beneficial to firms, but the relationship is not undisputed. In order to determine whether assurance is valued by the European capital markets, this thesis employs a sample of 439 European firms to explore the potential effect of several aspects of assurance on the cost of capital. Results show no relationships, indicating that the European capital markets do not value assurance and assurance therefore not leads to a lower cost of capital. Due to the absence of research on the effectiveness of assurance in European markets, this thesis contributes to the existing body of literature. The results of this thesis embrace the importance of increasing regulation and constructing general guidelines in order to enhance the effectiveness of assurance statements and consequently increase the credibility of CSR information.

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1. Introduction

From the 1990s onwards there is an increasing trend among companies to voluntarily issue corporate social responsibility (hereafter CSR) reports. Firms increasingly face pressure from their stakeholders to disclose information about their sustainability practices. To answer these demands and enhance their legitimacy to the stakeholders, firms issue CSR reports containing this information. The reports serve as a fundamental communication tool between the firm and its stakeholders to inform them about the firm's environmental and social performance and it is therefore essential for this information to be credible (Junior *et al.*, 2014). Although the rising supply of CSR reports is evident, the often voluntary nature of issuing CSR reports has caused concerns about the credibility and value relevance (Milne & Gray, 2013). In order to increase the credibility, firms turn to providers of external assurance for their reports. An assurance statement provides conclusions on the credibility of the reported information and can be prepared by several providers, namely accounting firms, consultancy firms and engineering firms (Cohen & Simnett, 2015; GRI, 2013). Eventually, firms hope to reap benefits from issuing CSR reports and having an external assurance statement. However, the frequently voluntary nature of the CSR assurance (hereafter CSRA) market and the absence of general guidelines around the assurance process question the effectiveness of assurance (Wong & Millington, 2014). This study aims at addressing these concerns by exploring whether different CSRA aspects lead to capital market benefits. In addition, Simnett *et al.* (2009) show that CSRA demand differs significantly between industries with mining and utilities services excelling. The reasoning behind these findings is that companies from socially or environmentally sensitive industries are more incentivized to distinguish themselves from competitors and therefore not only choose to report CSR information but also more frequently externally assure that information (Pflugrath *et al.,* 2011). This study will therefore analyze industry affiliation and whether CSRA by companies operating in particular industries exhibits differences in capital market benefits.

In academic literature, the potential economic benefits of CSRA have not been unanimously recognized and the relationship does not remain undisputed. Scholars argue that the fact that the governing of the assurance process is still underdeveloped and the lack of regulation result in differences in provider, scope and content which may reduce the comparability of assurance statements among firms (Gürtürk & Hahn, 2016; Junior *et al.*,

2014). In other words, there is considerable variability in different aspects of CSRA (Casey & Grenier, 2015; O'Dwyer & Owen, 2005). This may result in quality differences which could counter its effectiveness (Zorio *et al.*, 2013). Others suggest that despite the main purpose of CSRA, namely communicating sustainability information in the most credible way towards the stakeholders of the firm, stakeholders have little influence in the whole assurance process and therefore question the sole idea behind it (O'Dwyer & Owen, 2007). Also, doubts have been raised around the influence of management and the possibility that management is incentivized to use assurance practices for their own purposes instead of those of all stakeholders (Smith *et al.*, 2011). Furthermore, assurance providers may be interested in serving their own objectives too and will want to limit any liabilities by reducing the scope of their work (Deegan *et al.*, 2006).

On the other hand, theory and early evidence support the idea that CSRA leads to benefits to a firm. Previous studies have shown that publishing CSR reports reduces information asymmetry, decreases analyst forecast errors (Dhaliwal *et al.*, 2011) and increases firm value (Kuzey & Uyar, 2017; Matsumura *et al.*, 2014). Theory suggests that assurance lends further credibility to CSR reports by sending a signal to the investor and may therefore amplify these effects (Casey & Grenier (2015). To this date, studies have extensively investigated which firms choose assurance and why they do it. Unlike the determinants of CSRA, the important question of whether CSR reports and assurance on these reports indeed provide companies with the desired financial benefits remains insufficiently examined. Thus the next logical step is to investigate whether firms obtain a benefit from having their CSR reports assured (Cohen & Simnett, 2015). Several experimental studies have shown that participants indeed perceived sustainability information to be more credible if the information was externally assured (Cheng *et al.*, 2015; Pflugrath *et al.,* 2011). In an exploratory study on the U.S. market, Casey & Grenier (2015) find evidence that assurance indeed leads to reduced cost of equity capital, lower analyst forecast dispersion and fewer analyst forecast errors. However, it has been well documented that the market for CSRA in the U.S. has been trailing other countries and continents for decades (KPMG, 2016). Authors suggest that this trailing trend of the U.S. is mainly due to regulation on CSR reporting and its litigious society, which could partly serve as a substitute for CSRA and may hamper the believe of companies that having their reports assured indeed leads to financial benefits, making it a peculiar setting (Casey & Grenier, 2015; Kolk & Perego, 2010; Simnett *et al.*, 2009). The fact that European firms significantly more frequently opt for CSRA may indicate that European firms expect

CSRA to be more beneficial. As there is currently no evidence on this relationship in a European setting, these effects cannot be compared.

The aim of this study is to fill this gap by performing an exploratory analysis on whether CSRA is indeed relevant and valuable to investors in a European setting leading to capital market benefits for companies. The analysis employs a sample of 439 European listed firms that have published a CSR report, either integrated or stand alone. In line with previous studies on the effects of CSR reporting (Dhaliwal *et al.*, 2011) and in line with Casey & Grenier (2015), this study examines the effects of CSRA on the cost of equity capital (hereafter cost of capital). In addition to the adoption of assurance, the assurance provider and level of assurance are investigated as it is expected that having an accounting firm as the provider or having a high level of assurance enhances the effect of CSRA on the cost of capital. Lastly, industry differences are examined since it is expected that firms situated in a sustainability sensitive industry may benefit more from CSRA. This study contributes to the existing literature in several ways. Firstly, previous literature has focused on the U.S., which, as mentioned earlier, is a peculiar setting due to its historically low rates of CSRA. When examining the effect of CSRA and the assurance provider on capital market benefits in a European setting, this study may provide useful insights on whether the relationships differ internationally. Secondly, as mentioned earlier, KPMG (2016) documents that CSRA figures differ between industries. Environmentally and socially sensitive industries may have an increased desire to enhance the credibility of their disclosed information to raise the user confidence and therefore demand more CSRA. It is interesting to examine whether companies from these sensitive industries may experience additional capital market benefits. To this date, to the author's knowledge, there is no evidence documented on this relationship. Lastly, this study contributes to the current literature on CSRA as it includes the level of assurance. Casey and Grenier (2015) acknowledge that unlike the choice for CSRA and the choice of the provider, evidence on the relationship between the level of assurance and cost of capital is absent.

The results of the analysis show that the adoption of assurance, the assurance provider and the level of assurance do not influence the cost of capital. This may indicate that CSRA is not valued by investors and the European equity markets and therefore do not lead to a lower cost of capital. Lastly, although firms situated in sustainability sensitive industry do report a higher assurance rate in the sample, results do not support a relationship between industry and cost of capital. Since CSR reporting and CSRA are of voluntary nature in most countries, the

results of this study will be of help to several parties. The results may shed an interesting light for standard setters and regulatory bodies on the discussion to conduct CSR reporting and CSRA mandatory. In addition, it provides firms with information on whether the choice to take CSRA or not indeed pays off. In this way, companies can alter their consideration concerning the costs and benefits. Lastly, the supply side of the assurance market, the assurance providers, can use the results of this study to critically assess their services and marketing strategy.

