Radboud University

How Do Investors Value Assurance on Corporate Social Responsibility (CSR) Reports? Evidence From European Listed Companies

By Wouter Benschop (s4233115)

Master Thesis July 2017

Supervisor. Dr. D. Reimsbach

Nijmegen School of Management

Master Track: Corporate Finance and Control

Abstract

More and more companies are publishing CSR reports due to the growing interest of investors. Nonetheless, the quality of this information varies substantially across firms. Consequently, investors are demanding external verification of the content of CSR reports. This thesis examined how investors value the assurance and subsequent assurance-related decisions concerning the scope, level, provider and quality. Using data for 525 companies, the results indicate a significant positive influence of assurance on firm value. However, this relationship only holds when the reporting company is located in a country where CSR reporting remains voluntary. A significant negative relation is found between the scope of the assurance and firm value. Implying that assurance is preferred, but the costs involved should be limited. Furthermore, a significant positive relation is reported between the quality of assurance and firm value. No relationship is found for neither the level nor the provider of assurance on firm value. These findings show the importance of assurance for investors and the need for mandatory and enhanced regulation.

Contents

1. Introduction

Over the last decades, stake- and shareholders have become increasingly interested in the environmental and social performance of firms. Which is why firms started to voluntary release Corporate Social Responsibility (CSR) reports. One recent example that increased pressure on firms to be more open/transparent about CSR was the Volkswagen Group scandal or the even more recent acquisitions against Daimler (and Bosch) and Audi. These companies are accused of manipulating the software of their automobiles regarding their (diesel) emissions (Miller, 2016; Der Spiegel, 2017; Het Financieele Dagblad, 2017). Nonetheless, it is argued by Deegan *et al.* (2006) that share- and stakeholders remain cautious about believing the contents disclosed in these reports. This is because investors do not know whether the information is self-serving or gives an actual depiction of the companies actions regarding environmental and social issues (Cheng *et al.* 2015). One way to enhance the trustworthiness is by means of acquiring independent third party assurance on the CSR report, which firms have increasingly adopted (Park & Brorson, 2005; Jones & Solomon, 2010). However, due to the voluntary nature of assurance, general accepted guidelines and procedures are not yet developed. Due to this, the quality, scope (i.e. which sections), level (i.e. the rigor), and the firm that performs the assessment of the assurance vary significantly among companies, which can deteriorate the potential benefits of assurance (Gürtürk & Hahn, 2016). Therefore, this thesis tries to examine how the adoption and different aspects of assurance are valued by investors.

Companies can have various reasons for demanding assurance on their CSR reports. For instance, they can be pressured by the general public to adopt assurance (Braam *et al.*, 2016, Clarkson *et al.*, 2007). On the other hand, they can adopt assurance because they want to show to the public that the information is not self-serving and that they provide high quality disclosures (Cheng *et al.*, 2015). Previous research has attempted to examine and understand the consequences for companies after they had chosen to acquire assurance. For instance, Hodge *et al.* (2009) found that assurance, and when this assurance was both of a high level and provided by an accountant, takes away doubts of investors regarding the disclosures made by the reporting companies. Casey & Grenier (2015) even found that companies that bought assurance had significant capital market benefits. On the contrary, the results of Cho *et al.* (2014) and Peters & Romi (2015) show that companies saw no or just a marginally significant increase in their share price after they had bought assurance.

However, the latter results might be due to the fact that Cho *et al.* (2014) and Peters & Romi (2015) examined companies located in the United States, which are obligated to communicate their emissions by law, and are in this way subjected to a mandatory reporting regime (Rich, 2009). Although, the disclosures might not be validated by the government directly, Casey & Grenier (2015) argue that this indirectly forces a firm to behave in the appropriate way. If this is the case, investors can deem the added value of external assurance inadequate. Therefore, this thesis tries to examine the impact of the adoption of assurance and a wide range of CSR assurance-related decisions (i.e. scope, level and provider) under both a mandatory and voluntary reporting regime. In addition, the existing literature does not consider the consequences of the differences in quality of the assurances, although suggestions were made by Junior *et al.* (2014). The assurances vary significantly because having assurance is a voluntary choice and is, therefore, subject to the needs of executives (Owen & O'Dwyer, 2004) and how the provider believes the statement should be filled in. Evidence on this heterogeneity among assurances has been provided by e.g. Deegan *et al.* (2006) and Perego & Kolk (2012).

Hence, the aim of this thesis is to examine the association between the adoption, the level, provider, scope, and quality of assurance and firm value. The sample contains European companies that published a CSR report in 2016 according to the GRI database. The total sample used in this thesis contains 525 companies. Of these companies 168 chose to take up assurance. Of these 168 companies that provided an assurance the scope, level, and provider of the assurance is retrieved from the GRI database. The quality of the assurance is assessed using a content analysis, which is based on Perego & Kolk (2012), Segui-Mas *et al.* (2015) and Gürtürk & Hahn (2016). This content analysis enables an analysis of a broad variety of items addressed in the assurances. Subsequently, the incremental value of the adoption of assurance and several aspects of assurance are examined using the Ohlson (1995) valuation model, in line with previous research, such as Peters & Romi (2015).

This thesis contributes to the existing body of literature in several ways. Firstly, this thesis re-examines the relation between assurance and firm value, and therefore gives an insight into the current state of this still evolving concept. Peters & Romi (2015) found no relation between firm value and CSR assurance in their first sampling period, however it became marginally significant during the latter years. This result can be interpreted in the way that assurance is becoming increasingly important for investors when they decide to invest in a company. In addition, this thesis uses a European sample instead of an all U.S. sample which is used by most previous researchers, such as Peters & Romi (2015), Cho *et al.* (2014) and

Casey & Grenier (2015). Sustainability is a topic that receives a lot of attention in Europe and where most companies can report voluntarily. Also, some important organizations that are focused on sustainability are located in Europe, such as GRI and Greenpeace (Braam *et al.*, 2016). Hence, a research with regard to the current state using a European sample could change the conclusion drawn by previous researchers.

Furthermore, in contrast to previous research, this thesis uses an archival study to examine a broad perspective of aspects of assurance including scope, level, provider and quality. Previous research predominantly studied assurance in an experimental setting, such as Hodge *et al.* (2009), Pflugrath *et al.* (2011), and Cheng *et al.* (2015). In addition, the reaction of investors with regard to the scope of the assurance is examined, whereas previous researchers limited their focus towards provider (e.g. Casey & Grenier, 2015; Pflugrath *et al.* 2011), and level of assurance (e.g. Hodge *et al.*, 2009). Finally, this thesis provides evidence on the consequences of the quality of these statements, whereas prior studies predominantly focused on the determinants (e.g. Zorio *et al.*, 2013) or provide a descriptive overview of quality (e.g. Perego & Kolk, 2012). This method allows this thesis to separately measure each feature of CSR assurance and simultaneously control for all other aspects of assurance. In addition, the relationship between the assurance-related decisions and firm value is checked for a possible self-selection bias during the robustness tests.

The findings of this thesis are important to firms, regulatory bodies, and practitioners. The results give insight into the potential benefits of taking up assurance and thereby aid firms' decision making when considering assurance. Also, the subsequent cost-benefit decision with regard to scope, level, and provider of assurance can be based on the findings of this thesis. Furthermore, this thesis shows the importance of assurance quality. This can help the advisory role of the GRI and the preparation of future guidelines. The findings are also interesting for regulatory bodies to underline the value and importance of mandatory regulation. Finally, practitioners could use this thesis as evidence to convince firms to buy their products regarding external verification.

The thesis is organized as follows; Chapter 2 shows the trend with respect to assurance and gives an overview of the differences between the verification of CSR information and the auditing of financial information. Furthermore, prior research regarding CSR information is discussed, after which hypotheses are developed on the basis of signaling theory. Chapter 3 provides a description of the used method and gives a depiction of the data. Chapter 4 shows

the results of the analysis and robustness tests. In Chapter 5 the results are discussed regarding the expectations, theory and prior findings. Also, the limitations are mentioned and suggestions for future research are made. Chapter 6 contains the conclusion of this thesis.

2. Literature Review

2.1 Background on Assurance

Sustainability is becoming more and more an imperative topic for companies. One example that shows this increased interest, is the amount of attention U.S. President Trump received regarding his plans about climate change and the cancellation of the 2016 Paris Climate Change Agreement (Financial Times, 2017). One of the companies that tracks the trend of CSR disclosure by companies is KPMG. KPMG has examined the issuance and quality of CSR disclosures from 1993 onwards. They found that only a little over ten percent of the world largest companies issued a CSR report or CSR related information during their first year of study. This increased to over seventy percent in 2015 (KPMG, 2015). But, as stated in the introduction, the growing issuing of CSR related information does not translate into heightened trustworthiness of this information (Dando & Swift, 2003). This stems from the fact that these reports lack transparency, address similar issues in various ways and doubts remain whether they provide the reader with a complete picture (Adams & Evans, 2004; Cheng *et al.* (2015); Hodge *et al.*, 2009).

Various initiatives worldwide have proposed standards and procedures by which companies can communicate their CSR information to the public (Hodge *et al.*, 2009). These bodies are for instance the Global Reporting Initiative (GRI) and AccountAbility. They have a vital role in initiating standards to increase the role of CSR disclosures by enhancing the homogeneity of these disclosures (Cohen & Simnett, 2015). The starting objective of the GRI was to provide a framework for companies on how to report their environmental impact. They broadened their stakeholder audience in 1998 by also addressing social and economic related items. The GRI released their latest set of guidelines in 2013, called G4[1], which includes standards for reporting and a manual on how to implement the GRI Guidelines (Global Reporting Initiative (GRI), n.d.). The G4 give an insight into three standard areas on which the company should report, which are social matters (e.g. how employees are treated), environmental matters (e.g. emissions) and economic issues (Cohen & Simnett, 2015). Besides

[1] A new set of guidelines called 'GRI Standards' has been released in 2016, but will not become mandatory for firms until July 2018 (Global Reporting Initiative (GRI), 2016)

these guidelines for CSR reporting, these bodies have also advocated to externally assure this information which can enhance the trustworthiness of CSR disclosures even further (Cohen & Simnett, 2015; Hodge *et al.*, 2009; Kolk & Perego, 2010).

This call has been answered, to a certain degree, because in 2015 over sixty percent of the largest 250 companies worldwide had their CSR reports assured. Also, 42% of the 100 largest companies per country adopted assurance during 2015 in contrast to the 38% that adopted assurance in 2013 (KPMG, 2015). There are two ways in which a company can take on assurance: internal assurance and external assurance. Internal assurance can be achieved by means of internal auditing and control systems to validate data gathering processes (Global Reporting Initiative (GRI), 2011). The other being external assurance, which is recommended by the GRI and is the focus of this thesis. Whereas internal assurance gives the executives control over the reporting process, external assurance checks the overall quality of the disclosures. For assurors to assess this quality, they need to have the right recourses and possess the right competences to do the verification process (Deegan *et al.*, 2006; Simnett *et al.*, 2009a). They have to confirm that the disclosures, within the scope of the assurance, are in line with the appropriate guidelines and address the three broad categories in an applicable way (Cohen & Simnett, 2015). Also, they have to make sure that companies do not merely disclose positive information, called ‘cherry picking' (O'Dwyer, 2011).

However, problems persist when these reports are assured. This is because the assurance process misses general accepted guidelines and principles (Gürtürk & Hahn, 2016). Currently, one of the most common set of guidelines is produced by the International Auditing and Assurance Standards Board (IAASB) called the ISAE3000. The focus of the ISAE3000 lies upon the verification of internal control systems that measure the CSR performance (IAASB, 2011). Another set of guidelines is produced by the British non-profit organization AccountAbility, which are called the AA1000 Assurance Standards (AA1000AS). These standards do not merely support the checking of data gathering processes, but also help a company on how to evaluate its operations and subsequent performance. In addition, it encourages stakeholder incorporation, and that material information regarding stakeholders is verified (AccountAbility, 2008). To do this, the assuror has to identify different stakeholder groups and their respective informational needs (Segui-Mas *et al.*, 2015). Both these standards address similar issues, and make a distinction between two levels of assurance.

Accountant firms have a monopoly position on the verification of mandatorily issued annual reports, but they face competition on the assurance market for sustainability disclosures (Cohen & Simnett, 2015). Other assurance providers can be e.g. environmental experts, management advisors and NGO's (Perego & Kolk, 2012). These firms became major competitors for accountancy firms (Wallage, 2000). For instance, Simnett *et al.* (2009a) found that in 2002-2004, almost sixty percent of all assured CSR reports were assured by a firm other than an accountant. This is due to the distinct difference between financial and non-financial information. CSR-related information is non-financial, and contains e.g. information on emissions and working conditions, whereas auditors are trained in understanding financial regulation and accounting standards. Therefore, accountant firms are not the ordinary choice for firms when they demand assurance on their CSR report (Pflugrath *et al.*, 2011). However, it can be argued that they might profit from the fact that they are well established in the overall assurance market.

2.2 Prior Findings on Assurance

2.2.1 Determinants and Consequences of Assurance

Empirical research regarding this subject is drawing on more and more the attention of scholars over the last 10 to 15 years. Most of these studies concentrate on giving an overview of the assurance market or determinants for the demand of assurance by companies (Birkley *et al.*, 2016). For instance, Simnett *et al.* (2009a) conducted a broad empirical study. They gathered data on an international sample of over two thousand companies that produced a CSR report during 2002-2004. They found that companies that operated in sensitive industries (e.g. mining and utilities) had a greater demand to have their CSR report assured. Also, when companies were domiciled in a country with a strong legal environment or when the country of origin was stakeholder-oriented, the chance of having their reports assured increased, as did the subsequent choice towards an accountant firm as the provider. The latter is also supported by the findings of Kolk & Perego (2010) and by Zhou *et al.* (2016) on the GHG assurance market. However, contradicting results have been found by Casey & Grenier (2015), who studied the adoption and benefits of assurance using a U.S. sample. They found no significant relation between the adoption of assurance and the environmental and social sensitivity of the industry the companies operated in. They argue, in line with LaPorta *et al.* (2006), that this might be due to the fact that these companies have to disclose because of regulation, which might replace the demand for assurance.

