

The influence of board composition on CSR quality: Comparison of stakeholder- and shareholder-oriented countries



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Abstract

Society has become increasingly aware of the environmental, societal, and ethical consequences of activities of companies. This awareness is strengthened by major social and environmental scandals. Companies may publish a corporate sustainability report (CSR) in order to signal that they take care of their environmental, social, and ethical responsibilities or to preserve their legitimacy towards society. While these CSR could potentially be a very useful, the quality of these reports is, due to its voluntary nature, often taken into question. This study explores the role of the composition of the board of directors on the CSR quality. It is argued that board diversity, board independence, and board expertise gives new insights and other perspectives and therefore increases the monitoring ability of the board of directors and CSR quality. Using data from 215 companies listed on the major European indices in the period 2013-2016, this study investigates the relationship between measures of the composition of the board of directors and the CSR quality. In order to measure the company's CSR quality, the application of the (external) assurance standards and references to sustainability guidelines in the CSR, collected by the Global Reporting Initiative (GRI) database, are used. The results suggest that board diversity, board independence, and board expertise individually rarely increase the CSR quality, but interactions between these board composition characteristics can increase the CSR quality. In particular, board independence and board expertise are useful in these interactions effects in order to increase CSR quality. In addition, companies located in stakeholder-oriented countries have higher CSR quality compared to companies located in shareholder-oriented countries.

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1. Introduction

In the last decades society has become increasingly aware of the environmental, societal, and ethical consequences of activities of companies and organizations (Jenkins & Yakovleva, 2006; Kakabadse, 2007). Some scandals attracted higher than average awareness, for example the oil spill in the Gulf of Mexico and the use of child labour in Nike Inc. factories, due to its enormous effects on society. As a consequence, companies are being punished by society if they do not become more responsible for the effects of their business and operations, and if these operations are affecting the environmental and society negatively (Hahn & Kühnen, 2013). As a response, companies publish a corporate sustainability report (CSR) in order to show that they take care of their environmental, social, and ethical responsibilities towards society. While these CSR could potentially be a very useful and effective reporting mechanism, the quality of these reports is often taken into question. There are no regulations in order to be allowed to publish the CSR or mandatory requirements that guarantee the CSR quality. Consequently, due to its voluntary nature, the company could freely decide what information they want to disclose in the CSR. The board of directors have different incentives and motives in determining what to disclose in the CSR. One important motive is to signal their superior corporate sustainability performance (CSP) in order to maintain or improve their environmental, societal, and ethical reputation among the stakeholders and society (Watson et al., 2002). However, another important motive suggests that companies publish a CSR to maintain their legitimacy towards society (Manetti, 2011). With a CSR, the company tries to disguise their inferior corporate sustainability performance (CSP) by changing the perceptions of society, manipulating the awareness of society by distracting them to other issues, or convincing society that it is impossible to provide the right justification (An et al., 2011; Lindblom, 1994). Ultimately, the incentives of the company decide which information is disclosed and therefore also influences the quality of the information. The role of the board of directors is to monitor the relationship between the management and stakeholders and reduce the information asymmetry that exists in this principal-agent relationship (Fama & Jensen, 1983; Jensen & Meckling, 1976). The information asymmetry can be reduced by disclosing high CSR quality. In order to monitor the principal-agent relationship effectively, the board of directors needs to have sufficient competencies and expertise of the company's environmental, social, and ethical operations and responsibilities. When the board of directors have sufficient expertise they know how to interpret and deal with the related issues and accordingly how to ensure that the interest of stakeholders and managers are closely aligned. Also board diversity can enhance the ability to execute the monitoring role of the board of directors, since it provides a wider range of perspectives, discussions, exchange of ideas, and commitment on sustainability issues to the entire board (Hoffman & Maier, 1961; Watson et al., 1993; Bear et al., 2010; Chan et al., 2014). Thereby, also a broader range of

outcomes is assessed (Daily & Dalton, 2003). Also independent board directors can have a positive effect on the monitoring role and responsibilities of the board of directors (Anderson et al., 2004; Fields & Keys, 2003), since they can provide other perspectives to the board and generally have more commitment to the interests of the stakeholders and therefore can increase the CSR quality (Westphal & Zojac, 1997; Westphal & Milton, 2000). These different board composition characteristics could enhance the monitoring role of the board of directors and the commitment towards stakeholders in decreasing the information asymmetry and improving the CSR quality.