The remainder of this paper is structured as follows: chapter two will provide a short institutional framework, an extensive literature review and will work towards the development of the hypotheses. Chapter three elaborates on the methodology used in this study. Subsequently, in chapter four, the results of the analyses will be presented. Chapter five concludes with a thorough discussion and conclusion.

2. Literature review and hypotheses development

2.1 Institutional framework

Next to reporting of financial information, stakeholders have become increasingly interested in the reporting on environmental and social performance by companies. The increased demand for sustainability information has been answered by companies. In a report by KMPG (2016), figures show that 64% of the N100 companies, the hundred largest companies per country, and 92% of the G250 companies, the Global Fortune 250 companies, report on sustainability. In 2005, these figures were 41% and 64% respectively KPMG (2005). Along with the rise in interest in sustainability reporting, standard setters have focused on constructing general guidelines. In 2000, The Global Reporting Initiative (GRI) was the first to develop the Sustainability Reporting Guidelines. Since then, multiple alterations to these guidelines have been made and have eventually led to GRI standards published in 2016 (GRI, 2016). These guidelines will be enrolled in July 2018. In accordance to the processor of this version, the G4 guidelines published in 2013, disclosures are partitioned into three categories, namely Social, Environmental and Economical (GRI, 2013b). The GRI argues that reports containing information on these categories collectively embody a thorough CSR report. Although the GRI has put a lot of effort in constructing

comprehensive guidelines, the guidelines are still not generally accepted and of voluntary nature (Hodge *et al.,* 2009). It must be noted that some countries are an exception to the rule of voluntary CSR reporting as they have initiated mandatory reporting on some aspects of CSR reporting, namely France, the U.S, the U.K and to a lesser extent Denmark and Norway (Frost, 2007; Tschopp & Huefner, 2015). Regulation on CSR reporting is rising, but besides the few countries mentioned above regulation is still in its infancy. Also, among the countries that have initiated regulation of CSR reporting only few of those countries incorporate all aspects of CSR. In the U.K. for example, regulation focusses merely on the environmental elements.

Due to the often voluntary nature of having assurance and the choice to adhere to the GRI guidelines, the credibility of CSR information is frequently questioned (Milne & Gray, 2013). In other words, sustainability reporting currently suffers from a credibility gap (Dando & Swift, 2003). To ensure that the users of CSR reports can rely on the information given and to make sure that the decisions users make based on this information can be made with confidence, the disclosed information must be credible (Cohen & Simnett, 2015). Many scholars, but the GRI itself as well, therefore advocate the external assurance of CSR reports (Adams & Evans, 2004; GRI, 2013a). To increase the meaning of assurance, Huggins *et al.* (2011) propose several circumstances in which the value of assurance is enhanced. The assurance provider must be independent of the company, must have significant expertise on CSR reporting, must have gathered enough knowledge concerning the collection of sustainability information and needs to have enough quality controls on the process. Regarding the current movement in the assurance market, KPMG (2016) shows that in 2015, 63% of the G250 companies had their report assured in comparison to 40% in 2008. The assurance process is hardly regulated in most countries, what leads to different providers of assurance, different scopes and multiple guidelines that can be adhered. Two frameworks stand out in the assurance market. Firstly, in 2003, AccountAbility launched the *AA1000 Assurance Standard* (AA1000AS) and has since been revised to the latest version in 2008 (AccountAbility, 2008). Secondly, the International Auditing and Assurance Standards Board (IAASB) issued the *International Standard on Assurance Engagements* (ISAE 3000) (IAASB, 2011). The overarching themes of these two standards are much aligned, but several differences remain present. The ISAE3000 focuses mainly on the verification of the assurance process itself and ensures a more technical explanation, whereas the AA1000AS is predominantly focused on ensuring the accuracy of the information and accordingly the

relevance of the report to the intended users of the report focusing on all stakeholders (Hodge *et al.,* 2009; Junior *et al.,* 2014).

Note that these guidelines do not prescribe any advice on the provider of the assurance statement. Accounting firms are accompanied by several other assurance providers, for example consultancy firms and engineering firms (Simnett *et al.*, 2009). This choice for the assurance provider is resembled by the trends in the assurance market. KPMG (2016) reports that in 2015, 65% of the assurance statements of the reports by G250 companies where provided by accounting firms and 35% by other firms. So although these figures show that accounting firms are more predominantly chosen as the assurance provider, still a significant proportion is left for other than accounting firms. In addition to the provider, companies may choose different levels of an assurance statement. The AA1000AS distinguishes a high and moderate level of assurance, whereas the ISAE3000 uses the terminology reasonable versus limited (AccountAbility, 2008; IAASB, 2011). Despite the different jargon, in both standards high or reasonable assurance is chosen when the company has the urge to decrease the assurance risk to the lowest possible level. This level of assurance is reached by an extensive evaluation of the report whilst presenting the assurance statement worded in a positive form as opposed by a limited assurance statement which makes use of negative language (Hodge *et al.*, 2009). The level of assurance is determined preliminary to the assurance preparation itself and is contractually agreed upon by the company and assurance provider. Logically, a reasonable level is more costly to companies, which influences the decision by altering the costs and benefits of assurance.

2.2 Literature review

This literature review comprises two parts. The first section will review the literature that has examined the drivers of different aspects of CSRA and therefore answering the question why certain companies choose CSRA. It is important to find out why firms choose different aspects of CSRA to build the bridge to the potential benefits firms expect to gain. The second section will look at the literature concerning the effects of the different aspects of CSRA.

2.2.1 Determinants of CSRA demand

Alongside the evident rise in CSRA demand, literature has tried to answer the question what determinants actually lead to CSRA as well as which provider to take. Evidence on the aforementioned aspects of CSRA proposes multiple firm-level, country-level and industry-level characteristics which will be elaborated upon in this section.

Simnett *et al.* (2009) is seen as the first extensive archival study to assess the drivers of assurance. Their sample consists of 2,113 sustainability reports from 867 firms across the world during 2002-2004. Results show that firms that experience a greater urge to enhance the credibility of their CSR information more frequently demand CSRA. Firms that are situated in stakeholder oriented countries show more demand for CSRA. On firm-level, Simnett *et al.* (2009) include size, leverage and profitability into their analyses as control variables. The results show that larger firms more frequently opt for assurance, whereas the latter two do not seem to be associated. Casey & Grenier (2015) document the same relationship with size, but also find evidence supporting a positive relationship between profitability and CSRA demand. In addition, they find that firms having a greater global presence and higher customer awareness are more likely to assure their sustainability reports.

A following study by Kolk & Perego (2010) focuses on country-level determinants and in correspondence with Simnett *et al.* (2009) results show that firms domiciled in a stakeholder oriented country display a greater demand for assurance. Their results are based on a panel data sample in the years 1999, 2002 and 2005 using companies listed in the Global Fortune 250. These results are also found by Zhou *et al.* (2016). However, whereas Simnett *et al.* (2009) find a positive relationship between legal enforcement and assurance, Kolk & Perego (2010) document a negative relationship. Simnett *et al* (2009) do acknowledge that the relationship they found is declining along the time-period, which could explain the mixed results. Also, in a later study, Perego & Kolk (2012) propose that although regulatory bodies may enhance the willingness of firms to adopt assurance, litigation and other legal pressures may hamper adoption. Zhou *et al.* (2016) also show that there is a negative relationship between legal enforcement and the demand for assurance in the greenhouse gas emissions market.