These studies gave important insight into why companies demand assurance and subsequently the choice of assurance providers, hence the outcome. Next, literature regarding the consequences of assurance will be discussed. Research on whether investors deem assured CSR reports more trustworthy has been provided by Hodge *et al.* (2009) and Pflugrath *et al.* (2011). Hodge *et al.* (2009) made use of an experimental survey wherein they asked students about their perceived credibility regarding certain CSR reports. They checked whether this was higher when the reports were assured, whether the assurance was of a high level and whether the provider of the assurance was an accountant. They found a significant positive relation between the perceived credibility of CSR disclosures and assurance. No individual relations were found with regard to the level and the provider of the assurance. However, a positive interaction did exist when the assurance was both of a high level and provided by an accountant. It should be noted that the result regarding the understanding of CSR (reports) among students was not given (although the question was asked) and could have had an effect on the results. Pflugrath *et al.* (2011) conducted an experiment with the subjects being financial analysts from the U.S., U.K. and Australia. Their results were similar with those of Hodge *et al.* (2009). In addition, they found that the disclosures were perceived more reliable when the company operated in the mining industry (i.e. sensitive industry).

Another potential benefit of having assurance was examined by Birkley *et al.* (2016). Instead of focusing on credibility they argue that assurance leads to an enhanced environmental (conscious) image. They gathered environmental reputation scores from a magazine called Newsweek. This magazine scored companies that produced a CSR report during 2008 and 2009, in order to identify the best environmental performing company in the United States (Newsweek, 2016). The analysis of Birkley *et al.* (2016) showed that assurance is positively associated with the environmental image of the company. This relationship does not depend on the provider of the assurance. Both accountants and other assurors had a significant effect on the environmental image of the company. However, it should be noted that they found that the effect of having a provider from the auditing profession caused a bigger effect.

The link between assurance and the quality of the CSR disclosures is examined by Moroney *et al.* (2012). They underline the difference between preparing the CSR report and the assuring of the disclosures. They argue that through the assurance process the assuror can enhance the quality of the CSR disclosures by e.g. recommendations. These changes can have a direct effect, instead of the frequently argued lagged effect, when recommendations concern the improvement of management systems. Their results show a significant positive relation

between quality of CSR disclosures (in CSR reports, annual reports and online disclosures) and assurance. This relation does depend on the know-how, but not on the providers 'profession. More recently, Braam *et al.* (2016) found that Dutch companies that adopt assurance also provide more information that can be validated by for instance share- and stakeholders themselves.

Next, the literature on how assurance affects investment decisions and the capital market benefits of assurance will be discussed. In addition to the examination of determinants of assurance, Casey & Grenier (2015) also investigate the capital market benefits of assurance on CSR reports. They found that the cost of equity capital is lower for firms with assurance in the subsequent year. Also, analyst forecast were more similar for companies that had their CSR report assured. In addition, the expectation of analysts were more often correct. Furthermore, they found a reinforcing effect when the assurance is provided by a firm from the accounting profession. Based on these results they find it baffling that the rate of assurance on CSR reports remains low in the United States.

Coram *et al.* (2009) provides initial evidence on the relation between share price assessments and the assurance of non-financial information. They conducted an experiment and found that there was a significant effect between share price assessment and the assurance of non-financial information. However, they found that this relation depends on the situation, since it only holds for the assurance of positive information. Brown-Liburd & Zamora (2015) studied a context more related to the assurance of environmental and social disclosures. They examined, by means of an experiment, whether the relation between a share price assessment, CSR investment disclosures, and assurance differed when executives received a reward which depends on the non-financial performance of the company. Hence, whether doubts exist among shareholders regarding the self-serving motives of executives. They find that high (green) investment levels only lead to higher share price forecasts when assurance is present. A similar experiment was performed by Cheng *et al.* (2015). They found that reporting on non-financial items are perceived as more essential when these are verified by an external party, which in turn could lead to a higher readiness of investors to invest in the company.

Actual archival studies regarding the value implications of assurance are scarce. Among them are Cho *et al.* (2014) and Peters & Romi (2015). Cho *et al.* (2014) and Birkley *et al.* (2016) argued that assurance can increase firm value based upon enhanced trustworthiness. In addition, they argue that assurance strengthens the effect found by Dhaliwal *et al.* (2011). Their results

showed that disclosing has a positive effect on the social and environmental image of a company. Cho *et al.* (2014) used a valuation model to examine this relation in a U.S. setting. However, no significant results were found, meaning that having assurance did not lead to higher firm value. Cho *et al.* (2014) argue that this could cause for the fact that the demand for assurance lacked in the United States. Similar results were found by Peters & Romi (2015). They examined the market value effects of assurance during the periods 2002-2007 and 2008-2010. No significant results were found during the first period. During the second period, the relation between assurance that was provided by the auditing professions was marginally significant. Based on these results they conclude that investors are increasingly taking assurance into account.

Most of these studies use a sample containing companies domiciled in the U.S. However, as shown by the findings of Casey & Grenier (2015), results from the U.S. might not be generalizable to other countries. They argued, in line with LaPorta *et al.* (2006), that strict regulation can replace third-party verfication since these companies are (indirectly) monitored by the government. Furthermore, it should be noted that most studies start by arguing that the releasing of CSR information and the assurance of it is voluntary. However, mandatory regulation is emerging. This is an important factor to take into account since this could be the driver behind the issuance of CSR reports and the subsequent assurance. For instance, KPMG (2015) found that eight countries that had mandatory regulation on CSR disclosure had a CSR report issuance rate above 90%. Also, in the U.S., regulation is emerging. High emitting companies domiciled in the U.S. have to communicate their GHG emissions under the Greenhouse Gas Reporting Program from 2009 onwards (Rich, 2009). When investors deem this regulation sufficient (i.e. government monitoring), this might explain the insignificant results found by Cho *et al.* (2014) and Peters & Romi (2015). Therefore, this thesis tries to close this gap by focusing on subsamples within Europe, where under most regimes, CSR disclosure remains voluntary[2].

2.2.2 Quality of Assurance

The quality can be defined as to whether the assurance statement provides information to the share- and stakeholder on whether the company's disclosures, within the scope of the assurance, give a correct and complete depiction of the company's operations and answers the needs of those share- and stakeholders in the sense of transparency and understandability (based on

[2] Exceptions are e.g. Denmark France and the United Kingdom.

Adams & Evans, 2004). Scholars have addressed these issues by examining the assurance quality using a content analysis. Among the first was the study of Deegan *et al.* (2006), who studied an Australian sample. They found that the quality of assurance statements varied significantly and that most of the assurance statements lacked material information. For instance, assurance statements did not contain information on legal liability, e.g. who is responsible for disclosures in the report and who for the assurance process. Besides, the titles and addressees (management/stakeholders/shareholders/ the readers) varied among assurances even when the work performed was the same. Also, which standards were used to guide the assurance processes remained unanswered in most cases. They argue that this information is vital and homogeneity must be achieved. Otherwise, users of the statements could deem them worthless.

More recently, evidence has been provided on large companies over a 10-year period by Perego & Kolk (2012). Their descriptive analysis showed that between 1999 and 2008 the average quality of the verification statements increased significantly. However, the quality stagnated during the latter years of their research. A higher average quality score was achieved in European countries relative to the United States. Also, Australia saw its score increase significantly during the nine-year period. According to the authors, this seemed to coincide with the emergence of regulation regarding the publication of sustainability information. With respect to industry affiliation, their results showed that especially the environmental sensitive industry contained high-quality assurances. Also, they found that assurors from the accounting profession delivered a marginally higher quality than certification bodies.

A different view was taken by Zorio *et al.* (2013), who also added company characteristics when examining the assurance quality among Spanish companies. Overall, they found that the average quality of the assurances is tolerable, meaning that the assurance statements give a concrete amount of information to users of the statement. In addition, they found additional evidence on the relation between assurance provider and the quality of the assurance. Their findings showed that the quality of assurance provided by an accountant firm is higher in contrast to other providers. Also, their OLS regression showed that bigger firms had higher quality assurance in place with respect to smaller firms. They gave several reason for why this might be the case. The first reason is that it is due to the fact that larger firms perhaps tend to request a higher quality assurance from the provider. The second reason they mention is that the auditor faces a bigger public (i.e. more reputational costs) and therefore

chooses to provide better quality. Furthermore, in contrast to Perego & Kolk (2012), no relation was found between the quality of the assurance and the industry the company operated in.

Segui-Mas *et al.* (2015) extended the content analysis developed by Perego & Kolk (2012) and O'Dwyer & Owen (2005) by adding items such as e.g. whether the statement included limitations with respect to the assurance process and recommendations for future CSR reports. Also, instead of gathering a sample of listed companies, Segui-Mas *et al.* (2015) focused on partnerships. Their results were similar to Perego & Kolk (2012), e.g. sensitive industries showed overall higher quality scores. Also, companies domiciled in shareholder-oriented countries had assurance statements that were of a higher quality. Overall the largest number of assurors made references towards their independence from the company and their non-affiliation with stake- and shareholders. However, in most statements, no remark was made to different stakeholder groups and materiality. In contrast to Perego & Kolk (2012) and Zorio *et al.* (2015), they found that other firms produced assurances of higher quality with respects to assurances provided by accountant firms.

Most recently a study was conducted by Gürtürk & Hahn (2016). In line with Segui-Mas *et al.* (2015) they found that most assurances did not make reference towards the incorporation of stakeholders. In addition, they found that the assurance practice is becoming dominated by (BIG4) accountants and the use of the standards issued by the IAASB to guide the assurance process. These big accountant firms might mimic each other and are being mimicked by other providers, which causes assurances to becoming more and more the same. Therefore, the authors doubt whether these assurances can lead to a higher trustworthiness of CSR disclosures and subsequently question the value of these assurances.

These studies have predominantly underlined the possible heterogeneity in assurance quality. Also, most of these studies advocate mandatory guidelines and doubt the potential value implications of the assurances in their current state. However, no study has been identified that examined investors reactions to these different qualities. This thesis intends to close this gap.

2.3 Theoretical Framework & Hypotheses Development

2.3.1 Theoretical Framework

The problem that arises with the publication of CSR information can be explained by means of the agency problem. CSR information is prone to two types of information asymmetry. The first being that the users of the information doubt the quality of the information, i.e. is the information true and does it provide a complete picture. The second is with regard to the underlying motives of the company that disclosed the information (Elitzur & Gravious, 2003;

Connelly *et al.,* 2011). For instance, the stake- and shareholders doubt whether the company tries to, for example, greenwash their operations. This means they fear that the company is trying to create an image of themselves that they are committed to the environment, but their actual actions do not reflect this (Cheng *et al.*, 2015). However, even when the motive is justified, doubts about the quality remain, due to the lack of general accepted guidelines and standards to produce CSR disclosures. Hence, the quality of the information is difficult to observe for investors.

Two theories that are frequently used by scholars to explain the choice of companies to demand assurance are socio-political theories and voluntary economic based theories. From a socio-political view, legitimacy theory argues that companies that belong to the lesser performers or a sensitive group are pressured by stakeholders to buy assurance. Companies will answer this pressure by publishing information to alter the picture share- and stakeholders have of them (Clarkson *et al.,* 2007). On the other hand, if they fail to do this, legitimacy theory states that the companies can face increased scrutiny (Guthrie & Parker, 1989). Hence, this theory argues that the lesser performers use assurance as an instrument to appear legitimate (Reverte, 2016). Signaling theory argues that a company tries to show its quality using a signal, which would otherwise remain unobservable (Spence, 1973; Connelly *et al.,* 2011). In this sense, they try to amass a signaling reputation (Cheng *et al.,* 2015). This would not be mimicked by the lesser performers because this would reveal their lower quality and therefore they would be subsequently 'punished' by the market (Connelly *et al.,* 2011). This thesis takes on the signaling approach on how to overcome the agency problem in line with previous literature (e.g. Cho *et al.* 2014; Peters & Romi 2015; Birkley *et al.* 2016).

2.3.2 Adoption of Assurance

When applying the signaling framework (based on the framework of signaling theory by Connelly *et al.,* 2011) to the assurance market for CSR reports, the company that publishes the CSR report is the signaler and has access to non-public information about the company. Therefore, the company knows the quality of the CSR disclosures and they want to convey this quality to their share- and stakeholders. They do this in order to distinguish themselves from companies that have a low-quality CSR report (i.e. the lesser performers). The signal, in this case, is having the company's CSR report assured. For the signal to be useful it should unveil the underlying quality of the information (Connelly *et al.,* 2011) which is satisfied since the provider of the assurance checks the report and delivers a statement confirming that the quality is of an acceptable level. Firms that perform worse will abstain from doing this since having

assurance is a costly and timely process (Simnett *et al.,* 2009b) and it would therefore only lower profits, which is also an essential requirement of the signal (Bird & Smith, 2005). Furthermore, since the assurance statements are usually published along with the CSR report, they are easily detectable. In addition, the GRI keeps a list of all published CSR reports and whether they are assured, making it more visible to the receivers who would otherwise not react to the signal. Finally, it is important, for the signal to be effective, that the share- and stakeholders should actively search for the signal (Gulati & Higgins, 2003) and how they interpret it (Hodge *et al.*, 2009).

When the share- and stakeholders perceive the signal as a higher dedication of management to environmental and social causes in comparison to other companies, this will counter the believes that a CSR report is used to misguide the investors (Cheng *et al.,* (2015). Also, since the information in the CSR reports is checked, there is a lower probability the reports are published, containing glitches. Consequently, a higher quality is attained (Hodge *et al.*, 2009). Research also shows that consumers are willing to pay higher prices for goods of companies that obtained assurance (Gardberg & Fombrun, 2006) and enhances a firm's reputation (Birkley *et al.*, 2016). Besides, Birkley *et al.* (2016) argued that having assurance motivates the workforce of the company, leading to higher work efficiency. In turn, this can increase future cash flows, lower costs, and therefore increase profits. Also, investors will believe that the company will endure the expenses of the assurance only when the company deems CSR information relevant for corporate performance (Simnett *et al.,* 2009a). Hence, the assurance of CSR information can increase the readiness of shareholders to invest in the company, leading to a higher market value. In line with this argumentation and the findings of Hodge *et al.* (2009), Pflugrath *et al.* (2011), Brown-Liburd & Zamora (2015) and Casey & Grenier (2015) the first hypotheses is formulated as follows:

H_1: The market value of a company is positively associated with the choice of the company to obtain assurance.

2.3.3 Assurance Process

If a company chooses to have its reports assured the subsequent decision would be to choose which level of assurance to obtain and which sections (i.e. scope) to assure. As stated earlier, there are two levels of assurance a company can choose. The ISAE 3000 distinguishes between reasonable assurance and limited assurance (IAASB, 2011). The AA1000AS also differs between two levels of assurance being high assurance and moderate assurance (AccountAbility, 2008). In this thesis, the levels explained in the ISAE 3000 are used, in line with the research of Hodge *et al.* (2009). Reasonable assurance is stated in the positive form, in which the assuror states that the CSR report is in line with the identified criteria. Limited assurance is stated more negatively, indicating that nothing has come to the assurors attention that the CSR report is not in line with the appropriate guidelines (Hodge *et al.*, 2009; O'Dwyer *et al.*, 2011). As can be expected, to come to a reasonable conclusion (i.e. high-level assurance) a more extensive assurance process has to be conducted by the assuror. Therefore, the cost for the company to acquire a reasonable level assurance are higher than when a limited assurance statement is chosen. However, acquiring a reasonable assurance means the risk of serious flaws lowers significantly (O'Dwyer *et al.*, 2011).