In addition, previous studies have shown that the legal system and institutions of a country are affecting the behaviour and corporate governance mechanisms of a company (La Porta et al., 1998). La Porta et al. (1997) differentiates between countries with a common law and a civil law system. Within a common law system, companies tend to be more focused on the shareholders' interests and therefore the countries within the common law system are mentioned to be shareholder-oriented countries, whereas companies within a civil law system, companies are more focused on the stakeholders' interests and therefore the countries within the civil law system are mentioned to be stakeholder-oriented countries (La Porta et al., 2000; Prado-Lorenzo et al., 2013). Companies with more focus on the interests of stakeholder are more likely to react to their social responsibilities, because they consider not exclusively the shareholders' interests, and will disclose sustainability reports earlier (Kolk & Perego, 2010). As a consequence, the effects of board composition on CSR quality are moderated by the differences between stakeholder- and shareholder-oriented countries, which indicate that the effects of board composition on CSR are possibly higher for companies located in stakeholder-oriented countries.

Therefore, this study investigates *the influence of board composition on corporate sustainability reporting quality in a comparison of stakeholder- and shareholder-oriented countries*.

In order to investigate this research question, 215 companies from major European indices are examined in the time period of 2013-2016. The results show little support for the positive effect of board diversity on CSR quality, only nationality diversity shows some significant positive effects on CSR quality. Also for board independence and board expertise there is little support for a positive effect on CSR quality. The results of the interactions indicate that the board composition variables individually do not have a significant effect on the CSR quality, but when they interact with each other they have in most of the cases a positive effect on CSR quality. In particular, the significant interactions show that at least board independence or board expertise is useful in order to have a positive effect on CSR quality. Also the results show that CSR quality

is higher for companies located in stakeholder-oriented countries than for companies located in shareholder-oriented countries. On the contrary, there is no evidence that interactions between board composition and the differences between companies located in stakeholder- or shareholder-oriented countries have a positive effect on CSR quality.

This study contributes to the literature of the influence of board composition on the decision-making process of a company and voluntary corporate sustainability reporting in several ways. First, there is extensive literature and research that focuses on the topic of board composition (e.g. Hermalin & Weisbach, 1991; Dalton et al., 1998). Most of this research focuses on the influence of board composition on the firm's financial performance (Carter et al., 2003; Erhardt et al., 2003; Bhagat & Black, 1999; Zahra & Pearce, 1989; Campbell & Minquez-Vera, 2008; Barnhart & Rosenstein, 1998; Miller & del Carmen Triana, 2009; Smith et al., 2006; Rose, 2007) or on strategical change (Goodstein et al., 1994). In general, in these studies it is found that board diversity and a more independent board improves the firm value (Carter et al., 2003; Erhardt et al., 2003). Research has also been conducted on the influence of board composition on non-financial performance, with the main focus of this research on corporate social responsibility disclosure (Ben-Amar et al., 2017; Ben-Amar & McIlkenny, 2015; Michelon & Parbonetti, 2012; Ghazali & Weetman, 2006; Fernandez-Feijoo et al., 2014; Galbreath, 2017) or on corporate social performance (CSP) (Bear et al., 2010; Coffey & Wang, 1998; Boulouta, 2013). In general, board composition diversity was found to have a positive effect on CSP (Bear et al., 2010; Hafsi & Turgut, 2013). These studies primarily focus on the influence of board composition on corporate sustainability disclosure and CSP. This study focuses on the influence of board composition on the CSR quality. The focus on CSR quality is in particular relevant, because CSR quality and company's motives may be questionable.