A more recent study by Peters & Romi (2015) takes another approach by looking at the relationship between several corporate governance mechanisms and the demand for assurance. Results suggest that having a Chief Sustainability Officer (CSO) is positively associated with CSRA demand. This relationship is enhanced when the CSO has more expertise on the sustainability matter. Peters & Romi (2015) also provide an interesting insight concerning the relationship between size and CSRA. Their results show that in the absence of a sustainability committee or a CSO, size no longer influences the demand for CSRA.

Another firm-level characteristic which is emphasized in this thesis is industry affiliation. Simnett *et al.* (2009) show that being located in an environmentally or socially sensitive industry increases the likelihood of choosing CSRA. The mining, utilities and financing industry showcase this relationship. The mining industry extracts nonrenewable resources, the financing industry has a large social impact on society and the utilities industry is the industry with the highest production of greenhouse gasses (Simnett *et al.*, 2009). Results by Perego & Kolk (2012) confirm that for the most polluting firms in their sample the demand for CSRA is the highest. In their first results, Casey & Grenier (2015) only confirm the mining industry to show a positive relationship to CSRA demand. However, they posit that the inconsistent results concerning the financing and utilities industry may be attributed to the fact that they only examined firms in a U.S. sample. As mentioned earlier, the regulatory framework and the litigious tradition of the U.S., especially in the financing industry, makes it a peculiar country concerning CSRA (Casey & Grenier, 2015; Kolk & Perego, 2010; Simnett *et al.*, 2009).

2.2.2 Determinants of assurance provider

The choice for assurance provider is frequently divided into two categories, namely accounting firms and other firms (or Big 4 audit firms versus non Big 4 audit firms). Next to the adoption of CSRA, Simnett *et al.* (2009) examine the drivers of the choice for the assurance provider and find that size is positively related to choosing an accounting firm as the assurance provider. These results are confirmed by Kolk & Perego (2010). In contrast, Casey & Grenier (2015) document no significant relationship between size and the choice for assurance provider. Casey & Grenier (2015) posit that this is probably due to an ineffective marketing strategy by accounting firms in the U.S. (Casey & Grenier (2015). In the U.S. sample of Peters & Romi (2015), the demand for non-accounting assurance providers is even higher for larger firms. Simnett *et al.* (2009) also find that firms domiciled in a stakeholder oriented country are more likely to choose an assurance provider from the accounting profession. In contrast to the adoption of CSRA, industry does not seem to influence this decision. Zorio *et al.* (2013) confirm the latter result. Perego (2009) examines country-level characteristics and finds that firms located in a country with a weaker legal environment are more likely to have their CSR report assured by an accounting firm. However, Kolk & Perego (2010) document mixed results concerning the legal environment. Using two different proxies for enforcement, namely the quality of legal environment and a measure for litigation tradition, they only find the latter to be negatively associated with taking an accounting firm

as the assurance provider. Zhou *et al.* (2016) posit that these mixed results are due to an interacting effect with the corporate governance system of a company and find that the negative relationship between legal enforcement and the choice for an accouting firm only holds when companies have a strong corporate governance system.

2.2.3 Benefits of CSRA

Previous studies have extensively examined the potential benefits of CSR reporting, but only limitedly on the benefits of CSRA (Casey & Grenier, 2015). Reporting on CSR information has shown to be negatively related to cost of capital and analyst forecast errors (Dhaliwal *et al.,* 2011). Next to that, CSR reporting seems to positively affect firm value (Matsumura *et al.*, 2014; Servaes & Tamayo, 2013). Regarding the effects of CSRA, previous studies are mainly limited to experimental settings but many authors stress the importance of archival studies on the potential benefits of CSRA (Hahn & Kühnen, 2013; Junior *et al.*, 2014; Simnett *et al.*, 2009). This section will review the existing literature on the benefits of assurance.

In an early experimental study using Australian participants (students), Hodge *et al.* (2009) analyzed the perceived credibility of CSR reports when these reports were either assured or not. The results of their study show that the confidence of the participants in the credibility of the CSR reports is higher when it is externally assured. Moreover, assurance statements provided by an accounting firm showed a greater perceived credibility by the participants. However, this is only the case when the level of assurance is reasonable, meaning there is an interaction effect. Lastly, they could not find any direct significant relationship between the level of assurance (reasonable vs. limited) and user confidence.

A subsequent study by Pflugrath *et al.* (2011) performed a similar experiment with financial analysts from the U.S., U.K. and Australia as the participants. The results are in line with the findings by Hodge *et al.* (2009), namely that the perceived credibility is significantly higher when the reports are externally assured and that this effect is even more preeminent when the assurance provider is from the accounting profession. In addition, Pflugrath *et al.* (2011) examined whether industry differences influence the perceived credibility of the information. Based on the contrast in industries found by Simnett *et al.* (2009), they compare the mining industry to the retail industry and document a significant difference in the perceived credibility of CSR information in favor of the mining industry when the reports from these two industries are externally assured.

Taking a more governance related perspective, Brown-Liburd & Zamora (2015) stress that the often voluntary nature of CSR reporting can lead to perverse incentives to management when managerial pay is linked to sustainability. Therefore they conduct an experiment in which the participants' stock assessments are analyzed after the subjects were confronted with positive CSR performance information with and without external assurance. The results show that the assessment of stock prices by the subjects was greater only when the positive CSR performance information was simultaneously externally assured. This suggests that investors seek external assurance of the positive information they were provided with since otherwise they do not expect this information to be credible. Whereas Hodge *et al.* (2009) and Pflugrath *et al.* (2011) analyze the credibility of information, Brown-Liburd & Zamora (2015) focus on the direct relationship to the capital market. This is also the aim of the study performed by Cheng *et al.* (2015), who analyze the relationship between economic, social and governance performance indicators and the willingness of participants to invest. They find that the subjects in their experiment are more willing to invest in the respective company when its performance indicators are externally assured.

The first archival study on the benefits of CSRA is performed by Casey & Grenier (2015). In a U.S. setting, they investigate whether the adoption of CSRA and the type of assurance provider are related to the cost of capital, analyst forecast errors and analyst forecast dispersion. Results indicate that the adoption of external assurance leads to a reduction in the cost of capital in the subsequent year. In addition, this relationship seems to be enhanced when the external assurer is an accounting firm. Noteworthy is the results found are based on the first time firms chose CSRA, so it shows the difference before and after opting for CSRA for the first time.

Other studies suggest that the benefits of assurance can be directed to the valuation of the company as well. Birkey *et al.* (2016) hypothesize that external assurance of standalone CSR reports is associated with environmental reputation of the company. Using a data sample of U.S. firms, their results show that CSRA indeed improves the assessment of the companies' environmental reputation. The relationship however does not differ significantly between assurance providers. Peters & Romi (2015) look at the value relevance of assurance by investigating the relationship between CSRA adoption, the assurance provider and market valuation in the U.S. market. They show that the adoption of CSRA indeed positively influences market valuation of the respective company, but only with respect to assurance provided by accounting firms. However, early in their sample, this relationship does not hold,

suggesting it has been increasing over time. Regarding the content of assurance statements, Gürtürk & Hahn (2016) document large variability in scope and content, leading to lower comparability of assurance statements. They conclude that this may counter the potential benefits of assurance.

2.3 Theoretical framework and hypotheses development

In CSR reporting, an information asymmetry exists between the management of the company, the stakeholders and the rest of the public about the sustainability performance of the company (Simnett *et al.*, 2009). Reducing this information asymmetry is one of the reasons that companies have started issuing CSR reports voluntarily (Simnett *et al.,* 2009b). Eventually, it is in the companies' best interest to communicate the information in CSR reports in the most effective and credible way. This paragraph will construct a theoretical framework to understand how assurance of CSR information may benefit companies in the capital market, whereafter the hypotheses will be formulated.