The second part that determines the rigor of the assurance process is with respect to the agreed upon scope of the assurance. The scope of the assurance defines which sections of the sustainability report the company wants to have 'checked'. This can be for instance the data (i.e. specific sections), GHG emissions, or the entire sustainability report (Global Reporting Initiative (GRI), 2013). Hence, in line with the argumentation about the level of assurance, the broader the scope of the assurance, the more extensive the assurance process and the higher the costs. Also, the risk that serious flaws are still present in the CSR report is reduced.

When this is put in a signaling perspective, a company that wants to distinguish itself from lesser performers will obtain a higher level assurance and will choose to have their entire CSR report assured. With regard to the observability of the signal, the scope of the assurance is frequently mentioned in the assurance statement and therefore readily available to investors. Besides, the GRI provides a complete overview whether the CSR report is partially assured, completely assured or the assurance was limited to the information regarding GHG emissions. This way, no problems will arise with regard to observability. However, as argued by Hodge *et al.* (2009), questions were raised about whether investors acquire and understand information relating to the level of the assurance. Evidence concerning this subject has been provided by Hasan *et al.* (2003). They found that subjects perceive low level assurance statement as of a

lower quality and vice-versa. Furthermore, due to the costs a company has to endure and the way the more extensive process is structured, this would outweigh the benefits for lesser performers. Finally, the signal is valuable for investors, since the chance that the CSR report contains serious flaws is reduced (Hasan *et al.,* 2003). Also, it shows the intention of the company that it does not hide certain information and is convinced of the correctness of the information in the sustainability report. Hence, the readiness of investors to invest in the company increases when the assurance process covers the entire CSR report and is of a higher level. By this argumentation and the findings of Hodge *et al.* (2009), the following hypothesis is formulated.

H_2: The market value of a company is positively associated with the level and scope of the assurance.

2.3.4 Assurance Provider

The other choice the publishing company has to make is with respect to the provider of the assurance. As stated earlier, accountant firms do not have a monopoly on the assurance market. Therefore, companies have a wider choice of assurors (Casey & Grenier, 2015). In this thesis, a distinction is made between providers from the accounting professions and other providers (who could be for instance sustainability experts, consultancy firms or engineering firms (Global Reporting Initiative (GRI), 2016)). With regard to the standards used in the assurance process, Accountancy firms are known to make use of the ISAE3000. Whereas the other assurance providers predominantly make use of the AA10000AS from AccountAbility (Cohen & Simnett, 2015).

Overall it is argued that assurors who work for accountant firms do a better job than other providers with respect to the assurance of sustainability disclosures. Firstly, it is argued that the Code of Ethics and quality controls introduced by the IAASB and used by accountants, improve the process of the assurance and therefore increases the overall quality (Huggins *et al.,* 2011; O'Dwyer & Owen, 2005). Besides, accountant firms have a significant amount of reputational capital which motivates them to perform a high-quality job and makes them less prone to outside influences which can be detrimental to the assurors independence (Craswell *et al.*, 2004; Simnett *et al.*, 2009a). Also, accountant firms can profit from economies of scale, while other providers are usually much smaller (Pflugrath *et al.,* 2011). However, counter-

arguments are made by scholars who believe that other providers, such as an environmental specialist, perform a better job (Gray, 2000; Zorio *et al.*, 2013). They build upon the fact that these providers have more specialized knowledge regarding the assurance of CSR dislcosures and therefore perform better. However, as argued by Simnett *et al.* (2009a), this knowledge can easily be bought or obtained by accountant firms.

Based on this argumentation, when a company tries to signal its outperformance it would choose a provider from the accounting profession to verify their report. To choose an accountant is also more costly and the chance that errors are found, is also higher, hence lesser performers would not be willing to mimic this signal. The shareholders are also interested in this information, because it shows dedication of the company to provide high-quality information to their share- and stakeholders, and therefore endure the extra costs (Simnett *et al.*, 2009a). When the company believes an accountant firm provides a more valuable assurance, they would be more eager to devote their money to a company that has its CSR report assured by an accountant firm. Based on this argumentation and the findings by Casey & Grenier (2015), Hodge *et al.* (2009) and Pflugrath *et al.* (2011) the following hypothesis is formulated:

H_3: The market value of a company is higher if the report is assured by an accountant firm instead of a non-accountant firm.

Subsequently, these accountant firms can also be one of the BIG4 firms, which are the biggest accountant firms worldwide. These companies have more public visibility than the smaller (local) accountants. Hence, they have more to lose and therefore more reputational capital. Also, they have larger economies of scale than other accountant firms. Therefore, there might be a different (bigger) effect when the assurance is provided by a BIG4 accountant. The following hypothesis if formulated.

H_4: The market value of a company is higher if the report is assured by a BIG4 accountant firm instead of non-BIG4 accountant firm.

2.3.5 Assurance Quality

Finally, the provided assurance statement informs the investors on e.g. the work performed and competencies of the assuror. Giving more information in the statement (i.e. higher quality) helps the investors to assess how valuable the assurance is. For instance, the AA1000AS requires assurors to report on how stakeholders have been involved in the assurance process and the method by which the assurors tries to identify these stakeholders (AccountAbility, 2008). Without referring to stakeholders, doubt remains whether the given report addresses all material issues regarding the stakeholders or that it just answers to the needs of the company's executives (Edgley *et al.*, 2010). Also, the description of the assuror's competencies is necessary for share- and stakeholders. Claiming to be competent and providing an explanation on this matter increases the stakeholder's confidence that the CSR information does not contains errors. It stems from a logical reasoning that stakeholders are interested in these disclosures since as argued before, the assurance of non-financial information is a relatively new concept. Moreover, the provision of limitations on the scope of the assurance helps investors to assess the extensiveness of the assurance process (Fonseca, 2010). Also, when recommendations are given, the value of the assurance potentially increases. These recommendations can entail advice on the gathering of data and how to link financial and non-financial information increasing the value of future disclosures, and therefore the current market value of the company. So, when assurance quality is higher, the trustworthiness of the assurance increases, lowering information asymmetry and therefore leaving investors more willing to invest in the company's shares. The following hypothesis is formulated:

H_5: The market value of the company is positively associated with the quality of the assurance provided.

3. Methodology

3.1 Sample

In order to examine the relation between assurance and the assurance-related decisions and the market value of a company, a sample of European firms is composed. To find companies that published a CSR report, the GRI database is consulted. The GRI database gives a full overview of all published CSR reports uploaded to the GRI website from 1998 onwards. All European firms that published a CSR report, which could be an integrated report or a stand- alone report, during 2016 are selected[3]. This means that companies are included whose fiscal year ended on December 31st 2015 and June 30th 2016. Next, companies that were non-listed during 2016, according to the database, are eliminated. Although some companies were listed according to the GRI, it appeared that they were delisted during the following period and are therefore removed from the sample. Furthermore, companies are removed of which financial data is not available in Orbis. A total of 525 European companies remains that published a CSR report. Of these companies, 168 (32%) had chosen to assure their CSR report.

Table 1 provides an overview of the CSR publication and assurance rate per country. Of the 525 companies, 21% is domiciled in the United Kingdom, and 14% is domiciled in France. Both these countries have mandatory regulation in place regarding CSR disclosures according to the KMPG (2015) survey along with Denmark, Luxembourg, and Norway. The assurance rate in these countries remains rather low, only 15% of the companies listed in the United Kingdom adopted assurance. The highest assurance rate was achieved in Hungary (100%). However this country contains only three observations. Next to these countries, high assurance rates were achieved in Finland (55.5%), Italy (73.7%), Spain (78.6%) and the Netherlands (72.7%). For the Netherlands, this does not come as a surprise since this country has a good reputation regarding sustainability (Braam *et al.*, 2016).

[3] After analyzing the database companies were identified that uploaded a CSR reports in 2016 with the reporting year being 2014. These companies were removed from the dataset.

Table 1
CSR reports and assurances per country

Country	Published CSR report		Assured CSR report	
	Freq**	Of total sample	Freq	Of CSR reports
Austria	12	2.3%	9	75.0%
Belgium	12	2.3%	4	33.3%
Croatia	2	0.4%	0	0.0%
Denmark*	23	4.4%	1	4.3%
Estonia	2	0.4%	1	50.0%
Finland	40	7.6%	22	55.5%
France*	72	13.7%	14	19.4%
Germany	50	9.5%	26	52.0%
Greece	4	0.8%	2	50.0%
Hungary	2	0.4%	2	100.0%
Iceland	1	0.2%	0	0.0%
Ireland	3	0.6%	1	33.3%
Italy	19	3.6%	14	73.7%
Liechtenstein	1	0.2%	0	0.0%
Lithuania	1	0.2%	0	0.0%
Luxembourg*	8	1.5%	0	0.0%
Netherlands	22	4.2%	16	72.7%
Norway*	25	4.8%	7	28.0%
Poland	5	1.0%	1	20.0%
Portugal	1	0.2%	0	0.0%
Russian Federation	13	2.5%	3	23.1%
Spain	14	2.7%	11	78.6%
Sweden	53	10.1%	13	24.5%
Switzerland	28	5.3%	4	14.3%
United Kingdom*	112	21.3%	17	15.2%
Total	**525**	**100%**	**168**	**32.0%**

*Countries with mandatory regulation regarding CSR information.

** Includes both stand-alone CSR reports and reports that are integrated in the annual report.

Table 2
CSR Reports and assurances per industry

Industry	Published CSR report		Assured CSR report	
	Freq*	**of total sample**	**Freq**	**of CSR reports**
Agriculture, Forestry and Fishing	3	0.6%	0	0.0%
Mining	25	4.8%	12	48.0%
Construction	25	4.8%	6	24.0%
Manufacturing	202	38.5%	72	35.6%
Transportation, Communications, Electric, Gas and Sanitary services	73	13.9%	28	38.4%
Wholesale Trade	15	2.9%	3	20.0%
Retail Trade	24	4.6%	3	12.5%
Finance, Insurance and Real Estate	99	18.9%	34	34.3%
Services	59	11.2%	10	16.9%
Total	**525**	**100%**	**168**	**32.0%**

* Includes both stand-alone CSR reports and reports that are integrated in the annual report.

In Table 2 the publication of CSR reports and the subsequent assurance rates are given per industry. The companies were categorized according to their Standard Industrial Classification (SIC) codes to identify their primary business, which are retrieved from Orbis. Public administration (SIC = 9100-9729) and non-classifiable (SIC = 9900-9999) are excluded from the table since they do not contain any observations. The choice for industry categorization is in line with Cho & Patten (2007) and Simnett *et al.* (2009a) in order to create a comparable sample. Fifty percent of the companies in the sample operates in the Manufacturing (SIC = 2000-3999) and the Financial industry (SIC = 6000-6799), two industries which also show a high assurance rate. The highest assurance rate is achieved in the Mining (48.0%, SIC = 1000-

1499) and Transportation, Communication and Utilities (38.4%, SIC = 4000-4999) industry. Overall the Retail Trade (12.5%, SIC = 52000-5999), Agriculture, Forestry and Fishing (0.0%, SIC = 0100-0999) and Services industry (16.9%, SIC = 7000-8999) show the lowest assurance rate.

Table 3
CSR Reports and assurance per sensitive industry

Sensitive Industries	**Published CSR report**		**Assured CSR report**	
Environmental sensitive	**Freq***	**of total sample**	**Freq**	**of CSR reports**
Mining	7	3.2%	4	57.1%
Oil Exploration	15	6.8%	6	40.0%
Paper	11	5.0%	6	54.4%
Chemicals & Allied Products	45	20.5%	20	44.4%
Petroleum Refining	2	0.9%	1	50.0%
Metals	13	5.9%	4	30.8%
Utilities	28	12.7%	12	42.9%
Social sensitive				
Finance, Insurance and Real Estate	99	45.0%	34	34.3%
Total	**221**	**100%**	**87**	**39.5%**

*Includes both stand-alone CSR reports and reports that are integrated in the annual report.

Table 3 provides an overview of the publication and assurance rate of CSR disclosures in sensitive industries. The environmental sensitive industries are in accordance with Cho & Patten (2007) and can be the entire primary industry (e.g. Mining, SIC = 1000-1099) or a subset of the industry (e.g. Petroleum Refining, SIC = 2900-2999). In line with Simnett *et al.* (2009a)

the Financial Sector (SIC = 6000-6799) is incorporated as a social sensitive industry. A total of 221 companies (42% of the total sample) operates in a social or environmental sensitive industry. The distribution between environmental and social sensitive industries is approximately fifty-fifty. Of these 221 companies, 87 (39.4%) companies adopted assurance, which is 7% higher than the assurance rate of the total sample. The Metals industry (SIC = 3300-3399) has the lowest assurance rate with 31%.

3.2 Variables

3.2.1 Dependent Variable

This thesis adopts the valuation model of Ohlson (1995) in line with previous research such as Peters & Romi (2015), to measure the effect of assurance and the aspects of assurance on firm value. This model includes the following variables:

Share Price (P) The market value of the company is measured by the share price of the company four months after the end of the company's fiscal year. Hence, the share price of April 30th 2016 is taken when the fiscal year ended on December 31st 2015, and October 31st 2016 is used when the fiscal year ended on June 30th 2016. Although Peters & Romi (2015) used the three months after fiscal year end share price, an analysis of the assurance statements made clear a four-month-period is more appropriate. The analysis showed that the majority of the CSR reports were published near or at the end of a three-month period or at the beginning of the four-month period. So, in order to make sure that the publishing of a CSR reports is incorporated into the investment decisions of investors, a four-month period is chosen. In the robustness analysis the three-month period will be analyzed as well. The data is retrieved from the Orbis database.

3.2.2 Independent Variables

Book value of Equity (BVEPS) Retrieved from the Orbis database. This is the book value of common equity and is expected to have a positive influence on the share price of the company. The book value of equity is divided by the amount of stock outstanding (Ohlson, 1995).

Earnings (EPS) The earnings of the company minus extraordinary items divided by the amount of outstanding stock and is expected to have a positive relation with share price. Retrieved from the Orbis database (Ohlson, 1995).