Second, research that investigated the influence of board composition on corporate sustainability investigated only the individual influences of board composition variables on CSR quality and CSP (Michelon & Parbonetti, 2012; Amran et al., 2014; Hafsi & Turgut, 2013; Frias-Aceituno et al., 2013; Liao et al., 2015; Jizi et al., 2014; Fernandez-Feijoo et al., 2014). These studies indicate that board diversity can have a positive effect on some aspect of the CSR (Post et al., 2011; Williams, 2003). However, it is possible that different board composition variables interact with each other since it can be expected that when each board composition characteristic has a positive effect on the CSR quality, the interaction between these characteristics will result even in higher CSR quality. Therefore, this study investigates whether two-way and three-way interactions between board composition characteristics even have a more positive effect on CSR quality.

Third, limited research has been conducted on the effects of the differences between stakeholder- and shareholder-oriented countries on CSR quality. Some studies found that there

are differences in environmental disclosure between companies in different countries (Meek et al., 1995) or that companies located in shareholder-oriented countries are less likely to produce an integrated report (Frías-Acetuino et al., 2013). Kolk & Perego (2010) found that companies located in stakeholder-oriented countries disclose sustainability reports more often, but they do not look into the CSR quality. This study investigates whether there are differences in the CSR quality between stakeholder- and shareholder-oriented countries. In addition, this study investigates also whether these differences affect the relationship between the board composition characteristics and CSR quality.

Fourth, research in economics that focuses on board diversity, use the more easy way to measure diversity of board director characteristics. In an example, gender diversity is measured using a dummy variable, which takes a value of one when there is at least one woman on the board or calculated as the total number of women on the board divided by the total number of board directors. However, in many scientific fields, including genetics and cultural studies, there are other more complete diversity measures used (Campbell & Minguez-Vera, 2008). One of these measures is the Shannon index. The Shannon index is able to deal with little differences between different groups and is, therefore, a more appropriate measure to calculate diversity. Also in some related studies, the Shannon index is used (e.g. Campbell & Mínguez-Vera, 2008; Murray, 1989). Therefore, in this study, gender diversity and nationality diversity are measured using the Shannon index.

Fifth, and in addition to several scientific contributions, this study has also practical and societal contributions. Standard setters try to decrease the information asymmetry problem between the company and its stakeholder by increasing the CSR quality. Results from this study can give new insights to standard setters. The results can also provide insights to companies on the influence of board composition on the CSR quality. This does not necessarily mean that board directors with certain characteristics should be fired immediately, but it can be useful in the application procedure if one of the main goals of the company is to have superior CSR quality. This study can also contribute to the extensive recent debate on gender diversity in boardrooms, as it shows the influence of gender diversity on CSR quality. It can provide information to standard setters and legislators of accounting standards by showing the influence of more female board directors on the use of the CSR.

The remainder of this study is as follows. Chapter 2 provides the theoretical background and an overview of the relevant literature. The different hypotheses are developed from this literature overview. Chapter 3 describes the data, variables, and the research model used in this study. Chapter 4 provides the results of the study. Chapter 5 discusses the results, limitations, and opportunities for future research. Finally, chapter 6 concludes the study.

2. Literature review and hypotheses development

2.1. Theoretical background

Agency theory

Agency theory describes the separation of ownership and control and the relationship in which one party, the principal, delegates work to another party, the agent (Jensen & Meckling, 1976). In this principal-agent relationship, an agency problem could arise when the interests of the principal and agent are not in line with each other or the principal is not able to check whether the behaviour of the agent is appropriately and for which the agent has been appointed (Eisenhardt, 1989). The main interest of the company's stakeholders is to make sure that their investment is profitable. Since the stakeholders do not have the ability or expertise to achieve these objectives themselves, they use the company's management to execute their goals. A problem arises when the managers do not have the same interests as the stakeholders and do not perform the task they are hired for (Friedman, 2007). Thereby, the stakeholders do not have the information and cannot directly observe the action taken by the managers of the firm, so-called information asymmetry. To align the interests of the stakeholders and the managers, the board of directors has the goal to advise and monitor the performances of the managers. The interests of the board of directors are beneficial for both the managers and the stakeholders. On the one side, the board of directors wants to create value for the company and on the other side for the stakeholders (Baysinger & Butler, 1985; Prado-Lorenzo & Garcia-Sanchez, 2010). The problem of misalignment of interests and information asymmetry is also likely to arise for a lot of different subjects and issues. The sustainability responsibilities are one of the issues of the company. Stakeholders would like to know what the sustainability issues of the company are and how the company deals with these issues. In order to solve this information asymmetry, the company can disclose information to the stakeholders. The most common way to disclose sustainability information is by publishing a voluntary CSR (Cho et al., 2015). However, this also brings the problem straight, its voluntary character. The company can determine itself which information they want to disclose since no law specifies any obligations to which the CSR must comply with. For other corporate governance mechanisms, like the annual financial report, the law does specify requirements to comply with, and the quality is therefore to a certain level guaranteed. As a consequence, the company can determine more easily what and how much information they want to provide to the stakeholders in their CSR (Rupley et al., 2012). Therefore, different incentives to disclose a high-quality CSR could play a role. Companies are sensitive to reputation, so when companies provide high CSR quality the company's reputation with regard to sustainability issues will increase. However, the managers of the company can also have other incentives to voluntarily disclose CSR; some of the incentives are enhancing and