Over the years, sustainability literature has often built upon signaling theory (Cohen & Simnett, 2015). The initial problem is information asymmetry between two parties. Signaling theory, first stated in that way by Spence (1973), posits two elements, namely the signaler and the receiver in which the signaler is the party with the information advantage over the receiver (Connelly *et al.*, 2011). Due to this information advantage, the possessor of the information has the privilege to choose whether or not he or she wants to disclose this information. The information possessed by insiders can be either positive or negative and outsiders may find both sides of this information useful. However, signaling theory focuses primarily on the former kind of information disclosed deliberately as it may convey superior attributes or quality by the firm (Connelly *et al.*, 2011). Note that the decision to deliberately disclose the insider information is based on a cost-benefit weigh off. For a signal to produce the result the signaler desires, it has to fulfill two conditions. Firstly, the cost-benefit weigh off (or simply signal cost) stresses the notion that some signalers are better able to bear the costs of sending the signal than others. Consequently, the possessor of superior information will decide to send the signal when the expected benefits exceed the cost for initiating the signal. However, to avoid ineffective signaling, the signal needs to be more costly (directly or indirectly) to some poor-performing signalers (Connelly *et al.*, 2011). Secondly, the signal needs to be observable by the public. Otherwise the signal becomes useless and the information asymmetry persists. Due to the information advantage of the signaler and the privilege to choose what information to disclose, the signaler may benefit from misleading the

receiver (Bird & Smith, 2005). However, in signaling theory the choice to send the signal will have a strategic effect as the receiver will take a certain action based on the signal of which the signaler subsequently may benefit (Connelly *et al.*, 2011). The signaler thus may want to disclose value-revealing information to the receiver expecting the receiver to act upon that information and thus benefitting the signaler (Cheng *et al.*, 2015).

As mentioned, the often voluntary of nature of disclosing CSR information leads to doubts concerning the credibility of this information (Cho *et al.*, 2014; Milne & Grey, 2013). Hodge *et al.* (2009) state that independent CSRA adds to CSR in two ways: Firstly, it can spot notable errors, which improves the accuracy of the report. Secondly, an independent statement improves the credibility of the information in the CSR report. Signaling theory suggests that the firm (signaler) possesses private information about the sustainability performance of the firm, which it wants to convey to the investors (receiver) in a credible way. In order to increase the credibility, the firm adopts assurance (signal) on this information. Superior performing firms want to differentiate themselves from poor performing firms and use assurance as the signal to investors (Cheng *et al.*, 2015). Since CSRA is costly, the choice of firms to adopt assurance will be perceived by the investor as if the management of the firm may want to signal the importance of sustainability information and that they want it to be conceived credible (Cho *et al.*, 2014; Simnett *et al.*, 2009). When investors perceive the information to be credible, it will influence their decision-making and alter the decision to invest in the firm leading to a lower cost of capital. Consistent with this rationale and confirmed by the findings presented in the literature review, the following hypothesis is formulated:

H1: The adoption of CSR assurance is negatively associated with the firms' cost of equity capital

Regarding assurance provider, accounting firms are often perceived to use more cautious language in their reports (Casey & Grenier, 2015; O'Dwyer & Owen, 2005), are more prone to maintaining their reputational capital (Simnett *et al.*, 2009) and are subject to requirements concerning independence and professional conduct (Birkey *et al.*, 2016; Huggins *et al.*, 2011). Due to these characteristics, accounting firms are argued to be the high quality assurance provider (Pflugrath *et al.*, 2011). These characteristics influence the choice firms need to make regarding the provider of their assurance statements. Accounting firms also generally ask a higher fee for their assurance services. Choosing an accounting firm as

provider may be used by companies as another signal to enhance the credibility of the CSR information. This choice reflects the commitment firms have since they voluntarily choose the more costly option and therefore showing not only their ability to bear these costs but also their willingness to signal their CSR information in the most credible way. Investors may receive this signal and perceive the information to be more credible, which eventually will lead to more investments and a lower cost of capital. Based on the above discussion and in line with the results of Casey & Grenier (2015), the following hypothesis is formulated:

H2: The effect of assurance on the cost of equity capital is stronger when the assurance provider is an accounting firm

When engaging the assurance contract, firms may either opt for a limited or reasonable level of assurance. As mentioned earlier, a reasonable assurance statement requires a more stringent and thorough evaluation of the CSR report and is also accompanied by a higher fee (GRI, 2013a). The results of Hasan *et al.* (2003) show that report users find limited assurance statements to provide less credibility than reasonable assurance statements. Therefore, reasonable assurance statements will further improve the credibility of the disclosed information. To signal quality and reliability of information, firms may therefore opt for a reasonable level of assurance. Investors may perceive this as a signal of higher quality, also due to the higher contract fee, and associate this with higher credibility. Based on the above rationale the following hypothesis is formulated:

H3: The effect of assurance on the cost of equity capital is stronger when the assurance statement is of a reasonable level

Previous studies document significant differences in the demand for CSRA among industries (KPMG, 2015). These differences arise from the variation of sustainability concerns among industries. Some industries face severe environmental, political and social risks (Simnett *et al.*, 2009). To cope with these risks, these industries have an increased desire to enhance the credibility to distinguish themselves from competitors (Casey & Grenier, 2015). As signaling theory argues, in order for the firm to adopt CSRA, it must expect benefits from the actions the investor takes upon receiving this information. As firms in all industries adopt assurance in hopes of experiencing benefits by the actions of the investor, superior performing firms situated in sensitive industries may have an increased incentive to do so in order to distinguish themselves from poor performing firms. Due to the risks these companies face, investors may also have an increased desire to ensure the credibility of the

information before acting upon it. Pflugrath *et al.* (2011) show that the relationship between assurance and the credibility of CSR information is stronger for companies from the mining industry. Based on the above discussion, the following hypothesis is formulated:

> *H4: The impact of assurance on cost of equity capital is stronger for companies in a CSR sensitive industry*

3. Method

3.1 Sample

To test the hypotheses formulated, a sample of European firms is taken from the GRI Database. The GRI Database is a detailed repository for CSR reports containing information about, amongst other information points, the adherence to GRI guidelines, the decision to assure or not and the chosen level of assurance. Firms can register their CSR report to the database for free, but it is not obligatory. However, as the GRI Database is the most extensive repository for sustainability reports, covering almost all aspects of the report, firms are inclined to register their report in order to strengthen the way their sustainability information is communicated to the users of the report. The sample consists of listed firms only that published either a standalone or integrated CSR report. As argued before, only European firms were chosen since this is essential to answer the main research question of this study and analyze the possible differences in the relationships found in comparison to previous studies which mainly focused on a U.S. setting. The publication year 2016 was taken as it is the most recent year for which all required information in the GRI Database was available. As the assurance market is an expanding market, taking the most recent year will provide interesting results, especially in comparison to earlier studies. The reason to take one year only stems from additional difficulties with assessing multiple years. By analyzing multiple years, one must take into account whether or not the firm had assurance in all these years, whether the level remained the same, whether the provider remained the same and in which year the firm had taken assurance for the first time. This would make data gathering harder and interpretation of the results more difficult. Information regarding the choice for assurance, assurance provider and assurance level is collected from the GRI Database. Necessary information to calculate the dependent variable, cost of capital, is retrieved from the Orbis Database. In addition, financial information to compute the control variables is also collected

from the Orbis Database. After omitting firms for which data was missing and after analyzing and omitting any influential outliers in the sample, the eventual sample consists of 439 firms. For hypotheses two and three, subsamples are used as they only include firms that had external assurance. Regarding hypothesis three, the subsample is slighter smaller (n=140 instead of n=150) as the GRI Database did have information about the provider, but not the level of the assurance statement.