Assurance The effect of assurance was measured by means of a dummy variable in line with previous research as e.g. Simnett *et al.* (2009) and Peters & Romi (2015). The GRI database is consulted to find out whether the company adopted assurance. When the GRI indicated the

company adopted assurance a 1 is assigned. However, after analyzing the CSR reports, two companies received a 0, since no assurance statement was found.

Provider The GRI differentiates between 3 types of assurance providers, which are accountants, small consultancy firms, and engineering firms. Since, in this thesis, the focus lies on accountants a dummy variable is included which takes the value of 1 when an accountant provided the assurance according to the GRI database (Simnett *et al.*,2009a).

BIG4 In addition to the provider's profession, the effect of whether the provider belongs to one of the BIG4 auditors is examined as well. Hence, a 1 is assigned when the assurance was provided by Deloitte, PricewaterhouseCoopers, KPMG or Ernst & Young according to the GRI database.

Scope The reporting company can choose to have their CSR reports completely assured, partially assured, or the assurance can be limited towards disclosures regarding the GHG emissions as categorized by the GRI database. A dummy variable is added when the assurance covered the entire CSR report in line with the hypothesis.

Level Since this thesis argues that a high-level assurance leads to a higher share price a dummy variable is added which takes the value of 1 when the GRI database indicates the assurance is of a reasonable level.

3.2.3 Quality Construct

Quality To assess the quality of the assurance statement a content analysis is performed in line with Gürtürk & Hahn (2016), Perego & Kolk (2012), Segui-Mas *et al.* (2015) and Zorio *et al.* (2013). Perego & Kolk (2012) based their analysis on the framework of O'Dwyer & Owen (2005), and on the standards and principles proposed by GRI and AccountAbility. A total of 19 items are addressed by their content analysis. This includes e.g. responsiveness towards stakeholders, responsibilities of the assuror and preparer of the CSR report, scope and standards used to guide the assurance process, and conclusions on materiality and completeness.

The items 1-19 are copied from Perego & Kolk (2012). However some alterations and additions are made. Firstly, items regarding limitations and recommendation are copied from Sequi-Mas *et al.* (2015) and extended by including options as to whether explanations are given on how to overcome limitations and how to implement recommendations. Thirdly, two items are included regarding reservations and whether reference has been made towards stakeholder incorporation, which are copied from Gürtürk & Hahn (2016). Also, item 18 (stakeholder responsiveness) has been extended in line with Gürtürk & Hahn (2016) as to whether an

explanation has been given in the statement. Based on this adapted content analysis a total score of 35 points can be achieved over 23 items. The complete codebook can be found in appendix 1 along with the achieved scores per company.

The coding of the assurance statements was done solely by the author of this thesis since no second coders were available. This could be deemed problematic for the reliability of the results. To enhance the reliability the coding was done three times. The first time the coding of the assurance statements was done during a two-week period. Afterwards items were identified that could have caused errors in the data due to subjectivity of the coder. After identifying the possible problematic items, all assurance statements were re-examined. Minor errors and deviations were found and subsequently corrected. After one month, 30 assurance statements were completely recoded. No errors or deviations were found this time. These procedures significantly reduced the chance of data errors.

3.2.4 Controls

Industry Control variables are added to control for across industry differences. For instance, financial firms are known to be valued differently than industrial firms. Individual dummies are added for each industry (based on their SIC code) present in the sample.

Dummy Control 22 companies did not provide an assurance statement in English, Dutch or German during 2016, which caused for 22 missing values. To overcome data loss, a dummy variable adjustment is conducted. This means that missing quality values are substituted by the average quality of the remaining observations. Next, a dummy variable is added which takes the value of 1 when the missing value is substituted by the average quality.

In addition, some countries have implemented regulation which addresses a broad perspective of social and environmental items. For example, authorities in the United Kingdom released mandatory guidelines with regard to GHG emissions. From 2013 onwards all stock listed companies in the U.K. are required to release information about their GHG emissions in their annual report (Climate Disclosure Standards Board, 2017). Furthermore, as argued in the literature review, mandatory regulation might act as a replacement for assurance (Casey & Grenier, 2015). Hence, in addition, this thesis makes use of two subsamples. The first subsample contains companies that are domiciled in a country with mandatory regulation (France, Luxembourg, Norway, Denmark and the United Kingdom (KPMG, 2015)) and a second subsample contains companies domiciled in a country without mandatory regulation.

3.3 Models

In order to test the hypotheses, the following two models are used, based on the Ohlson (1995) valuation model used by Peters & Romi (2015).

Model 1:

$P_{it} = \beta_0 + \beta_1 BVEPS_i + \beta_2 EPS_i + \beta_3 Assurance_i + \beta_{4\text{-}12} Industry + \varepsilon_i$

Model 2:

$P_{it} = \beta_0 + \beta_1 BVEPS_i + \beta_2 EPS_i + \beta_3 Scope_i + \beta_4 Level_i + \beta_5 Quality_i + \beta_6 (Provider/BIG4)_i + \beta_{7\text{-}15} Industry + \beta_{16} Dummy\ control + \varepsilon_i$

Table 4
Definition variables

Variable	Definition	Hyp.	Exp. Sign	Source
P	Share price four months after fiscal year end (Ohlson, 1995; Peters & Romi, 2015)			Orbis
BVEPS	Book value of equity per share (Ohlson, 1995; Peters & Romi, 2015)		+	Orbis
EPS	Net earnings before extraordinary income per share (Ohlson, 1995; Peters & Romi, 2015)		+	Orbis
Assurance	A dummy which takes the value of 1 when the company has their CSR report assured (Simnett *et al.*, 2009a; Peters & Romi, 2015)	H_1	+	GRI
Level	A dummy variable which takes the value of 1 when the assurance is of a reasonable level	H_2	+	GRI
Scope	A dummy which takes the value of 1 when the assurance covers the entire CSR report	H_2	+	GRI
Provider	A dummy which takes the value of 1 when the assurance is provided by a professional accountant firm (Simnett *et al.*, 2009a)	H_3	+	GRI
BIG4	A dummy which takes the value of 1 when the assurance is provided by a BIG4 accountant	H_4	+	GRI
Quality	The quality of the assurance which is measured by the modified content analysis of Perego & Kolk (2012), Segui-Mas *et al.* (2015) and Gürtürk & Hahn (2016)	H_5	+	Content Analysis
Dummy control	A dummy which takes the value of 1 when the missing quality value is substituted by the average quality			
Industry	Control variable(s) which assigns dummies according to SIC codes indicating the main industry the company operates in			Orbis

The first model is to examine the relation between the adoption of assurance and the share price of a company using the entire sample (Hypothesis 1). The second model is run to examine the relation between the aspects of assurance and the share price of the company (Hypotheses 2-5). It includes only those firms that adopted assurance during 2016. Both models are tested using the total sample, and the two subsamples, which differs between companies that operate in a country that has mandatory regulation regarding CSR and companies that operate in a country where CSR disclosure remains a voluntary choice. This is done to check whether the effect of assurance and the aspects of assurance differs among different disclosing regimes.

The regressions/data are checked for multicollinearity, heteroscedasticity and influential outliers. Tables 5 & 6 provides the correlation matrices for model 1 & 2. Model 1 panel A, B and C show a significant and positive correlation between BVEPS and EPS. The correlation is higher than 0.6 in the total sample (Panel A) and the voluntary regime sample (Panel B), which suggests possible multicollinearity between the independent variables. Also, the correlation between BIG4 and Provider is high (0.91) and significant in table 6 panel A, B and C, which could also cause multicollinearity between the independent variables (Hill *et al.,* 2012). However, this does not come as a surprise, because if a company chooses a provider from the accounting profession, in most cases this will be one of the BIG4 auditors. In addition, a marginally significant positive correlation is found between Level and Quality. This means that when a provider provides a reasonable assurance, overall, he also provides a higher quality assurance.

To check whether multicollinearity causes a problem the Variance Inflation Indicators (VIF) are calculated, of which the results can be found in tables 7 & 8. No high VIF' are found for BVEPS and EPS in both tables. However, both BIG4 and Provider show a high VIF score (> 5-10 according to Montgomery *et al.* (2001)) when both variables are included in the model. Therefore, separate regressions are run, with one including BIG4 and the other including Provider as an independent variable. With separate regressions, the VIF's are 1.15 and 1.13 for Provider and BIG4 respectively, hence multicollinearity does not cause a problem when separate regressions are run. Also, high VIF scores are found for several industry dummies when the model 2 regressions are run for the Mandatory and Voluntary regime samples. Therefore, dummies that caused the multicollinearity were excluded from the regression, hereafter multicollinearity did not pose a problem anymore.

Table 5 Correlation matrices model 1

Panel A: Total sample

Variable	BVEPS	EPS	*Assurance*
BVEPS	1		
EPS	0.62***	1	
Assurance	0.04	-0.01	1

***, ** , * Significance at the 1%, 5% and 10% level

Panel B: Voluntary regime

Variable	BVEPS	EPS	*Assurance*
BVEPS	1		
EPS	0.66***	1	
Assurance	-0.05	-0.06	1

***, ** , * Significance at the 1%, 5% and 10% level

Panel C: Mandatory regime

Variable	BVEPS	EPS	*Assurance*
BVEPS	1		
EPS	0.55***	1	
Assurance	0.14**	0.03	1

***, ** , * Significance at the 1%, 5% and 10% level

Table 6
Correlation matrices model 2

Panel A: Total sample

Variable	BVEPS	*EPS*	*Scope*	*Level*	*Provider*	*BIG4*	*Quality*
BVEPS	1						
EPS	0.62***	1					
Scope	-0.13*	-0.05	1				
Level	-0.00	0.04	0.06	1			
Provider	-0.01	-0.16	-0.11	-0.14*	1		
BIG4	0.01	-0.13*	-0.13	-0.09	0.91***	1	
Quality	-0.09	-0.20**	0.07	0.13*	0.05	0.05	1

***, ** , * Significance at the 1%, 5% and 10% level

Panel B: Voluntary regime

Variable	BVEPS	*EPS*	*Scope*	*Level*	*Provider*	*BIG4*	*Quality*
BVEPS	1						
EPS	0.66***	1					
Scope	-0.15*	-0.06	1				
Level	-0.08	-0.03	0.01	1			
Provider	-0.09	-0.26***	-0.14	-0.09	1		
BIG4	-0.06	-0.22**	-0.18*	-0.06	0.88***	1	
Quality	-0.10	-0.23***	0.04	0.15*	0.06	0.06	1

***, ** , * Significance at the 1%, 5% and 10% level

Panel A: Mandatory regime

Variable	BVEPS	*EPS*	*Scope*	*Level*	*Provider*	*BIG4*	*Quality*
BVEPS	1						
EPS	0.55***	1					
Scope	-0.00	0.03	1				
Level	0.34**	0.33	0.28*	1			
Provider	0.27*	0.16	-0.21	-0.18	1		
BIG4	0.30*	0.17	-0.17	-0.14	0.94***	1	
Quality	-0.08	-0.06	0.16	0.09	0.02	0.05	1

***, ** , * Significance at the 1%, 5% and 10% level

Table 7
Variance inflation indicators model 1

Variable	VIF
BVEPS	1.64
EPS	1.62
Assurance	1.04

Table 8
Variance inflation indicators model 2

Variable	VIF (after adj.)
BVEPS	1.31
EPS	1.40
Provider	6.11 (1.15)
Quality	1.11
BIG4	6.01 (1.13)
Scope	1.05
Level	1.13

Numerical instruments are used to identify potential influential outliers. This is done since the samples are relatively small and are therefore susceptible to influences of large outliers. The Cook and Dfits[4] values were calculated for each observation. Subsequently, outliers are removed one by one to examine their influence on the results. When no significant change was visible the observation was deemed not influential and therefore not removed from the sample. This is done for each regression separately. Finally, the regressions are tested for heteroscedasticity of which the results can be found in appendix 2. This is done since heteroscedasticity influences the standard errors and makes statistical tests unreliable (Hill *et al.*, 2012). Since the data shows significant heteroscedasticity, the regressions are run with robust standard errors (Hill *et al.*, 2012) except for the model 2 regressions with the sample containing firms domiciled in a country with mandatory regulation.

4. Results

4.1 Descriptive statistics

Table 9 panel A gives an overview of the summary descriptive statistics of the data for the total sample. The pooled sample comprises of 525 company observations. About 32%, or 168 firm observations adopted assurance, whereas the rest did not. This is approximately 10% lower than the assurance rate found by KPMG (2015). However, this can be explained by the fact that KMPG (2015) examines the 100 biggest firms per country, whereas this thesis does not differentiate between larger and smaller firms. Zorio *et al.* (2013) found that the size of a company is significantly positively associated with the choice of a company towards having assurance. These results might explain the overall higher assurance rate found in the KMPG (2015) survey. Of these 168 assured CSR reports, 43% of the companies made the decision to have their entire CSR report assured and 82% chose a professional accountant to perform the assurance process. The latter number is significantly higher than the results from earlier researches. This might indicate that the assuring of CSR reports is becoming more generic and companies are starting to copy each other's decisions in line with the findings of Gürtürk & Hahn (2016). Concerning external accountant firms, most are BIG4 auditors. This is also indicated by the high correlation between Provider and BIG4 in the previous chapter. No trend is visible with regard to the level, since only 11% of the companies chose to demand assurance of a reasonable/ high level. A potential explanation is provided by the high costs associated with this kind of assurance. The average quality of the assurance statements is acceptable with a score of 18.84. Panel B & C show the descriptive statistics with respect to the subsamples.

[4] Measures the influence of each observation on the overall results

The rate of assurance displays the biggest deviation when comparing the subsamples regarding the mandatory and voluntary regimes. This rate equal 45% under the first regime, whereas only 16% is assured in the latter (regime). In addition, the descriptive statistics show that companies which operate in a country with mandatory regulation choose less often for a provider from the accounting profession and to assure the entire sustainability report. With respect to the quality of the assurance, no serious differences are visible.