securing their own career, at the expense of the stakeholders of the company or to remain the legitimacy of the company (Unerman et al., 2010). Following from these different incentives of the company to disclose a high quality CSR, there are two theories that could provide a reason why a company wants to provide a high-quality CSR in order to reduce the information asymmetry between them and the stakeholders. These are the signalling (theory) and the legitimacy theory.

Signalling theory

As discussed earlier, voluntary disclosure of CSR can reduce the conflicts of interest and information asymmetry regarding sustainability issues between the stakeholders and the managers of the companies (Chau & Gray, 2002). Companies will signal information if it is believed it will help the decision-making of stakeholders in favour of the company and its reputation (Meek et al., 1995). Companies will only do so because providing reports comes at a cost. The consequence is that only companies that have superior corporate sustainability performance will provide high-quality CSR because with high-quality CSR reports they can signal to the stakeholders that they have superior sustainability performance compared to other companies, and therefore further enhance their reputation (Verrecchia, 1983). Accordingly, inferior corporate sustainability performers will not provide high-quality CSR, because their reputation will be at stake. Also in the studies of Hummel & Schlick (2016) and Herbohn et al., (2014) it is found that superior sustainability performers disclose a high-quality CSR to signal their high sustainability performance. Therefore, a major advantage for stakeholders is that they can more easily separate superior sustainability performers from the inferior performers (Clarkson et al., 2008). So the signalling theory suggests that there is a positive relationship between the sustainability performance and the CSR quality (Dye, 1985).

Legitimacy theory

Legitimacy theory assumes that there is a social contract between the company and their stakeholders and society as a whole. With this contract, the company tries to find a social justification of the actions in which they are involved and are affecting society. The legitimacy theory can be applied to different situations and expectations of stakeholders towards the company. The first situation occurs if the company is seen as legitimate, and adheres to the contract between them and the society. The society will not punish the company and there will be no threat to the survival of the company. The second situation occurs if the company is seen as illegitimate, and does not adhere to the contract between them and the society (An et al., 2011). The society will punish the company for its behaviour. In order to secure their reputation, the company can adopt multiple mechanisms to reduce the legitimacy problem faced by the society (Chan et al., 2014; An et al., 2011). The most common used strategies are changing the

behaviour of the company towards to expectation of the stakeholders or society, changing the perceptions of the society, manipulating the awareness and perceptions of the society by distracting them to other issues and away from the related issue and manipulating the expectations of the society by convincing them that it is impossible to provide the right justification (An et al., 2011; Lindblom, 1994). To execute these strategies in order to secure their legitimacy and manipulate the perception of the society, companies can inform their bad sustainability performance to their stakeholders in a high-quality CSR (Clarkson et al., 2008). So, from the perspective of the legitimacy theory there is a negative relationship expected between sustainability performance and the CSR quality (Gray et al., 1995).