In the eventual sample, 24 European countries are represented. The sample overview in Table 2 shows that the UK and Northern Ireland are most represented in the sample; together they amount to 22.55% of the firms. Regarding assurance provider, 88.67% of the assurance statements in the sample are provided by an accounting firm. This figure is higher than the 65% that KPMG (2015) reported in their survey concerning the G250 firms. This may be attributable to the focus of the GRI Database on stand-alone CSR reports. Integrated CSR reports are often assured by the same company as the annual report is audited. Given the fact that the auditing of the annual reports is also often done by non-Big4 audit firms, this may explain the difference. Panel B also shows the distribution of the level of assurance. Figures show that only 7.86% of the assurance statements have a high/reasonable level. It must be noted however, that if the level was not specified it was seen as limited/moderate as well as the observations which are labeled "not specified". It could therefore be the case that the level of assurance is higher than most limited/moderate levels, but this information is uncertain. In Panel C of Table 2, an overview of the industry classifications is given. Statistics show that 37.13% of the firms are situated in a sustainability sensitive industry. Leaving aside firms in the "other" category, the distribution of industries is quite even with real estate and energy being the most represented in the sample (6.61% and 6.15% respectively).

Table 1: Sample overview

Panel A: Country and assurance

Country	Frequency	% of total	Assurance/Reports%
Austria	9	2.05%	77.78%
Belgium	11	2.50%	36.36%
Croatia	1	0.23%	0.00%
Denmark	15	3.42%	6.67%
Estonia	2	0.46%	50.00%
Finland	35	7.97%	60.00%

France	61	13.90%	22.95%
Germany	44	10.02%	52.27%
Greece	2	0.46%	0.00%
Hungary	1	0.23%	100.00%
Ireland	1	0.23%	100.00%
Italy	21	4.78%	76.19%
Jersey	1	0.23%	0.00%
Luxembourg	6	1.37%	0.00%
Netherlands	13	2.96%	38.46%
Norway	19	4.33%	26.32%
Poland	3	0.68%	33.33%
Portugal	7	1.59%	71.43%
Russian Federation	3	0.68%	33.33%
Serbia	1	0.23%	100.00%
Spain	12	2.73%	83.33%
Sweden	51	11.62%	21.57%
Switzerland	21	4.78%	28.57%
United Kingdom of Great Britain and Northern Ireland	99	22.55%	16.16%
Total	439	100%	34.17% average

Panel B: Assurance provider and level of assurance

Variable	Observations	Mean	St. dev.	Min	Max
Provider	150	0.8866667	0.3180618	0	1
Level	140	0.0785714	0.2700438	0	1

Provider	Observations	Percentage	Level	Observations	Percentage
Accountant	133	88.67%	Reasonable / high	11	7.86%
Engineering firm	9	6.00%	Limited / moderate	124	88.57%
Small consultancy / boutique firm	8	5.33%	Combination	5	3.57%

Panel C: Industry and assurance

Industry	Observations	Percentage	Assurance%	Sensitive
Agriculture	1	0.23%	100%	No
Automotive	14	3.19%	28.57%	No
Aviation	9	2.05%	0.00%	No
Chemicals	19	4.33%	57.89%	Yes
Commercial services	10	2.28%	50.00%	No
Computers	6	1.37%	16.67%	No
Conglomerates	16	3.64%	43.8%	No
Construction	21	4.78%	23.81%	Yes
Construction materials	14	3.19%	35.71%	Yes
Consumer durables	6	1.37%	33.33%	No
Energy	27	6.15%	37.04%	Yes
Energy utilities	18	4.33%	77.78%	Yes
Equipment	20	4.56%	35.00%	No
Financial services	12	2.73%	16.67%	Yes
Food and beverage products	23	5.24%	21.74%	No
Forest and paper products	7	1.59%	85.71%	Yes
Healthcare products	14	3.19%	28.57%	Yes
Healthcare services	4	0.91%	0.00%	No
Household and Personal products	5	1.14%	20.00%	No
Logistic	7	1.59%	28.57%	No
Media	10	2.28%	40.00%	No
Metals products	13	2.96%	46.15%	Yes
Mining	10	2.28%	70.00%	Yes
Non-profit / services	2	0.46%	0.00%	No
Other	48	10.93%	22.92%	No
Railroad	2	0.46%	0.00%	No
Real Estate	29	6.61%	34.48%	No
Retailers	19	4.33%	15.79%	No
Technology hardware	16	3.64%	25.00%	No
Telecommunication	18	4.10%	55.55%	No
Textiles and apparel	4	0.91%	25.00%	Yes
Tourism/Leisure	8	1.82%	0.00%	No
Toys	1	0.23%	0.00%	No
Waste management	2	0.46%	50.00%	No
Water utilities	3	0.67%	33.33%	Yes

Total	439	100%			
Variable	Obs.	Mean	St. dev.	Min	Max
SIN	439	0.3712984	0.4837033	0	1
SIN1	439	0.1412301	0.348656	0	1

3.2 Measurement of variables

3.2.1 Dependent variable

To analyze the relationship between several CSRA characteristics and cost of capital, the Easton (2004) model is taken to measure cost of capital. This model is a modified version of the normal price/earnings to growth (PEG) ratio and is frequently used in previous literature regarding CSR and CSRA, amongst others, in Dhaliwal *et al.* (2011) and Casey & Grenier (2015). Table 1 provides detailed information about the calculation of the model. As it incorporates analysts' forecasts of the earnings per share for the upcoming two years and the expected dividend per share, it is capable of capturing how the perceived credibility of investors alters forecasts and therefore influences cost of capital. Easton (2004) also acknowledges that the modified PEG ratio is suitable for capturing the effects of disclosures on cost of capital. Some studies choose to take the average of four proxy models. However, requiring financial information for four models will lead to further data elimination. In addition, Botosan & Plumle (2005) tested five existing models that proxy cost of capital and results show that the Easton (2004) model is the most suitable model when one needs to analyze relationships including aspects of disclosures.

3.2.2 Independent variables and control variables

To test the first hypothesis about CSRA adoption, a dummy variable is created for the choice for CSRA (AST) and takes the value of 1 if the firm has externally assured its CSR report and 0 otherwise. To analyze the influence of assurance provider in the second hypothesis, a dummy variable is created (PROV) which takes the value of 1 if the assurance provider is an accounting firm (Big-4) and 0 otherwise. The latter in this case includes engineering firms and small consultancy/boutique firms. To test hypothesis three, a dummy variable is created (LEVEL) which takes the value of 1 if the level of assurance is reasonable/high and 0 otherwise, where otherwise is either moderate/low or a combination between both reasonable/high and moderate/low. The choice to classify the categories in this

way is made due to the limited information regarding which aspects of the CSR reports are assured with a high level and which are not. Lastly, to test the fourth hypothesis, a dummy variable is created (SIN) which takes the value of 1 if the firm is situated in a CSR sensitive industry and 0 otherwise. The decision to classify an industry as CSR sensitive is mainly made based on previous literature by Casey & Grenier (2015), Perego & Kolk (2012), Peters & Romi (2015) and Simnett *et al.* (2009). The industry classification in the GRI Database is broad, as the database divides firms among 36 industries. Following aforementioned studies, chemicals, financial services, forest and paper products, metals, mining and utilities (water as well as energy) industries are taken as CSR sensitive industries. In addition, construction materials, healthcare products, and textiles & apparel are included. All these industries either have a large environmental or social footprint on society or even both.