Table 9
Descriptive Statistics

Panel A: Total Sample

Variable	Observations	Mean	Std. Dev.	Min	Max
Share Price	525	39.16	84.70	0.45	1254.25
BVEPS	525	24.13	55.43	-6.25	584.70
EPS	525	2.07	5.70	-14.54	57.48
Assurance	525	0.32	0.47	0	1
Level	168	0.11	0.32	0	1
Provider	168	0.82	0.39	0	1
Scope	168	0.43	0.50	0	1
BIG4	168	0.79	0.41	0	1
Quality	168	18.84	5.00	3	31

Panel B: Voluntary regime

Variable	Observations	Mean	Std. Dev.	Min	Max
Share Price	285	47.38	109.01	0.00	1254.25
BVEPS	285	30.91	69.04	-1.40	584.70
EPS	285	2.47	6.38	-14.54	55.94
Assurance	285	0.45	0.49	0	1
Level	129	0.10	0.30	0	1
Provider	129	0.86	0.35	0	1
Scope	129	0.49	0.50	0	1
BIG4	129	0.83	0.38	0	1
Quality	129	18.82	4.97	3	31

Panel C: Mandatory regime

Variable	Observations	Mean	Std. Dev.	Min	Max
Share Price	240	29.40	37.84	0.32	246.50
BVEPS	240	16.08	30.86	-6.25	254.81
EPS	240	1.60	4.73	-6.20	57.48
Assurance	240	0.16	0.37	0	1
Level	39	0.15	0.37	0	1
Provider	39	0.67	0.48	0	1
Scope	39	0.26	0.44	0	1
BIG4	39	0.64	0.49	0	1
Quality	39	18.91	5.20	6	31

Although it is not the intention of this thesis, table 9 panel A & B provide a more in-depth overview of the scores from the content analysis. Panel A provides an overview of the frequency of the scores achieved. The lowest achieved score is 3, the highest score is 31 and the median score is 18 on a 35-point scale. The mean of the coded assurance statements was 18.84, which is filled in for the 22 missing values. Overall the results show that the content of the assurances are becoming generic, with 67 assurances receiving a score between 17 and 21.

Panel B provides an overview of the descriptive statistics per item included in the content analysis. Almost all assurance statements addressed the liabilities of the assuror (item 6, average = 0.91, max = 1), the liabilities of the company's management (item 7, average = 0.92, max = 1), the standards that guide the assurance process (item 13, average = 1.77, max = 2), and the guidelines used to develop the CSR report (item 14, average = 1.64, max = 2). A greater variance is found with regard to addressing stakeholders (item 2, average = 0.96, max = 2), how the company identifies the stakeholders (item 18, average = 0.41, max = 2), and whether limitations and recommendations are discussed (item 20, average = 0.54, max = 2 & item 21, average 0.38, max = 2). About a quarter of the providers claim to be impartial from stakeholders (item 9, average = 0.23, max = 1). Hardly any provider gives an explanation or even makes a reference towards whether the needs of outsiders are accounted for (item 23, average = 0.21, max = 2) in the assurance statement. Overall these results support the mimetic behavior of providers as found and argued by Gürtürk & Hahn (2016).

Table 10: Descriptive Statistics of Content Analysis

Panel A: Frequency table

Score	Freq.	% of sample	Score	Freq.	% of sample
3	2	1.2	19	16	9.5
5	1	0.6	20	14	8.3
6	3	1.8	21	9	5.4
7	1	0.6	22	7	4.2
8	2	1.2	23	12	7.1
10	1	0.6	24	5	3.0
11	2	1.2	25	2	1.2
12	2	1.2	26	2	1.2
13	5	3.0	27	4	2.4
14	4	2.4	28	4	2.4
15	6	3.6	29	3	1.8
16	9	5.4	31	2	1.2
17	10	6.0	Mean 18,84	22	13.1
18	18	10.7			
Total				**168**	**100**

Panel B: Descriptive statistics per item

Item	Min	Max	Average	Item	Min	Max	Average
1	0	1	0.99	13	0	2	1.77
2	0	2	0.96	14	0	2	1.64
3	0	1	0.99	15	0	2	0.84
4	0	1	0.96	16	0	3	0.98
5	0	1	0.96	17	0	2	0.81
6	0	1	0.90	18	0	2	0.41
7	0	1	0.92	19	0	2	0.99
8	0	1	0.89	20	0	2	0.54
9	0	1	0.23	21	0	2	0.38
10	0	2	0.86	22	0	1	0.23
11	0	2	1.03	23	0	2	0.21
12	0	2	0.41				

4.2 Hypotheses Testing

The results of the first model (with robust standard errors) can be found in table 11. The results were split into three parts, which are regarding to the Total, Voluntary Regime and Mandatory Regime sample. After the removal of influential outliers the Total, Mandatory Regime and Voluntary Regime sample contained 523, 282 and 238 observations respectively. The explanatory power of the Total sample is 63%, of the Voluntary sample 74% and of the Mandatory sample 67%, which means the model fits the data rather well. In the second column (Total sample) both BVEPS (coefficient = 0.49, p = 0.020) and EPS (coefficient = 8.23, p = 0.024) are positive and significant as expected. The first hypothesis states that Assurance is positively associated with Share Price. The positive sign of Assurance in the second column means that adopting assurance leads to a higher share price after the publication of the CSR report and is significant at the 5% level (coefficient = 10.49, p = 0.047). The third column (Voluntary regime) provides somewhat different results. Although EPS (coefficient = 12.37, p= 0.001) and Assurance (coefficient = 14.49, p = 0.030) remain significant, BVEPS (coefficient 0.29, p = 0.284) becomes insignificant. In the fourth column (Mandatory regime) the results show that both BVEPS (coefficient = 10.40, p = 0,000) and EPS (coefficient = 0.75, p = 0.000) are positive and significant in line with the expectation. However, Assurance (coefficient = 6.80, p = 0.223) becomes insignificant in contrast with the results displayed in the second and third column. These results suggest that the assurance of CSR disclosures is valued more or only by investors when mandatory regulation is not in place. Hence, government monitoring (assurance) might act as a substitute for assurance (government monitoring). Overall, the findings support the first hypothesis and provide evidence in favor of signaling theory.

Table 11
Results Model 1: $P_{it} = \beta_0 + \beta_1 BVEPS_{it} + \beta_2 EPS_{it} + \beta_3 Assurance_{it} + \beta_{4\text{-}12} Industry + \varepsilon_i$

Variable Name	Total Sample	Voluntary Regime	Mandatory Regime
Intercept	10.45** (0.022)	14.79 (0.162)	10.40*** (0.000)
BVEPS	0.49** (0.020)	0.29 (0.284)	0.75*** (0.000)
EPS	8.23** (0.024)	12.37*** (0.001)	3.81** (0.010)
Assurance (H_1)	10.49** (0.047)	14.49** (0.030)	6.80 (0.223)
Industry Controls	Yes	Yes	Yes
Dummy Control	No	No	No
N	523	282	238
R^2	0.63	0.74	0.67

***, ** , * Significance at the 1%, 5% and 10% level

Table 12 shows the results of the second model with regard to the remaining hypotheses. Again, the model is tested using the Total, Voluntary Regime and the Mandatory Regime sample. In addition, due to the multicollinearity problems when both Provider and BIG4 are included, separate regressions are run with one including BIG4 and the other with Provider[5]. Hence, a total of six regressions are run. After the removal of influential outliers the total sample contained 166, the Voluntary Regime sample 124 and the Mandatory Regime sample 36 firm observations. The model fits the data well which is shown by the r-squared. Also, the BVEPS is positive and significant when looking at the second (coefficient = 0.74, p =0.000), third (coefficient = 0.75, p = 0,000) and fourth (coefficient = 0.57, p = 0.004) column. Also, EPS is significant at the 1% level in the second (coefficient = 13.98, p = 0.000), third (coefficient = 14.54, p = 0.000) and fourth (coefficient = 5.30, p = 0.002) column. Hence, both BVEPS and EPS do not show any results that are not in line with the expectations regarding their relation with Share Price.

The second hypothesis expects a positive relation between the share price, and the Level and Scope of the assurance. Level shows no significant relationship when looking at the Total Sample (coefficient = -3.94, p = 0.553), meaning that a reasonable level assurance does not lead to a significant change in the share price after the publication of the CSR report. Similar results are found for Level in the third (coefficient = 1.73, p = 0.759) and fourth (coefficient = -2.58, p = 0.802) column. This suggests that investors do not perceive the level of assurance as a signal of superior performance or they are not able to differentiate between the two levels. Scope does show a significant relationship at the 5% level in the second column (coefficient = -12.76, p = 0.037). However, instead of a positive relation, the results show a significant negative relationship. This means that when a company chooses to assure the entire CSR report, investors start to short the shares of the company leading to a decline in share price. This can be due to the fact that having the entire report assured comes with a greater cost to the firm. Investors can deem this investment unnecessary and therefore an unwanted cost which could harm future profits. Less significant results are found for scope in the third (coefficient = -13.48, p = 0.086) and fourth (coefficient = -13.97, p = 0.097) column. Hence, the results do not show any support for the second hypothesis and is therefore rejected. This implies that investors do not perceive a high-level assurance or when the entire CSR report is assured as a signal of superior performance but rather as an unwanted cost.

[5] The discussed coefficients an p-values for Quality, Level, BIG4 and Scope are with respect to the results from the regressions including BIG4.

The third hypothesis expects a positive relation between the share price and when the assurance is provided by a professional accountant firm. The second column shows a negative and insignificant coefficient for Provider (coefficient = -3.78, p = 0.501). Similar results were found in the third column (coefficient = -4.89, p = 0.478). The results in the fourth column show an insignificant but positive relation between Share Price and Provider (coefficient = 1.32, p = 0.880). The fourth hypothesis expects a positive relation between the share price and whether the assurance is provided by a BIG4 auditor. The results are similar with respect to Provider. The second (coefficient = -5.61, p = 0.305) and third (coefficient = -8.35, p = 0.212) column both show an insignificant and negative coefficient for BIG4. The fourth column shows an insignificant but positive coefficient for BIG4 (coefficient = 1.68, p = 0.851). Hence, the results suggest that investors do no base their investment decision on the provider of the assurance statement and therefore the third and fourth hypothesis are rejected. This can, for instance, be the result of the assurance process becoming generic over time. As argued under the summary statistics, more than 80% of all assurances is done by a professional accountant firm. Hence, choosing an accountant might have become "normal" and does not show that the company is a superior performer. Therefore, investor might believe that this information does not adds value to the company.

Finally, the fifth hypothesis expects a positive relation between the share price of the company and the quality of the assurance statement provided. When all companies are included in the regressions, Quality is both positive and significant at the 5% level (coefficient = 1.12, p = 0.046). The relationship is significant and suggests that investors are more willing to invest when the assurance provides more information (about the assurance process). When looking at the third column no significant relation is found between Quality (coefficient = 0.79, p = 0.243) and Share Price. When looking at the results in the fourth column, Quality (coefficient = 1.52, p = 0.046) remains significant at the 5% level. Overall, the results suggest that the quality of the assurance, to a certain extent, positively affects the share price of the company. Therefore, the fifth hypothesis is accepted.

Table 12

Results Model 2: $P_{it} = \beta_0 + \beta_1 BVEPS_{it} + \beta_2 EPS_{it} + \beta_3 Scope_{it} + \beta_4 Level_{it} + \beta_5 Quality_{it} + \beta_6 (Provider/BIG4)_{it} + \beta_{7\text{-}15} Industry + \beta_{16} Dummy\ control + \varepsilon_{,}$

Variable Name	Total Sample		Voluntary Regime		Mandatory Regime	
	BIG4	Provider	BIG4	Provider	BIG4	Provider
Intercept	-5.96 (0.587)	-7.18 (0.522)	-2.50 (0.847)	-5.51 (0.689)	-19.31 (0.229)	-19.63 (0.225)
BVEPS	0.74*** (0.000)	0.74*** (0.000)	0.75*** (0.000)	0.75*** (0.000)	0.57*** (0.004)	0.57*** (0.003)
EPS	13.98*** (0.000)	14.00*** (0.000)	14.54*** (0.000)	14.58*** (0.000)	5.30*** (0.002)	5.31*** (0.002)
Quality (H_5)	1.12** (0.046)	1.11** (0.048)	0.79 (0.243)	0.78 (0.250)	1.52** (0.046)	1.53** (0.043)
Scope (H_2)	-12.76** (0.037)	-12.50** (0.041)	-13.48* (0.086)	-12.80* (0.098)	-13.97* (0.097)	-14.01* (0.099)
Level (H_2)	-3.94 (0.553)	-3.87 (0.563)	1.73 (0.759)	2.10 (0.710)	-2.58 (0.802)	-2.61 (0.800)
BIG4 (H_3)	-5.61 (0.305)		-8.35 (0.212)		1.68 (0.851)	
Provider (H_4)		-3.78 (0.501)		-4.89 (0.478)		1.32 (0.880)
Industry Controls	Yes	Yes	Yes	Yes	Yes	Yes
Dummy Control	Yes	Yes	Yes	Yes	Yes	Yes
N	166	166	124	124	36	36
R^2	0.88	0.88	0.91	0.91	0.88	0.88

***, ** , * Significance at the 1%, 5% and 10% level

4.3 Robustness Tests

In order to test the robustness of the results several additional tests are performed. Although this thesis argues in favor of a four-month period after fiscal year end, Peters & Romi (2015) use a three-month period. To test whether this decision affects the results, the same regressions are run, using a three-month period instead of a four-month period after fiscal year end. No significant changes are found with regard to coefficients and significance levels. The only consistent change is that the explanatory power of each regressions goes up by 1%. In addition, this implies that the information regarding the adoption of assurance is not merely disclosed threw the publication of the sustainability report. Other channels might communicate this information to investors which in turn incorporate this information into their investment decisions. Therefore, the chosen period is not an important factor for this kind of research.

Furthermore, the dummy variable Level takes on the value of 1 when the assurance is of a reasonable level. However, as can be seen from the content analysis of Perego & Kolk (2012) similar point are assigned when the assurance is of a reasonable level or a combination of reasonable and limited. This implies that, for instance, the company chooses to have assurance on GHG emissions of a reasonable level and demands limited assurance on the remaining disclosures. Therefore, it is checked whether the test renders different results when the dummy takes on the value of 1 when the assurance was of reasonable level or a combination of limited and reasonable. Now the dummy takes up the value of 1 in 14.3% of the cases, instead of the 11.3% in the main analysis. However, no different results are found and therefore the conclusion regarding the second hypothesis does not change.

Another problem which might affect the results is with respect to a selection bias in the second model. In order to mitigate this problem a two-stage Heckman selection test is performed. The second stage is in line with model 2. The first stage is based upon the model of Simnett *et al.* (2009a). Using a pluralistic approach, the authors identify country and industry-specific characteristics that potentially affect the companies' choice concerning the demand for assurance. Hence, the following variables are included in line with Simnett *et al.* (2009): (1) Stakeholder, takes on the value of 1 when the country the firms operates in is a stakeholder oriented country and is based on the overview of Simnett *et al.* (2009a), (2) Sensitive industry, takes on the value of 1 when the company operates in a sensitive industry and is based on Cho & Patten (2007) and Simnett *et al.* (2009a), (3) Rule of Law, measures the strength of the legal system and is retrieved from the World Bank database. Additional control variables are the natural logarithm of sales and leverage, in line with Simnett *et al.* (2009a).