Human capital theory

The role of the board of directors is to monitor the relationship between the management and stakeholders and reduce the information asymmetry by enhancing the disclosure of a high-quality CSR (Fama & Jensen, 1983; Jensen & Meckling, 1976). In order to execute their role effectively, the board directors need to have sufficient expertise and therefore have to exploit their human capital value. Human capital is defined as “the knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being” (OECD, 2007, p. 29). This means that each board director can add their own unique human capital, and these unique values bring new perspectives, discussions, and exchange of ideas and therefore add to the diversity and expertise of the board of directors. These new perspectives, diversity and expertise enhances the decision making process of the board of directors and the effectivity to monitor the principal-agent relationship and to reduce the information asymmetry between management and stakeholders by improving the CSR quality (Hillman & Dalziel, 2003).

2.2. Development of hypotheses

As discussed from the previous theories, there are different incentives and motives for the company to disclose a high-quality CSR. The signalling theory argues that companies use a high-quality CSR to signal their superior sustainability performance to the society. On the other side the legitimacy theory argues that companies use a high-quality CSR in order to secure their reputation and legitimacy. The role of the board of directors is to monitor the relationship between the management and the stakeholders of the company. As discussed from the human capital theory, the unique values of the board directors determine whether the board have the ability to execute the monitoring role effectively, to reduce the information asymmetry, and to increase the CSR quality. Therefore, for the unique values and characteristics of the board directors it is hypothesized in what way this can affect the CSR quality.

Board diversity and CSR quality

Board diversity emphasises the individual role of the board directors on their monitoring role of the management and stakeholder relationship. The unique values and characteristics of the board directors can come from the gender, nationality, and age of the board directors. These characteristics provide the best source for differences between the board directors and are mentioned in the previous literature extensively (e.g. Bear et al., 2010; Carter et al., 2003; Erhardt et al., 2003).

Gender diversity

It is argued that more board diversity can be created by changing the gender composition in the board of directors, and these changes affect the decision-making process of the board of directors positively (Carter et al., 2003; Lückerath-Rovers, 2013). Empirical evidence of previous research shows that more gender diversity could not only affect the financial performance positively (Campbell & Minguez-Vera, 2008; Carpenter, 2002) but also affect the CSR strength ratings of companies (Bear et al., 2010). Thereby, female board directors have more different perspectives and background and put more effort and commitment in their objectives (Srinidhi et al., 2011). In the sustainability perspective, it is found that gender diversity explains CSR information disclosure (Frias-Aceituno et al., 2013). Thereby, female board directors are tend to be more socially responsible (Bernardi & Threadgill (2011) and sensitive to sustainability issues (Burgess & Tharenou, 2002; Bernardi, 2006). Fernandez-Feijoo et al., (2012) found that a board of directors with more female board directors are a determinant for CSR disclosure and inform the company's CSR strategy more. For these reasons it is expected that if gender diversity can bring more perspectives, backgrounds, and put more effort and commitment in their sustainability objectives to the board of directors, it has a positive effect on CSR quality. Therefore, the first hypothesis is as following:

H1: The corporate sustainability reporting (CSR) quality is higher for companies with more gender diversity than for companies with less gender diversity on the board of directors.

Nationality diversity

As stated in a previous section, the nationality of the board directors can also provide as a source for differences between the board directors (Bear et al., 2010). North (1990) states that the institutional environment of a country consists of formal and informal institutions, where the formal institutions consists of rules and contracts that are established to shape the institutional environment and the informal institutions consist predominantly of norms and values that are embedded in the society. Since each country has its own formal and informal institutions, each individual is developed in a different way and has its own beliefs. Different nationalities and backgrounds create more different perspectives. These different perspectives will lead to

generation and discussion of new ideas and innovative solutions (Nielsen & Nielsen, 2013). Reviewing and discussing these different perspectives and solutions in the board of directors, causes a better assessment of the issues, in particular sustainability issues (Richard, 2000, Carter et al., 2003). For these reasons it is expected that if nationality diversity can bring more perspectives, backgrounds, and solutions of sustainability issues to the board of directors, it has a positive effect on CSR quality. Therefore, the third hypothesis is as following:

H2: The corporate sustainability reporting (CSR) quality is higher for companies with more nationality diversity than companies with less nationality diversity on the board of directors.