Following previous studies, several control variables for cost of capital will be included in the models. Firstly, firm size (lSIZE) is expected to be negatively associated with cost of capital as larger firms are less prone to risk. To measure firm size, the natural logarithm of market capitalization is taken (Dhaliwal *et al.*, 2011; Fama & French, 1992; Hail & Leuz, 2006). Secondly, market-to-book ratio is expected to be negatively associated with the cost of capital and is therefore included as a control variable (Dhaliwal *et al.*, 2011; Hail & Leuz, 2006). It is calculated by dividing the market price of a share by the book value per share. In addition, following Casey & Grenier (2015) and Dhaliwal *et al.* (2011), analysts' forecasts of long-term growth (LTG) is included as a control variable, which is measured as the difference between the expected earnings per share two years and one year ahead.

3.3 Models

To test the hypotheses, four multivariate regression models are constructed. The first model measures the effect of having an assurance statement on the cost of capital. This model is tested including the whole sample.

Model 1: $PEG = \beta_0 + \beta_1 AST + \beta_2 MTB + \beta_3 LTG + \beta_4 LEV + \beta_5 lSIZE + \varepsilon$

The second model measures the effect of having an assurance statement provided by either an accounting firm or another firm on the cost of capital. This model is run on a subsample, as it only includes firms that have assurance. In this way, results of this model will show the isolated effect of the assurance provider on cost of capital.

Model 2: $PEG = \beta_0 + \beta_1 PROV + \beta_2 MTB + \beta_3 LTG + \beta_4 LEV + \beta_5 lSIZE + \varepsilon$

The third model measures the effect of having either an assurance statement with a reasonable/high level or a limited/moderate level on the cost of capital. Corresponding with model 2, the model is run on a subsample with only firms that have externally assured their CSR report.

Model 3: $PEG = \beta_0 + \beta_1 LEVEL + \beta_2 MTB + \beta_3 LTG + \beta_4 LEV + \beta_5 lSIZE + \varepsilon$

Lastly, the fourth model is used to test whether having assurance and being in a sensitive industry simultaneously affects cost of capital. Next to the assurance variable (AST) and industry (SIN), an interacting term (SIN1) is included in the model. This model is again run on the whole sample.

Model 4: $PEG = \beta_0 + \beta_1 AST + \beta_2 SIN1 + \beta_3 MTB + \beta_4 LTG + \beta_5 LEV + \beta_6 lSIZE + \varepsilon$

Table 2: Variable definitions

Variable	Definition
Dependent variable	
Cost of equity capital	Cost of equity capital is measured by the modified PEG-ratio (or Easton model (2004)), which is calculated as follows: $r = \sqrt{(eps_2 + rdps_1 - eps_1) / P_0}$, EPS_2 is the mean two-year-ahead analysts forecast of the earnings per share, EPS_1 is the mean one-year-ahead analysts forecast of the earning per share, $RDPS_1$ is the mean one-year-ahead analysts forecast of the dividend per share and P_0 is the market price of the base year
Independent variables	
Assurance	Assurance is a dummy variable and equals 1 if a companies' CSR report is externally assured and 0 otherwise
Assurance provider	Assurance provider is a dummy variable and equals 1 if the assurance provider is an accounting firm and 0 otherwise
Level of assurance	Level of assurance is a dummy variable and equals 1 if the level of assurance is a reasonable/high level and 0 otherwise

Industry	Industry is a dummy variable and equals 1 if the company is situated in a CSR sensitive industry and 0 otherwise
Control variables	
Size	Size is measured by the natural logarithm of the market capitalization of a firm
Leverage	Leverage is measured by dividing long term debt by total assets
Market-to-book ratio	Market-to-book ratio is measured by dividing the market price by the book value per share
Long term growth	Long term growth is measured as the difference between the mean two-year-ahead analysts forecast of the EPS and the mean one-year-ahead analysts forecast of the EPS divided by the mean one-year-ahead analysts forecast of the EPS
Robustness checks	
Cost of equity capital	For the additional analysis, the cost of equity capital is measured via a model by Ohlson & Juettner-Nauroth (2005): $$p_t = \left(\frac{eps_1}{r_{oj}}\right) * (g_{st} + r_{oj} * \frac{dps_1}{eps1} - g_{lt})/(r_{oj} - g_{lt})$$ In this equation, p_t is the market price of the base year, r_{oj} is the cost of equity capital, g_{st} is the short term growth which is measured by the average of the difference of eps_2 and eps_1 on the one hand and the analysts' consensus five year forecast of growth on the other hand. G_{lt} is the expected one year ahead inflation rate per country.

4. Results

This section will first provide a brief overview of the descriptive statistics in the data. Thereafter, the results of the analyses will be presented leading to the testing of the hypotheses.

4.1 Descriptive statistics

In the first model, the whole sample of 439 observations is included. When looking at how many firms opt for assurance, presented in Table 2, one can see that 34.17% of the firms in the whole sample chose to externally assure their CSR report. Going into detail per country shows that assurance rates differ significantly. Setting aside countries with less than five observations, Spain exhibits an assurance rate of 83.33%, whereas only 6.67% of firms in Denmark chose CSRA.

Table 4 shows assurance rates per industry. Overall, firms situated in a sustainability sensitive industry choose CSRA in 44.17% of the cases, in comparison to 28.26% of firms in non-sensitive industries, supporting the findings by Simnett *et al.* (2009). Neglecting industries with less than five observations, the highest assurance rates can be seen in Forest and Paper Products and Energy Utilities, namely 85.71% and 77.78% respectively. Of the industries labeled as sensitive, financial services has the lowest assurance rate with 16.67%. This latter finding is remarkable in comparison to the findings of Simnett *et al.* (2009), which show that besides the mining and utilities industry the financial services industry is more likely to choose CSRA. However, later results by Casey & Grenier (2015) neither find a higher demand for CSRA by firms in the finance industry. These findings could be explained by an increasingly stringent regulation on the financial services industry since the financial crisis (Casey & Grenier, 2015). This enhanced regulation may serve as a substitute for credibility enhancement. Regarding the interaction term SIN1, statistics show that 62 (or 14.12% of the) firms are situated in a sustainability sensitive industry and have an assurance statement simultaneously.

4.1 The adoption of assurance

To test the first hypothesis, the first model examines the relationship between having an assurance statement and the cost of capital. The results are presented in Table 3. In contrast to the expected relationship, no significant relationship can be found between having an assurance statement and the cost of capital. This means that the first hypothesis has to be rejected. Regarding the control variables, firm size seems to be significantly influential with the expected sign ($t = -3.30$, $p < 0.01$). This finding is in line with previous literature. Next to that, long term growth (LTG) is positively related to cost of capital, as expected ($t = 2.14$, $p < 0.05$). In contrast to Casey & Grenier (2015), market-to-book ratio (MTB) and leverage (LEV) do not seem to influence the cost of capital. The adjusted R^2 is 0.0339 which may seem relatively low and contribute a low explanatory power to the variables. However, models with the cost of capital as the dependent variable have often shown to have a low R^2 (Dhaliwal *et al.*, 2011).

4.2 Assurance provider

The second model analyses the relationship between the assurance provider and the cost of capital. It is expected that having an accounting firm as the provider of the assurance statement negatively influences the cost of capital. The model is run including only firms from the sample having an assurance statement (n=150). Results from Table 3 show that in contrast to expectations, no relationship is found between the assurance provider and the cost of capital meaning that hypothesis two has to be rejected. Again, firm size is negatively associated with cost of capital ($t = -1.71$, $p < 0.10$), although with a lower probability level than in the first model. In addition, as expected, market-to-book ratio shows to be negatively associated with the dependent variable ($t = -1.67$, $p < 0.10$). In accordance with the first model, long term growth is significantly positively associated ($t = 3.43$, $p < 0.01$). The other control variables remain insignificant. The adjusted R^2 is remotely higher in this model, namely 0.1222.