The two-stage Heckman test shows similar results. Except for Scope (coefficient = -17.76, p = 0.005), which becomes significant at the 1% level instead of the 10% level when the regression is run with companies domiciled in a country with mandatory regulation. Also, the significance level of Quality (coefficient = 1.23, p = 0.069) changes from 5 to 10% for the total sample. However, this does not change the conclusion regarding the second and fifth hypothesis. It should be noted that due to the extra financial data needed, around 100 firms were dropped from the analysis, which is about 20% of the total sample. This could have caused the change in significance of Scope, since the mandatory regulation sample is rather small. On the other hand, this also shows that the results are robust when the regressions are run with different sample sizes.

5. Conclusion & Discussion

This thesis tries to answer the question how assurance and assurance-related decisions on sustainability reports are valued by investors. Overall, the results are inconsistent regarding the expectations that are discussed in this thesis. The descriptive statistics show that assurance is not increasingly present in Europe in contrast with the study of KPMG (2013, 2015), which can also be due to the differences in sample selection. However, the descriptive analysis shows that having assurance is more common in countries where the disclosing of sustainability related information remains a voluntary choice. This supports the argumentation and findings of Casey & Grenier (2015) that government involvement adds credibility to the disclosures. Furthermore, the results of the regression show that having assurance leads to increased share prices in the subsequent period. Hence, investors use assurance as a way to filter out the better performers and subsequently invest their money in these companies, and that companies can use the assurance as a way to make them stand out among other companies.

The results of this thesis are in contrast to the findings of Cho *et al.* (2014) and Peters & Romi (2015) who found no relation (or only a marginal relation) between the value of a company and the adoption of assurance. There are two possible reasons for this. The first is in line with the argument of Peters & Romi (2015), which is that assurance is becoming increasingly integrated in the investment decisions of investors. Secondly, as argued by Casey & Grenier (2015), investors might deem regulation sufficient, because they believe that companies will behave appropriately due to government involvement. Since both Cho *et al.* (2014) and Peters & Romi (2015) use a U.S. sample, this might (in part) explain their insignificant results. On this matter, this thesis provides initial evidence in favor of the argumentation (and findings) of Casey & Grenier (2015). The results show that assurance

positively affects share prices in those countries where no mandatory regulation regarding the disclosure of CSR information is present. The relation between share price and assurance becomes insignificant when companies are included which operate in countries where mandatory regulation is in place. Hence, this implies that future research should incorporate/account for the presence of regulation.

With regard to the aspects of assurance, i.e. scope, quality, level and providers, different results are found. Overall, the descriptive statistics show that trends, for those companies that adopt assurance, are evolving. For example, over 80% of the companies within the sample chose to have a provider from the accounting profession, of whom most were a BIG4 auditor. However, this trend is not visible with regard to the level of assurance. Having a reasonable assurance on the sustainability report is/remains rather uncommon in Europe. Furthermore, insignificant results are found with regard to level and the provider of assurance. This means that companies cannot signal their quality by means of choosing reasonable assurance, an assuror who is an accountant, or a BIG4 auditor, which contradicts the results of e.g. Casey & Grenier (2015). With respect to BIG4 auditors and accountants this is probably, as previously argued, due to the fact that having assurance from an accountant is becoming "the standard". Furthermore, a significant negative relation is found between the scope of the assurance and the share price of a company, in contrast to the formulated hypothesis. There are several ways in which this result can be interpreted. For instance, an investor can believe that the motive of a company to have the entire sustainability report assured, is to misguide the investor regarding the company's performance, as argued by legitimacy theory (Braam *et al.,* 2016; Clarkson *et al.,* 2007). However, this seems counterintuitive since the results also show that investors react positively towards having assurance. Therefore, it seems more likely that this is the result of an economic decision (benefits versus costs) made by investors. The expense to have the entire CSR report assured might be 'over the top' for investors and therefore deemed harmful for future profits. As an example, a general assurance process can take up to twelve weeks and employs a team of five to ten people. Hence, this result is not necessarily in contradiction with signaling theory, but may indicate that the signaling conditions are not met.

Finally, this thesis examines the relation between the quality of the assurance statements and share price. Overall, the descriptive statistics show that the statements provide the share- and stakeholders with a wide range of vital information regarding the assurance process in contrast to the findings of e.g. Perego & Kolk (2012) and Deegan *et al.* (2006). In line with Gürtürk & Hahn (2016) the descriptive statistics indicate that the statements have become

generic over time in the sense that providers are increasingly addressing similar items. In addition, the results of this thesis show that the quality of assurance is significantly and positively associated with share prices. Hence, investors are overall interested in how the assurance process was performed instead of merely looking at the label 'assured' or 'third party verification in place'. Taken together with the results on provider, it can be argued that investors are trying to validate themselves how reliable and truthful the disclosures in the assurance and the CSR report are, instead of trusting on prior believes about the provider's profession, as explained by Hodge *et al.* (2009).

The results have important implications for companies and practitioners. It shows that investors are increasingly taking CSR assurance into account when valuing a company. Hence, companies should take on the potential benefits of assurance when determining whether to adopt assurance or not. But, as can be seen from the results regarding scope, the expense induced by assurance should be limited to a certain point, otherwise investors could deem the assurance too costly. Practitioners could use these results to advertise their assurance products in countries were regulation regarding sustainability remains absent. In addition, the outcome of this thesis shows the need for enhanced guidelines and the general acceptance of proposed standards. Now even more, since investors are not clinging on to labels such as level and provider, but are actually taken note of the subject matter of these assurances. Finally, regulatory regimes should start the process towards the development of mandatory regulation regarding these reports, based upon the value investors assign to them.

However, these results should not be considered without some inherent limitations. The sample used for this thesis is limited towards companies that made their CSR report available to the GRI database (i.e. data limitations). This means that it only contains companies that were willing to publish their information online during 2016. Therefore, it can be the case that the results suffer from a selection bias due to the voluntary choice to upload the CSR report. Next to that, data retrieved from the GRI database suffers from omissions. For instance, in some cases the name of the provider was included in the database, but its profession was missing. This could cause errors while coding the dummy variables. However, a serious (structural) effort was put in to detect these errors. In addition, due to technical issues, the results regarding level should be considered with care. The sample that is used only contained 18 (approximately 11%) assurances of a reasonable level. Therefore, the insignificant relation found between level and share prices might not be due to the fact that investors do not trade upon knowing the level of the assurance, but due to the technical limitation to measure this effect. The same applies to

provider and BIG4 auditors. Finally, the construct that proxies the quality of the assurance might measure more than merely the quality of the assurance itself. Hence, there might be a problem with the internal validity of the variable. If the error is positively correlated with the share price, this can bias the results.

Based upon this thesis and the current line of research regarding sustainability and assurance, there are several interesting topics for future research to address. For instance, as argued by Casey & Grenier (2015) and found by Pflugrath *et al.* (2011), assurance can be examined using different contexts. Future research can for instance examine how CSR assurance is valued when a company belongs to a sensitive or non-sensitive industry using an archival study. Investors might show more interest in assurance when a company operates in a social or environmental sensitive industry. Another interesting avenue is how the value relevance of assurance developed over the last five years in Europe and the United States and thereby complement the study of Peters & Romi (2015). This can give an insight into whether the contradicting findings between this thesis, Peters & Romi (2015) and Cho *et al.* (2014) is fully due to regulatory aspects or in part because of increased interest of investors towards sustainability. Furthermore, future research should re-examine the consequences of having a BIG4 auditor or a reasonable assurance due to the limitations of this thesis to measure these effects. Finally, future research should focus on the validation of the used construct to measure assurance quality that is also used by prior researches. It can answer the question whether the assurance statement reflects the quality and rigor of the assurance process in the appropriate way. Hence, 'auditing the audit statement'. This can shed light onto whether the reaction of investors, as found in this thesis, is justified.

References

AccountAbility. (2008). *AA1000 Assurance Standards 2008.* London: AccountAbility UK.

AccountAbility. (n.d.). *Standards*. Retrieved March 21, 2017, from AccountAbility: https://www.accountability.org/standards/

Adams, C., & Evans, R. (2004). Accountability, completeness, credibility and the audit expectation gap. *The Journal of Corporate Citizenship, 14*(1), 97-115.

Bird, R., & Smith, E. (2005). Signaling theory, strategic interaction, and symbolic capital. *Current Anthropology, 46*, 221-248.

Birkley, R., Michelon, G., Patten, D., & Sankara, J. (2016). Does assurance on CSR reporting enhance environmental reputation? An examination in the U.S. context. *Accounting Forum, 40*(3), 143-152.

Braam, G., Weerd, L. U., Hauck, M., & Huijbregts, M. (2016). Determinants of corporate environmental reporting: The importance of environmental performance and assurance. *Journal of Cleaner Production, 123*(1), 724-734.

Brown-Liburd, H., & Zamora, V. (2015). The role of corporate social responsibility (CSR) assurance in investors' judgments when managerial pay is explicitly tied to CSR performance. *A Journal of Practice & Theory, 34*(1), 75-96.

Casey, R., & Grenier, j. (2015). Understanding and contributing to the enigma of corporate social responsibility (CSR) assurance in the United States. *A Journal of Practice & Theory, 34*(1), 97-130.

Cheng, M., Green, W., & Co, J. C. (2015). The impact of strategic relevance and assurance of sustainability indicators on investors' decisions. *Auditing: A Journal of Practice & Theory, 34*(1), 131-162.

Cho, C., & Patten, D. (2007). The role of environmental disclosure as tools of legitimacy: A research note. *Accounting, Organizations and Society, 34*(7-8), 639-647.

Cho, C., Michelon, G., Patten, D., & Roberts, R. (2014). CSR report assurance in the USA: an empirical investigation of determinants and effects. *Sustainability Accounting, Management and Policy Journal, 5*(2), 130-148.

Clarkson, P., Li, Y., Richardson, G., & Vasvari, F. (2007). Revisiting the relation between environmental performance and environmental disclosure: An empirical analysis. *Accounting, Organizations and Society*.

Climate Disclosure Standards Board. (2017, February 15). *UK mandatory GHG and environmental reporting*. Retrieved from cdsb: http://www.cdsb.net/what-we-do/reporting-policy/uk-mandatory-ghg-reporting-qa

Cohen, J., & Simnett, R. (2015). CSR and assurance services: A research agenda. *A Journal of Practice & Theory, 34*(1), 59-74.

Connelly, B., Certo, S., Ireland, R., & Reutzel, C. (2011). Signaling theory: A review and assessment. *Journal of Management, 37*(1), 39-67.

Coram, P., Monroe, G., & Woodliff, D. (2009). The value of assurance on voluntary nonfinancial disclosure: An experimental evaluation. *Auditing: A Journal of Practice & Theory, 28*(1), 137-151.

Craswell, A., Stokes, D., & Laughton, J. (2004). Auditor independence and fee dependence. *Journal of Accounting and Economics, 33*, 253-275.

Dando, N., & Swift, T. (2003). Transparency and assurance: Mind the credibility gap. *Journal of Bussiness Ethics, 44*(1), 195-200.

Deegan, C., Cooper, B., & Shelly, M. (2006). An investigation of TBL report assurance statements: Australian evidence. *Australian Accounting Review, 16*(2), 1-18.

Der Spiegel. (2017, May 23). *Ermittler durchsuchen Daimler-Standorte*. Retrieved May 26, 2017, from Spiegel Online: http://www.spiegel.de/wirtschaft/unternehmen/daimler-razzien-wegen-dieselskandal-a-1148967.html

Dhaliwal, D., Li, O., Tsang, A., & Yang, Y. (2011). Voluntary nonfinancial disclosure and the cost of equity capital: The initiation of corporate social responsibility reporting. *The Accounting Review, 86*(1).

Edgley, C. R., Jones, M., & Solomon, J. (2010). Stakeholder inclusivity in social and environmental report assurance. *Accounting, Auditing & Accountability Journal, 23*(4), 532-557.

Elitzur, R., & Gravious, A. (2003). Why are individuals attracted to organizations. *Journal of Management, 31*, 1472-1480.

Financial Times. (2017, June 2). *Trump takes US out of Paris climate deal.* Retrieved June 5, 2017, from Financial Times: https://www.ft.com/content/ab93d8ea-46fa-11e7-8519-9f94ee97d996

Fonseca, A. (2010). How credible are mining corporations' sustainability reports? A critical analysis of external assurance under the requirement of the international council on mining and metals. *Corporate Social Responsibility and Environmental Management, 17*, 355-370.

Gardberg, N., & Fombrun, C. (2006). Corporate citizenship: creating intangible assets across institutional environment. *Academy of Management Review, 31*(2), 329-346.

Global Reporting Initiative (GRI). (2011). *GRI Sustainability Reporting Guidelines Versions.* Amsterdam: GRI International.

Global Reporting Initiative (GRI). (2013). *The external assurance of sustainability reporting.* London: GRI.

Global Reporting Initiative (GRI). (2016, October 19). *G4 Sustainability Reporting Guidelines*. Retrieved March 22, 2017, from GRI: https://www.globalreporting.org/information/g4/Pages/default.aspx

Global Reporting Initiative (GRI). (n.d.). *GRI's History*. Retrieved March 17, 2017, from GRI: https://www.globalreporting.org/information/about-gri/gri-history/Pages/GRI's%20history.aspx

Gray, R. (2000). Current developments and trends in social and environmental auditing, reporting, and attestation: A review and comment. *International Journal of Auditing, 4*, 247-268.

Gulati, R., & Higgins, M. (2003). Which ties matter when? The contingent effects of interoganizational partnerships on IPO success. *Strategic Management Journal, 24*, 127-144.

Gürtürk, A., & Hahn, R. (2016). An empirical assessment of assurance statements in sustainability report: smoke screens or enlightening information? *Journal of Cleaner Production, 136*, 30-41.

Guthrie, J., & Parker, L. (1989). Corporate social reporting: A rebuttal of legitimacy theory. *Accounting and Business research, 19*(76), 343-352.

Hasan, M., Roebuck, P., & Simnett, R. (2003). An investigation of alternative report formats for communicating moderate levels of assurance. *Auditing: A Journal of Practice and Theory, 22*(2), 171-187.

Het Financieele Dagblad. (2017, June 2). *'Audi schuldig aan gebruik sjoemelsoftware'.* Retrieved June 7, 2017, from fd.: https://fd.nl/ondernemen/1204611/audi-schuldig-aan-gebruik-sjoemelsoftware

Hill, R., Griffiths, W., & Lim, G. (2012). *Principles of Econometrics.* Danvers: John Wiley & Sons.