Age diversity

As stated in a previous section, the age of the board directors can also provide as a source for differences between the board directors, and in particular the philanthropic decision making (Post et al., 2011). It is well known that most of the board of directors consist of middle-aged male directors and that these board directors are part of the old-boys network, and so the average age of the board of directors is relatively high (McDonald, 2011). The advantage of more mature directors is that they have more experience and have built a reputation in the industry. They also can provide more economic resources to the company (Houle, 1990). On the sustainability perspective, it is argued that when board directors are maturing, they become more sensitive to societal issues, and more willing to contribute to the welfare of the society (Hafsi & Turgut, 2011). On the other hand side, less mature board directors are more active in sustainability committees and are more concerned with the environmental and ethical issues within the company (Kang et al., 2007). This group tends to act more friendly towards the interests of the society and the environment (Bekiroglu et al., 2011). Hafsi and Turgut (2003) found that more age diversity has a positive effect on CSP. Also a board of directors with more age diversity among the board directors acts in the interest of a wider range of stakeholders (Aguilera & Jackson, 2010). From these perspectives, it can be argued that both mature and less mature board directors can positively affect the commitment of the board of directors to their sustainability responsibilities towards society. Therefore, the second hypothesis is as following:

H3: The corporate sustainability reporting (CSR) quality is higher for companies with more age diversity than companies with less age diversity on the board of directors.

Board independence and CSR quality

A board of directors with multiple independent directors can bring different benefits. First of all, independent board directors can provide legitimacy and bring expertise to the company (Salancik & Pfeffer, 1978). The main goals of independent board directors are to oversee the decision making process of the board of directors and to manage the interests of the

stakeholders (Jensen & Meckling, 1976; Fama & Jensen, 1983). Previous research suggests that outside board directors can make a positive contribution to the monitoring responsibilities of the board (Anderson et al., 2004; Fields & Keys, 2003) and that they are more sensitive to social demands (Ibrahim and Angelidis, 1995). Also independent board directors are not heavily involved in the daily operations and are less dependent of the financial results of the company. Therefore, they are expected to be more objective to and independent of the decisions of the management (Prado-Lorenzo et al., 2009). As a consequence they can more easily provide different perspectives than the other board directors to the decision making of the board of directors. Also, independent board directors are more frequently appointed to develop and commit to CSR strategies. Since the independent board directors are more committed to the stakeholders, these independent board directors are also more willing to provide high quality information disclosure to the stakeholders. This willingness also arises from the fact that the outside board directors want to maintain their reputation towards the stakeholders (Fama & Jensen, 1983). In addition, previous research found that there is a positive relationship between board independence and socially responsible behaviour of the company (O'Neill et al., 1989), and also between board independence and quality of information disclosure (Karamanou & Vafeas, 2005). Specific to the disclosure of sustainability information disclosure it is found that there is a positive relationship between board independence and the CSR quality in Hong Kong (Leun & Horwitz, 2004). This is also the case for the companies within the Singaporean exchange and European biotech companies (Cheng & Courtenay, 2006; Cerbioni & Perbonetti, 2007). As a result, more board independence is likely to increase the CSR quality. Therefore, the fourth hypothesis is as following:

H4: The corporate sustainability reporting (CSR) quality is higher for companies with more independent board directors than for companies with less independent board directors on the board of directors.

Board expertise and CSR quality

Board expertise arises through the knowledge and experience of individual board directors. These board directors can provide the board of directors with knowledge and information in order to deal with different issues. Some of these directors are an expert in a certain discipline. Sustainability experts can help the board of directors to set up a sustainability strategy, advice and respond to sustainability issues and improve the overall sustainability performance of the company (Hillman & Dalziel, 2003; Aram et al., 2014). In addition, these sustainability experts are better able to monitor the management regarding sustainability issues, since they have more expertise on these issues. This means that board directors with more sustainability expertise are better able to influence and advice the decision making on corporate sustainability disclosure.