4.3 Assurance level

Thirdly, the relationship between the assurance level and cost of capital is examined. It is hypothesized that having an assurance statement with a reasonable/high level is negatively associated with cost of capital. Again, the subsample is used with firms that have an assurance statement only. The sample however is slightly reduced (n=140) as several observations had level labeled as not specified. Due to this limited information, the level was labeled missing

Table 3: Results from multivariate regressions with dependent variable PEG

	Part 1 Assurance n=439	Part 2 Provider n=150	Part 3 Level n=140	Part 4 Industry n=439
Intercept	0.250 (5.90)***	0.203 (3.22)***	0.203 (3.18)***	0.250 (5.86)***
AST	0.002 (0.30)	-	-	-0.001 (-0.17)
PROV	-	0.007 (0.47)	-	-
LEVEL	-	-	-0.015 (-0.86)	-
SIN	-	-	-	0.004 (0.60)
SIN1	-	-	-	0.007 (0.56)
MTB	0.000 (0.32)	-0.005 (-1.67)*	-0.005 (-1.74)*	0.000 (0.44)
LEV	0.006 (0.34)	0.300 (0.84)	0.035 (0.96)	0.007 (0.39)
LTG	0.156 (2.14)**	0.067 (3.43)***	0.067 (3.29)***	0.016 (2.16)**
SIZE	-0.007 (-3.30)***	-0.005 (-1.71)*	-0.004 (-1.52)	-0.007 (-3.32)***

*, ** and *** indicate significance at the 10%, 5% and 1% levels respectively (two-tailed). For variable definitions, see Table 1

Results, as can be found in Table 3, show that the level of the assurance statement is not associated with cost of capital. Therefore, hypothesis three has to be rejected. As in the second model, both control variables long term growth (t =3.29, p < 0.01) and market-to-book ratio (t = -1.74, p < 0.10) are significant. In contrast to the first two models, firm size is, although just, no longer significantly related to cost of capital. This latter finding may be attributable to the further reduction in the sample size.

4.4 Sensitive industries

The last model is used to analyze the relationship between being situated in a sustainability sensitive industry and simultaneously having an assurance statement on the cost of capital.

Due to this interaction term, the sample on which the model is run is again the complete sample (n=439). Results, as presented in Table 3, show that there is no relationship between the interaction term and the dependent variable, which means that hypothesis four has to be rejected. As in the first model, firm size is again negatively associated with cost of capital with the highest probability level (t = -3.32, p < 0.01) and long term growth is positively associated (t = 2.18, p < 0.05). Interestingly, although not significant, the interaction term SIN1 shows a positive sign which may indicate that being situated in a sustainability sensitive industry increases the cost of capital. Further rationale on these results will be presented in the discussion section.

4.5 Robustness checks

To see whether the above results are robust, this section will present additional results after altering the method or the calculation of specific variables. Firstly, as mentioned before, the dependent variable cost of capital can be measured in many ways. Previous studies have shown that the Easton (2004) model is one of the most suitable ways of calculating the cost of capital. However, previous studies also often use an average figure of multiple models. Another model that is also often used is the model by Ohlson & Juettner-Nauroth (2005). This model is different from the Easton (2004) model in assuming that abnormal earnings per share after t+1 equal the inflation rate of the country (Daske *et al.*, 2008). In addition, for short term growth it takes the average of the difference between expected earnings per share two year ahead and one year ahead and the expected earnings per share over a five year period. The data for this latter forecast is retrieved from the ThomsonOne Database. Due to mathematical problems with calculating the cost of capital via this model, firms that are not expected to have dividends at t+1 are provided with a meaningless figure regarding the cost of capital. Therefore, the sample had to be reduced to 406 observations for the first and fourth model and 145 and 136 observations for the second and third model respectively. The cost of capital through this model is labeled as variable ROJ. One of the original control variables, long term growth (LTG), is highly intertwined with the calculation of the dependent variable causing misleading results about its relationship and is therefore left out of the regression. In line with the results presented in sections 4.1 through 4.4, results show no support in favor of the hypotheses. Although both the level of assurance and the assurance provider show the expected sign, the results are insignificant. Regarding the control variables, size is significantly negatively associated in all four models. For t-values and the level of significance, results are presented in Table 4.

Table 4: Results from robustness checks

	Dependent variable ROJ				Without UK & NI			
	Part 1 Assurance n=406	Part 2 Provider n=145	Part 3 Level n=136	Part 4 Industry n=439	Part 1 Assurance n=340	Part 2 Provider n=134	Part 3 Level n=127	Part 4 Industry n=340
Intercept	0.472 (5.04)***	0.493 (3.38)***	0.472 (3.16)***	0.471 (5.01)***	0.246 (5.24)***	0.210 (2.97)***	0.204 (2.93)***	0.246 (5.22)***
AST	0.001 (0.07)	-	-	0.004 (0.24)	0.004 (0.54)	-	-	-0.000 (-0.04)
PROV	-	-0.031 (-0.99)	-	-	-	0.000 (0.03)	-	-
LEVEL	-	-	-0.015 (-0.39)	-	-	-	-0.022 (-1.17)	-
SIN	-	-	-	0.009 (0.50)	-	-	-	0.006 (0.67)
SIN1	-	-	-	-0.010 (-0.36)	-	-	-	0.008 (0.60)
MTB	-0.007 (-3.21)***	-0.009 (-1.39)	-0.008 (-1.21)	-0.007 (-3.16)***	0.001 (0.72)	-0.005 (-1.60)	-0.005 (-1.72)*	0.001 (0.85)
LEV	-0.039 (-1.01)	-0.062 (-0.74)	-0.049 (-0.55)	-0.036 (-092)	0.001 (0.03)	0.039 (0.98)	0.046 (1.14)	0.001 (0.04)
LTG	-	-	-	-	0.029 (2.54)**	0.072 (2.40)**	0.072 (2.39)**	0.029 (2.53)**
SIZE	-0.013 (-3.02)***	-0.013 (-1.95)*	-0.013 (-1.95)*	-0.013 (-3.02)***	-0.007 (-3.00)***	-0.005 (-1.62)	-0.004 (-1.45)	-0.007 (3.06)***

*, ** and *** indicate significance at the 10%, 5% and 1% levels respectively (two-tailed). For variable definitions, see Table 1*

Table 5: Results from robustness checks (continued)

	Dependent variable WACC (equity)			
	Part 1 Assurance n=417	Part 2 Provider n=146	Part 3 Level n=136	Part 4 Industry n=417
Intercept	0.005 (0.29)	-0.021 (-0.87)	-0.018 (-0.80)	0.003 (0.19)
AST	-0.001 (-0.51)	-	-	-0.002 (-0.65)
PROV	-	0.001 (0.24)	-	-
LEVEL	-	-	-0.003 (-0.48)	-
SIN	-	-	-	0.006 (1.87)*
SIN1	-	-	-	-0.000 (-0.03)
MTB	-0.000 (-1.05)	-0.002 (-2.06)**	-0.002 (-1.99)**	-0.000 (-0.85)
LEV	-0.005 (-0.68)	-0.006 (-0.46)	-0.000 (-0.02)	-0.003 (-0.48)
LTG	0.011 (2.31)**	-0.008 (-0.76)	-0.010 (-0.93)	0.010 (2.15)**
SIZE	0.005 (4.08)***	0.004 (4.32)***	0.004 (4.20)***	0.003 (4.06)***

*, ** and *** indicate significance at the 10%, 5% and 1% levels respectively (two-tailed). For variable definitions, see Table 1

In contrast to the earlier regressions, market-to-book ratio now significantly influences ROJ in the first and fourth model (t = -3.21, p < 0.01; t = -3.20, p < 0.01)[1].