Hodge, K., Subramaniam, N., & Stewart, J. (2009). Assurance of sustainability report: Impact on report users' confidence and perceptions of information credibility. *Australian Accounting Review, 19*(3), 178-194.

Huggins, A., Green, W., & Simnett, R. (2011). Are greenhouse gas assurance engagements a natural domain of the auditing profession. *Current Issues in Auditing, 5*(2), 1-12.

IAASB. (2011). *ISAE 3000 (Revised), Assurance Engagements Other Than Audits or Reviews of Historical Financial Information* . New York: International Federation of Accountants.

Jones, M., & Solomon, J. (2010). Social and environmental report assurance: Some interview evidence. *Accounting Forum, 34*(1), 20-31.

Junior, R., Best, P., & Cotter, J. (2014). Sustainability reporting and assurance: A historical analysis on a world-wide phenomenon. *Journal Bussiness Ethics, 120*, 1-11.

Kolk, J., & Perego, P. (2010). Determinants of the adoption of sustainability assurance statements: an international investigation. *Business Strategy and the Environment, 19*(3), 182-198.

KPMG. (2013). *The KPMG survey of corporate responsibility reporting 2013.* Amsterdam: KPMG International.

LaPorta, Lope-De-Silanes, F., & Shleifer, A. (2006). What works in securities laws. *The Journal of Finance, 61*(1), 1-32.

Miller, D. (2016, February 14). How Volkswagen Group managed to win the global sales crown despite diesel scandal. *The Motley Fool*.

Mock, T., Strohm, C., & Swartz, K. (2007). An examination of worldwide assured sustainability reporting. *Australian Accounting Review, 17*(1), 67-77.

Montgomery, D., Peck, E., & Vinning, G. (2001). *Introduction to linear regression analysis* (3 ed.). New York: Wiley.

Moroney, R., Windsor, C., & Aw, Y. (2012). Evidence of assurance enhancing the quality of voluntary environmental discosures: An empirical analysis. *Accounting & Finance, 52*(1), 903-939.

Newsweek. (2016, February 6). *2016 Newsweek green rankings: FAQ*. Retrieved March 27, 2017, from Newsweek: http://www.newsweek.com/2016-newsweek-green-rankings-faq-464496

O'Dwyer, B. (2011). The case of sustainability assurance: Constructing a new assurance service. *Contemporary Accounting Research, 28*(4), 1230-1266.

O'Dwyer, B., & Owen, D. (2005). Assurance statements practice in environmental, social and sustainability reporting: A critical evaluation. *British Accounting Review, 37*(2), 205-229.

O'Dwyer, B., Owen, D., & Unerman, J. (2011). Seeking legitimacy for new assurance forms: The case of assurance on sustainability reports. *Accounting, Organizations and Society, 36*(1), 31-52.

Ohlson, J. (1995). Earnings, book values, and dividends in equity valuation. *Contemporary Accounting Research, 28*(4).

Owen, D., & O'Dwyer, b. (2004). Assurance statement quality in environmental, social and sustainability reporting: A critical evaluation of leading edge practice. *occasional paper, university of Tasmania*.

Park, J., & Brorson, T. (2005). Experiences of and views on third-party assurance of corporate environmental and sustainability reports. *Journal of Cleaner Production, 13*(11-12), 1096-1106.

Perego, P., & Kolk, A. (2012). Multinationals' accountability on sustainability: The evolution of third-party assurance of sustainability reports. *Journal of Business Ethics, 110*(1), 173-190.

Peters, G., & Romi, A. (2015). The association between sustainability governance characteristics and the assurance of corporate sustainability reports. *Auditing: A Journal of Practice and Theory, 34*(1), 163-198.

Pflugrath, G., Roebuck, P., & Simnett, R. (2011). Impact of assurance and assurer's professional affiliation on financial analysts' assessment of credibility of corporate social sustainability information. *Auditing: A Journal of Practice and Theory, 30*(3), 239-254.

Reverte, C. (2016). Corporate social responsibility disclosure and market valuation: Evidence from Spanish listed firms. *Review of Managerial Science, 10*(1), 411-435.

Rich, D. (2009, March 9). *New EPA rule establishes mandatory greenhouse gas reporting*. Retrieved February 15, 2017, from Greenhouse Gas Protocol: http://www.ghgprotocol.org/feature/new-epa-rule-establishes-mandatory-greenhouse-gas-reporting

Segui-Mas, E., Bollas-Araya, H., & Polo-Garrido, F. (2015). Sustainability assurance on the biggest cooperatives of the world: An analysis of their adoption and Quality. *Annals of Public and Cooperative Economics, 86*(2), 363-383.

Simnett, R., Nugent, M., & Huggins, A. (2009b). Developing an international assurance standard on greenhouse gas statements. *Accounting Horizons, 23*(4), 347-363.

Simnett, R., Vanstraelen, A., & Chua, W. (2009a). Assurance on sustainability reports; An international comparison. *The Accounting Review, 84*(3), 937-967.

Spence, M. (1973). Job market signaling. *Quarterly Journal of Economics, 87*, 355-374.

Wallage, P. (2000). Assurance on sustainability reporting: An auditor's view. *Auditing: A Journal of Practice & Theory, 19*(1), 53-65.

Wong, R., & Millington, A. (2014). Corporate social disclosures: A user perspective on assurance. *Accounting, Auditing & Accountability Journal, 27*(5), 863-887.

Zhou, S., Simnett, R., & Green, W. (2016). Assuring a new market: The interplay between country-level and company-level factors on the demand for greenhouse gas (GHG) information assurance and the choice of assurance provider. *Auditing: A Journal of Practice & Theory, 35*(3), 141-168.

Zorio, A., Garcia-Benau, M., & Sierra, L. (2013). Sustainability development and the quality of assurance reports; Empirical evidence. *Business Strategy and the Environment, 22*(1), 484-500.

Appendices

Appendix 1 - Content analysis

Source: Definitions are copied from Perego & Kolk (2012, p. 187-188), Gürtürk & Hahn (2016, p. 40) and Segui-Mas *et al.* (2015, p. 382-383)

Ranking	Criteria	Definition	Scale (total 35 points)
1.	Title	Title of the assurance statement	0. No reference 1. Reference
2.	Addressee	Party to whom the assurance statement is formally addressed (either in title separate addressee line or within text)	0. No reference 1. Addressee is internal or "the readers" 2. Stakeholders mentioned in the adressee
3.	Name of assuror	Name of the firm that conducts the assurance engagement	0. No reference 1. Reference
4.	Location of assuror	Location of the office of the assurance provider	0. No reference 1. Reference
5.	Report date	Reference to the date at which the assurance exercise was finished	0. No reference 1. Reference
6.	Responsibilities of reporter	Explicit statement that reporter is responsible for preparation of report (keywords: responsible, responsibility)	0. No reference 1. Reference
7.	Responsibilities of assuror	Explicit statement that the reporter is responsible to express an (independent) opinion on the subject matter (the sustainability/environmental/social report)	0. No reference 1. Reference
8.	Independence of assuror from reporting organization	Statement expressing the independence of the two parties involved (a 1 is assigned as soon as the word(s) independent or independence appear anywhere in the assurance statement or its title. Thus, remarks such as 'this is an independent opinion…' already qualifies as a 1)	0. No reference 1. Reference or mere statement expressing that independence can be looked up on the internet

Ranking	Criteria	Definition	Scale (total 35 points)
9.	Impartiality if assuror towards stakeholders	Assuror's declaration of impartiality with respect to stakeholder interests	0. No reference 1. Reference (a remark that such a declaration can be made available on request or reference to an internet site already qualifies as a 1)
10.	Scope of the assurance engagement	Assurance statement coverage (a 1 is assigned if anywhere in the assurance statement the coverage of the assurance exercise is stated)	0. No reference 1. Reference
11.	Objective of the assurance engagement	Objective to be achieved through the engagement (indicating the level of assurance intended)	0. No reference 1. Review, limited assurance, independent opinion, independent assurance, external verification, external assurance or validation 2. Reasonable Assurance or reasonable and limited assurance (e.g. two different levels of assurance for different parts of the report)
12.	Competencies of assuror	Description of the professional skills that enable the engagement team to conduct the assurance exercise	0. No reference 1. Statement claiming competency (but not explanatory note) or mere reference to an internet site 2. Explanatory statement of competencies based on prior experience/engagements
13.	Criteria used to assess evidence and reach conclusion	A statement that makes reference to particular criteria against which the sustainability report has been prepared (e.g. GRI and often internally developed standards)	0. No reference 1. Reference to publicly unavailable criteria 2. Reference to publicly available criteria (e.g., internally developed criteria that are published anywhere in the report or GRI)
14.	Assurance standards used	Standards used which govern the work of the assurance provider (e.g. AA1000AS or ISAE3000)	0. No reference 1. Reference to publicly unavailable criteria 2. Reference to publicly available criteria
15.	Summary of work performed	Statement explaining the actions taken to arrive at a conclusion	0. No reference 1. Reference

Ranking Criteria		Definition	Scale (total 35 points)
16.	Materiality	Degree of information provision on materiality level. If the conclusion states that the report is in conformance with the AA1000 (Materiality, completeness, and responsiveness) this qualifies for a reference and thus a 1 is assigned	0. No reference 1. Reference limited to a broad statement (covers all material aspects"or "… in all material respects…") But also negative statements claiming that assuror has not undertaken any work to confirm that all relevant/material issues are included 2. Reference and explanation of materiality setting or reference limited to a broad statement and stakeholder perspective introduced (e.g. "issues material to stakeholders have been considered") 3. Reference, explanation of materiality setting and stakeholder perspective introduced
17.	Completeness	Statement expressing that all material aspects are covered by the report. If the conclusion states that the report is in conformance with the AA1000 principles (Materiality, completeness, and responsiveness) this qualifies for a reference and thus a 1 is assigned	0. No reference 1. Reference
18.	Responsiveness to stakeholders	Statement referring to the organization's procedures (or lack of them) for identifying stakeholder's interest and concerns. If the conclusion states that the report is in conformance with the AA1000 principles (Materiality, completeness, and responsiveness) this qualifies for a reference and thus a 1 is assigned	0. No reference 1. Reference 2. Clearly described (stakeholders included)*
19.	General conclusion/opinion	Statement expressing the result of the assurance exercise. If there is no general conclusion but the conclusion solely refers to the 3 principles of AA1000 (materiality, completeness, and responsiveness) a 0 is assigned	0. No reference 1. Mere statement expressing the opinion of the assuror (e.g., "XY's report is a fair representation of XY's CSR performance") A 1 is assigned only if the conclusion consists only of one sentence 2. Explanatory statements (more than one sentence, but recommendations for improvement are not considered part of the conclusion)
20.**	Limitations to the scope	Whether references have been made to possible limitations	0. No reference 1. Reference 2. Broad explanation (e.g. when an explanation is included on the importance of these limitations)***
21.**	Recommendations for further work	Whether recommendations or opportunities are made	0. No reference 1. Reference 2. Broad explanation (e.g. explanation on how to implement)***

Ranking Criteria		Definition	Scale (total 35 points)
22.*	Reporting on reservations/Qualifications	Consideration of assurors towards any kind of reservations	0. No reference 1. Reference
23.*	Extent of stakeholders participation in the assurance process	Description of stakeholders involvement in the assurance process	0. No reference 1. Reference 2. Broad explanation

*Copied from Gürtürk & Hahn (2016, p. 40)
**Copied from Segui-Mas *et al.* (2015 p. 382-383)
***Input Author

Company Name	Total Score	Question Number																						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Aareal Bank	*19*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	0	0	2	0	0
Abengoa	*23*	1	2	1	1	1	0	1	1	0	1	2	1	2	2	1	1	1	0	2	1	0	0	1
Acciona	*29*	1	0	1	1	1	1	1	1	1	1	2	2	2	2	1	3	1	1	2	2	2	0	0
Akzo Nobel NV	*13*	1	1	1	1	1	1	0	1	0	1	1	0	1	1	1	0	0	0	0	0	0	0	1
ALPHA Bank	*19*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	1	0	0	0	1	0
alstria office REIT-AG	*19*	1	1	0	1	1	1	1	1	0	1	1	0	2	2	0	0	1	0	2	1	2	0	0
Altran	*16*	1	2	1	1	1	1	1	1	0	0	1	0	0	2	1	1	1	0	1	0	0	0	0
AMAG Austria Metall	*17*	1	0	1	1	1	1	1	0	0	1	1	0	2	2	1	1	0	0	2	1	0	0	0
Amec Foster Wheeler	*16*	1	2	1	1	1	0	0	0	1	1	1	0	0	2	1	1	0	2	1	0	0	0	0
Anglo American	*20*	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	2	0	0	1	0
Ansaldo STS	*20*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	1	2	0	0	0	0
AS Tallinna Vesi	*5*	1	0	1	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
ASML	*24*	1	1	1	1	1	1	1	1	0	1	2	0	2	1	1	3	1	2	1	0	0	0	2
Associated British Foods	*31*	1	1	1	1	1	1	1	1	0	1	1	2	2	2	1	3	1	2	2	2	2	0	2
Atlantia	*20*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	1	2	0	0	0	0
Atlas Copco	*11*	1	1	1	1	1	1	1	0	0	1	1	0	1	0	0	0	0	0	1	0	0	0	0
Atos	*23*	1	1	1	1	1	1	1	1	0	1	1	1	2	2	1	1	1	2	2	0	0	0	1
Autogrill S.p.A.	*16*	1	1	1	1	1	1	1	1	0	0	1	0	2	2	1	1	1	0	0	0	0	0	0
BANKIA	*24*	1	1	1	1	1	1	1	1	0	1	1	1	2	2	1	1	1	1	2	0	2	1	0
BASF SE	*3*	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Billerud	*15*	1	1	1	1	1	1	1	0	0	1	1	0	2	1	0	1	1	0	1	0	0	0	0
BMW Group	*13*	1	1	1	1	1	1	1	1	1	0	0	0	1	0	1	0	1	1	0	0	0	0	0
Boliden	*14*	1	1	1	1	1	1	1	0	0	1	1	0	2	1	0	1	1	0	0	0	0	0	0
BONDUELLE SAS	*25*	1	2	1	1	1	1	1	1	0	1	2	1	2	2	1	2	1	0	1	2	0	0	1
British Land	*23*	1	0	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	0	2	2	0	0	0
BT Group	*30*	1	1	1	1	1	1	1	1	1	1	2	2	2	2	1	3	2	2	2	0	0	0	2
Bunzl	*10*	1	0	1	0	0	0	0	1	0	1	1	0	2	2	1	0	0	0	0	0	0	0	0
Cargotec	*17*	1	1	1	1	1	1	1	1	0	0	1	1	2	2	1	1	1	0	0	0	0	0	0
Carillion	*25*	1	2	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	2	0	2	0	0	0
Carlsberg Group	*21*	1	1	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	0	1	0	0	0	0
cewe color Holding AG	*21*	1	1	1	1	1	1	1	1	0	1	1	1	2	2	1	1	1	1	0	1	0	1	0
Citycon	*21*	1	1	1	1	1	1	1	1	0	1	1	1	2	2	1	1	0	0	2	2	0	0	0
Clariant	*15*	1	1	1	1	1	1	1	1	0	0	1	0	2	2	1	0	0	0	1	0	0	0	0
CNH INDUSTRIAL	*24*	1	0	1	1	1	1	1	1	1	1	2	1	2	2	1	2	1	1	2	0	0	0	1
Coca-Cola Hellenic Bottling Company	*33*	1	2	1	1	1	1	1	1	1	1	2	1	2	2	1	3	1	2	2	2	2	0	2
Cofinimmo SA	*18*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	0	1	1	0	2	0	0	0	0
CRH	*29*	1	0	1	1	1	1	1	1	1	1	1	2	2	2	1	2	1	1	2	1	2	1	2
Delta Lloyd	*18*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	1	0	0	0	0
Derwent London	*14*	1	0	1	1	1	1	1	1	0	1	1	0	2	2	1	0	0	0	0	0	0	0	0
Deutsche Bank	*20*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	0	0	2	1	0
Deutsche Börse AG	*18*	1	1	1	1	1	1	1	1	0	1	1	0	2	1	1	1	1	0	1	0	0	1	0
Deutsche Telekom	*20*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	0	0	1	0	2	1	0
Diageo	*18*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	0	0	0	1	0
DNB NOR	*18*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	1	0	0	0	0
DOF ASA	*15*	1	1	1	1	1	1	1	1	0	0	0	0	2	2	1	1	1	0	0	0	0	0	0
DSM	*19*	1	2	1	1	1	1	1	1	0	1	1	0	2	1	1	1	1	0	2	0	0	0	0
Electrolux	*17*	1	0	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	1	0	0	0	0
Elisa Oyj	*18*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	0	1	0	0	0
Endesa	*27*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	2	1	2	2	2	2	0	1
Enel	*19*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	2	1	1	0	0	0	0	0
Erste Group Bank	*22*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	1	0	2	1	1	0
ESPRINET	*3*	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Essilor International	*18*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	0	1	0	0	0
Evonik Industries	*23*	1	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	1	1	2	1	0
Fabasoft AG	*17*	1	2	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	0	0	0	0	0
Fabege AB	*12*	1	1	1	1	1	1	1	1	0	1	1	0	0	0	0	1	1	0	0	0	0	0	0
Fonciere Des Regions	*17*	1	2	1	1	1	1	1	1	0	1	1	0	2	2	1	0	0	0	0	1	0	0	0
Gas Natural SDG	*31*	1	1	1	1	1	1	1	1	1	1	2	1	2	2	1	3	1	2	2	2	1	1	1
Georg Fischer	*6*	0	0	1	1	1	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0
Henkel	*6*	1	0	1	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0
HOCHTIEF Aktiengesellschaft	*23*	1	1	1	1	1	1	1	1	0	1	1	1	2	2	1	1	1	0	1	0	2	1	1
Holmen	*8*	1	0	1	0	0	0	0	0	0	1	1	0	1	0	0	1	1	0	1	0	0	0	0
Iberdrola	*28*	1	0	1	1	1	1	1	1	0	1	1	2	2	1	1	3	1	2	2	2	2	1	0
Inditex	*23*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	1	2	1	2	0	0
Infineon Technologies AG	*22*	1	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	1	1	1	0	1
ING Group	*21*	1	1	1	1	1	1	1	1	0	1	1	1	2	2	1	1	1	1	1	0	0	1	0
Intesa Sanpaolo	*18*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	1	0	0	0	0	0
Johnson Matthey	*18*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	0	0	0	1	0
Kemira	*22*	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	0	1	2	0	0	0
Kendrion N.V.	*21*	1	2	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	1	2	0	0	0
Kesko Corporation	*27*	1	1	1	1	1	1	1	1	0	1	1	1	2	2	1	1	1	1	2	2	2	0	2
Kingfisher	*18*	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	1	1	0	2	0	0	1	0
KONE Corporation	*20*	1	2	1	1	1	1	1	1	0	1	1	1	2	2	1	1	1	0	1	0	0	0	0
Krones	*19*	1	0	1	1	1	0	1	1	1	1	1	0	2	2	1	1	2	1	1	0	0	0	0
Lafarge	*17*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	0	0	0	1	1	0	0	0
LANXESS AG	*19*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	0	0	1	1	0
Lassila & Tikanoja	*19*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	2	0	0	0	0
Liberty Global	*19*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	0	2	0	0	0
Lotus Bakeries	*13*	1	1	1	1	1	1	1	1	0	1	1	0	2	0	0	0	0	0	1	0	0	0	0
Loulis Mills S.A.	*12*	1	1	1	1	1	1	1	1	0	0	1	0	2	0	0	0	0	0	1	0	0	0	0
Magyar Telekom	*17*	1	1	1	1	1	1	1	1	0	1	1	0	2	1	1	1	1	0	1	0	0	0	0
Mapfre	*19*	1	1	1	1	1	1	1	1	0	1	1	1	2	2	1	1	1	0	1	0	0	0	0
Martela	*17*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	0	1	1	0	1	0	0	0	0
Meda	*11*	1	1	1	1	1	1	1	1	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0

Company Name	Total Score	Question Number																						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Metso	*15*	1	1	1	1	1	1	0	1	0	1	1	0	2	0	1	1	1	0	0	1	0	0	0
MN	*16*	1	1	1	1	1	1	1	1	0	0	0	0	2	2	1	1	1	0	1	0	0	0	0
Modern Times Group	*23*	1	0	1	1	1	1	1	1	1	1	1	1	2	2	1	2	1	2	2	0	0	0	0
Neste Oil	*24*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	2	1	2	2	0	2	0	0
NN Group	*20*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	2	0	0	1	0
Nokia Corporation	*19*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	1	0	0	1	0
Nordea Bank	*13*	1	1	1	1	1	1	1	1	0	0	0	0	2	0	0	1	1	0	1	0	0	0	0
Norsk Hydro	*17*	1	1	1	1	1	1	1	1	0	1	1	0	1	2	1	1	1	1	0	0	0	0	0
Novartis	*20*	1	1	1	1	1	1	1	1	0	1	1	1	2	2	1	1	1	1	1	0	0	0	0
Novozymes	*23*	1	2	1	1	1	1	1	1	0	1	1	0	2	2	1	1	0	2	1	0	2	1	0
Nutreco	*20*	1	1	1	1	1	1	1	1	0	1	2	0	2	1	1	1	1	1	2	0	0	0	0
OMV	*18*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	0	1	0	0	0	2	0	0
Orkla	*13*	1	0	1	1	1	1	1	1	0	0	1	0	2	0	1	1	0	0	1	0	0	0	0
OTP Bank	*20*	1	1	1	1	1	1	1	1	1	0	1	1	2	2	1	1	1	0	2	0	0	0	0
OutoKumpu	*17*	1	1	1	1	1	1	1	1	0	0	1	0	2	2	1	1	1	0	0	1	0	0	0
Outotec	*26*	1	1	1	1	1	1	1	0	1	1	2	2	2	1	1	1	2	1	1	2	2	0	0
Palfinger	*18*	1	0	1	1	1	1	1	1	1	1	1	0	2	2	1	0	0	1	0	2	0	0	0
Pearson	*6*	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	0
Philips	*23*	1	2	1	1	1	1	1	1	0	1	2	2	2	1	1	1	1	0	1	1	0	1	0
PKC Group	*7*	1	0	1	0	1	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0
Polymetal	*19*	1	2	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	0	1	0	0	0
Porsche	*22*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	2	1	2	0	0	0
PostNL	*23*	1	1	1	1	1	1	1	1	0	1	2	1	2	1	1	2	1	1	1	2	0	0	0
Premier Oil	*23*	1	1	1	1	1	1	1	1	0	1	1	0	2	0	1	2	1	1	1	2	1	0	2
Provident Financial	*28*	1	0	1	1	1	1	1	1	1	0	1	1	2	2	1	2	1	1	2	2	2	1	2
Publicis Groupe	*21*	1	0	1	1	1	1	1	1	1	1	2	2	2	2	1	0	0	0	1	0	1	0	1
Puma	*20*	1	1	1	1	1	1	1	1	1	1	1	0	2	2	1	1	1	0	1	0	0	1	0
RHI	*19*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	2	0	0	0	0
Rio Tinto	*16*	1	1	1	1	1	1	1	1	0	1	0	0	2	2	1	1	1	0	0	0	0	0	0
ROCKWOOL Benelux	*16*	1	2	1	1	1	1	1	1	0	1	1	0	0	1	1	1	1	0	0	1	0	0	0
RWE	*25*	1	1	1	1	1	1	1	1	0	1	1	2	2	2	1	1	1	0	1	2	2	1	0
SABMiller	*15*	1	1	1	1	1	1	0	1	0	1	1	0	1	2	1	1	1	0	0	0	0	0	0
Saga Furs Oyj	*20*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	2	0	0	1	0
Saint-Gobain	*18*	1	2	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	0	0	0	0	0
Saipem	*23*	1	2	1	1	1	1	1	1	1	1	1	0	2	2	1	1	1	1	2	0	0	0	1
Sandvik	*13*	1	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0	1	0	1	0	0	0	0
Sanofi	*14*	1	1	1	1	1	0	1	0	0	1	1	1	0	2	1	1	1	0	0	0	0	0	0
SAP	*29*	1	1	1	1	1	1	1	1	1	1	2	2	2	2	1	2	1	2	2	1	2	0	0
SEB	*16*	1	1	1	1	1	1	1	1	1	0	0	1	2	2	0	1	1	0	0	0	0	0	0
Siemens	*23*	1	2	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	0	2	1	0	0	0
Snam	*18*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	0	0	0	0	1
Sodexo	*19*	1	2	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	1	0	0	0	0
SolarWorld	*16*	1	1	1	1	1	1	1	1	0	0	1	2	2	1	0	1	1	0	0	0	0	0	0
SOLVAY s.a.	*18*	1	1	1	1	1	1	1	1	0	0	1	0	2	2	1	1	1	0	1	0	1	0	0
Sponda	*20*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	1	2	0	0	0
Statoil ASA	*26*	1	1	1	1	1	1	1	1	1	1	1	0	2	2	1	1	1	2	1	2	1	1	1
Stora Enso	*21*	1	1	1	1	1	1	1	1	1	1	1	0	2	2	1	1	1	0	1	2	0	0	0
Storebrand	*16*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	0	0	0	0	2	0	0	0	0
Suez Environment	*26*	1	2	1	1	1	1	1	1	1	1	2	2	2	2	1	2	1	1	1	0	0	0	1
Svenska Cellulosa Aktiebolaget - SCA	*17*	1	1	1	1	1	1	1	1	0	1	1	0	1	2	0	1	1	0	2	0	0	0	0
Swedbank	*16*	1	1	1	1	1	1	1	1	1	0	0	1	2	2	0	1	1	0	0	0	0	0	0
Syngenta	*22*	1	1	1	1	1	1	1	1	1	1	1	2	0	2	2	1	1	0	2	0	0	0	1
TAKKT AG	*15*	1	1	1	1	1	1	1	0	0	1	1	0	2	1	0	1	1	0	1	0	0	0	0
Technip	*20*	1	2	1	1	1	1	1	1	0	1	1	1	2	2	1	1	1	0	1	0	0	0	0
Telecom Italia	*22*	1	2	1	1	1	1	1	1	0	1	1	1	2	2	1	1	1	0	0	1	0	1	1
Telekom Austria	*21*	1	0	1	1	1	1	1	1	1	1	1	0	2	2	1	1	1	0	2	2	0	0	0
TeliaSonera	*17*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	0	0	0	0	2	0	1	0	0
TF1	*8*	1	0	1	1	1	0	1	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0
Tieto Corporation	*21*	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	0	1	0	0	1	0
Tikkurila	*21*	1	1	1	1	1	1	1	1	0	1	1	1	2	2	1	1	1	0	1	1	0	1	0
TMG	*27*	1	2	1	1	1	1	1	1	0	1	2	0	2	2	1	1	1	1	2	1	2	1	1
TNT Express	*21*	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	0	2	0	0	0	0
TOTAL	*22*	1	2	1	1	1	1	1	1	0	1	2	1	2	2	1	1	1	0	1	1	0	0	0
UCB	*18*	1	0	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	1	0	0	1	0
UNIBAIL-RODAMCO SE	*19*	1	2	1	1	1	1	1	1	0	1	2	0	2	2	1	0	0	0	2	0	0	0	0
Unicredit	*18*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	0	1	0	0	0
UPM-Kymmene	*15*	1	0	1	1	1	1	1	1	0	1	1	0	2	2	1	0	0	0	1	0	0	0	0
Vaisala Oyj	*28*	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	2	1	1	2	2	0	1	2
Valmet	*19*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	1	1	0	0	0
Van Lanschot	*18*	1	1	1	1	1	1	1	1	0	1	1	0	2	2	1	1	1	0	0	1	0	0	0
VERBUND	*14*	1	0	1	1	1	1	1	1	0	1	1	0	2	2	0	0	0	0	1	0	0	0	0
Vodafone Group	*28*	1	1	1	1	1	1	1	1	1	1	1	2	2	2	1	2	1	1	2	1	2	1	0
Wereldhave	*27*	1	2	1	1	1	1	1	1	1	1	2	1	2	2	1	1	1	1	2	2	0	1	0
Worldline	*19*	1	1	1	1	1	1	1	0	1	2	1	0	2	2	1	1	0	0	2	0	0	0	0
Yara International	*20*	1	2	1	1	1	1	1	1	1	1	1	0	2	2	1	1	1	0	1	0	0	0	0

Appendix 2 - Test for heteroscedasticity

White's test: H_a: data suffers from heteroscedasticity

Regression	**Chi2**	**P-value**
Model 1		
Total Sample	443,74	0,000
Voluntary Regime Sample	219,44	0,000
Mandatory Regime Sample	93,61	0,000
Model 2		
Total Sample		
BIG4	159,46	0,000
Provider	159,35	0,000
Voluntary Regime Sample		
BIG4	123,92	0,000
Provider	125,25	0,000
Mandatory Regime Sample		
BIG4	36,00	0,4215
Provider	36,00	0,4215