Secondly, the previous two measures of cost of capital have both been related to expected earnings and discounted growth figures. To ensure that the proxies taken are not too much aligned, the weighted average cost of capital (WACC) is used to measure the cost of capital and is extracted from the Thomson Reuters Eikon Database. The WACC contains two parts, namely the cost of equity and the cost of debt. In this analysis, the cost of equity part of

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[1] To make sure that the separate results of the two models are indeed aligned, additional regressions were run with the average of both models as dependent variable. Following these regressions, no changes in the relationships were documented.

the WACC is taken as the dependent variable as this study is interested in looking at how firms may experience capital market benefits through increased investor confidence in the reported information. Results are shown in Table 5. From these results, it again becomes clear that none of the variables of main interest significantly influence the cost of capital which is in line with earlier results. Regarding the control variables, the documented relationships are mostly aligned with the first results. However, firm size seems to be significantly positively related to cost of capital.[2]

Thirdly, the original sample comprises for a large part of firms from the UK and Northern Ireland (22.55%). To make sure the results are robust and not largely attributable to the UK and Northern Ireland, the analysis was repeated while leaving out firms from the UK and Northern Ireland. Doing this reduces the sample to 340 observations for model one and four and 134 and 127 firms in models two and three respectively. Results are presented in Table 4. Regarding the variables of main interest, still no significant results are found. The signs of the coefficients are in accordance with the initial results. Regarding the control variables, several small changes can be seen although these are mainly limited to different significance levels. Where firm size was significant at the lowest level in model two in the initial analysis, it no longer influences cost of capital in model two. A negative effect of firm size remains apparent in models one and four. In addition, market-to-book ratio is no longer negatively related, where in the initial results it was significant with $p < 0.10$. Lastly, although long term growth remains significantly negatively related to the cost of capital in all models, significance levels dropped for models two and three to $p < 0.05$

5. Discussion and conclusion

As the market for CSR reporting and assurance is expanding, this study analyzes whether different aspects of CSRA lead to capital market benefits for European firms. As criticisms have been raised around the effectiveness of assurance, but on the other side theory and early evidence suggest that assurance may be beneficial to firms, this study explores whether different aspects of assurance lead to capital market benefits to firms. The analysis

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[2] A possible explanation for this observation could be that the WACC relies heavily on the firm's beta. Firm size is expected to be negatively associated as larger firms experience less risk. The sample used contains listed firms only, already being of considerable size. In addition, the natural logarithm of size is taken reducing the variability. Considering that beta is measured using a sample with much more variability, the actual effect of firm size on the WACC could be altered. For further robustness, size was also measured as the logarithm of total assets, but no changes were documented.

employs a sample of 439 listed European firms that published a CSR report. Next to the choice to assure or not, the assurance provider, the level of assurance and the industry in which the firm is situated are examined. It is expected that having an assurance statement is negatively associated with the cost of capital. Having an accounting firm as the assurance provider, contractually agreeing upon a high level of assurance and being situated in a sustainability sensitive industry are all expected to further reduce cost of capital. Results show no support in favor of the hypotheses and it can therefore be concluded that CSRA and above mentioned aspects of CSRA are not valued by European investors and consequently fail to influence the cost of equity capital. Thus, although theory and some early evidence suggest that assurance may be beneficial to firms, a first look at the results of this study bolsters the criticisms that have been expressed about the effectiveness of CSRA. Nevertheless, the increased demand for assurance has called for more attention on the effectiveness of assurance. As it is still voluntary to do so in most cases, it shows that firms do expect benefits in some way. As most criticisms against CSRA are formed around the lack of oversight, regulation and guidelines, it could well be possible that this is currently the reason that the potential benefits are not reflected by a lower cost of capital. If this regulatory framework will be improved, investors might find the information more credible and react upon that. As this study is exploratory in nature, the context could play an important role in this topic. In comparison to related literature, the results contrast those of Casey & Grenier (2015), the paper this study largely follows. An important deviation that is made in comparison to their paper is the choice to take a static year for all firms, namely 2016. In this way, the results from this study reflect the influence of CSRA on the cost of equity capital in that year only. Casey & Grenier (2015) analyze the effects of CSRA after the firm has chosen assurance on their CSR report for the first time. In this way, they analyze first time effects of externally assuring a CSR report. Therefore, it could be possible that the effect subsides after the first time, influencing the relationship and providing a possible explanation for the mixed results. Also, the variability in the sample of Casey & Grenier (2015) is low as only 8.68% of the CSR reports are externally assured. Although this confirms the low rate of assurance in the U.S., it could provide statistical issues.

This study has several important implications for various parties. A first sight at sustainability practices immediately points out that a lack of universal guidelines, oversight and regulation hamper the quality and comparability of assurance statements. Results of this study may therefore be of help to regulatory bodies and the debate concerning the mandatory

adoption of CSRA, the construction of general guidelines and a more stringent oversight. In addition, results point out that assurance provider and level differences do not lead to further capital market benefits which may reinforce the assessment assurance providers need to make for their marketing and business strategies. Lastly, both companies that currently assure their CSR report as well as companies that are in doubt of having an external assurance statement may use the results of this study to reassess the costs and benefits of having CSRA.

Several limitations to this study are noteworthy. From the sample description, it becomes clear that there is a lack of variability in the level of assurance. As only 7.86% of the firms opt for a high level of assurance, the results must be interpreted critically. This low figure is not remarkable however. Gürtürk & Hahn (2016) report that only three of the 60 assurance statements in their sample are of a high/reasonable level. Although Casey & Grenier (2015) advocate to examine the economic consequences of different assurance levels, this may be the reason that it has not been investigated yet. Apparently, firms do not seem to believe that the costs of having a higher level of assurance are justified by additional economic benefits. Secondly, by analyzing reports published in 2016 only, possible trends over a larger time period are not captured. As the institutional framework is constantly changing, the effects might change as well making this a certain limitation to this study. Lastly, the GRI Database itself provides a limitation to this study. Although it is the most elaborate database on sustainability information and reports, it is up to a firm itself to register its CSR report in the database. This could lead to missing data, but also misinterpreting of the assurance statement by the GRI Database.

The market for CSRA still lacks research in a lot of areas. As mentioned earlier, unlike the question which firms choose assurance, its eventual benefits remain questioned. As this is the first exploratory study with European firms, research should continue reassessing Europe in different contexts and different time periods to further improve the understanding of how CSRA is valued in European markets. Criticisms around regulation lead to scholars questioning the content and quality of assurance statements. Content analysis on the quality of assurance is already present in some studies. However, the question whether quality differences also lead to differences in economic benefits has not been examined to this point. Regarding economic benefits, future research should expand benefits to other value measures such as firm value, information asymmetry (spreads) and for example sustainability indicators. Lastly, there has been a widespread call for increased regulation. As mandatory CSR reporting and assurance is, although slowly, increasing for some countries, it may also

be interesting to see what the consequences are. Future research should therefore assess the consequences of mandatory CSR reporting and assurance.

Concluding, this study provides an exploratory analysis on the capital market benefits of assurance of CSR reports. Although it is expected that CSRA is negatively associated with the cost of equity capital, results do not support the hypotheses. Despite its limitations, the results of this study pave the way for future research on the benefits of CSRA. As research on this topic is scarce, the rapidly expanding markets of CSR reporting and CSRA and the lack of regulation, oversight and guidelines call for further analyses on how firms may benefit from CSRA and in which contexts this relationships hold.

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