Harjoto et al. (2015) shows that the total number of sustainability issues is reduced when the board has more expertise. Also as previous research suggests, companies with an environmental committee are more likely to disclose information on sustainability issues, such as greenhouse-gas emissions (Adnan et al., 2009). As a result, this increased expertise on sustainability issues is likely to increase the disclosure of sustainability issues and the CSR quality. Therefore, the fifth hypothesis is as following:

H5: The corporate sustainability reporting (CSR) quality is higher for companies with more expertise than for companies with less expertise on the board of directors.

Board composition characteristics interaction

From the previous sections, it is expected that the CSR quality is higher for companies with more board diversity, based on gender, age, and nationality, board independence, and board expertise. All these individual board director characteristics tend to have a positive effect on the ability of the board of directors to act in the interests of the stakeholders, to monitor the relationship between the management and stakeholders and therefore increase the CSR quality. In previous research, it is not widely suggested that these different board composition characteristics might have a more positive or different effect on the CSR quality if they interact with each other. This means that for example it can be expected that a board with both more independence and expertise is better able to disclose higher CSR quality than a board with only high board independence or expertise. This expectation also applies for the other board composition characteristics. So the CSR quality is expected to be higher for companies with both more board diversity and board independence, both more board diversity and board expertise, and both more board independence and board expertise. Since board diversity is determined by gender diversity, age diversity and nationality diversity, interactions between these characteristics are also expected to result in higher CSR quality. It can also be expected that the CSR quality will be even higher for a company with high board diversity, board independence and board expertise. These expectations are all explorative, and as a result, the sixth hypothesis is as following:

H6: The positive effect on corporate sustainability reporting (CSR) quality is higher if the different board composition characteristics interact with each other.

Stakeholder and shareholder orientation and CSR quality

La Porta et al. (1998) describes that the origin of a country and its legal system is developed over multiple ages and cannot be changed in a small period of time. These different legal systems and institutions are affecting the corporate governance mechanisms and behaviour of a company (La Porta et al, 1998). Extensive research has been conducted on the effects of differences in legal systems, primarily on the differences between common law and civil law systems. A common

law system is primarily focused on protecting the interest of shareholders and creating shareholder value (La Porta et al., 2000; Hoskisson et al., 2004). These countries are mentioned as shareholder-oriented countries. Focussing on the protection of the interest of shareholders, this also means that these shareholders are better able to influence the decisions made by the board of directors in their favour and not necessarily in the favour of the society (Prado-Lorenzo et al., 2012). Previous research found that for companies located in shareholder-oriented countries the quality and disclosure of financial information is higher (e.g. Ball et al., 2000; Leuz et al., 2003; Jaggi & Low, 2000). On the other hand, a civil law system does not only focus on the protection and the interests of shareholders, but on all the stakeholders of the company, including consumers, staff and suppliers (Prado-Lorenzo et al., 2013; Ball et al., 2000). These countries are mentioned to be stakeholder-oriented countries. As they are more focused on the stakeholders, they are also more likely to react to their social responsibilities (Kolk & Perego, 2010). Previous research also suggests that companies located in these stakeholder-oriented countries are expected to disclose more non-financial and voluntary information to their stakeholders (Marginson & Sisson, 1994) and in particular sustainability reports (Kolk & Perego, 2010). Also the quality of the social and environmental reports is higher for companies located in stakeholder-oriented countries (Smith et al., 2005). Therefore it is expected that the CSR quality is higher for companies in stakeholder-oriented countries. The seventh hypothesis consists of two parts. The first part of the hypothesis argues that there is a positive effect for companies located in stakeholder-oriented countries compared to shareholder-oriented countries on CSR quality. The second part investigates whether the positive effects of board composition characteristics on CSR quality, expected from the previous hypotheses are moderated by the differences between companies located in stakeholder-oriented countries and shareholder-oriented and that the positive effects are higher for companies located in stakeholder-oriented countries. So the seventh hypothesis is as following:

H7a: The corporate sustainability reporting (CSR) quality is higher for companies located in a stakeholder-oriented country than for companies located in a shareholder-oriented country.

H7b: The positive effects of the different board composition characteristics on corporate sustainability reporting (CSR) quality is higher for companies located in a stakeholder-oriented country than for companies located in a shareholder-oriented country.

3. Research method

3.1. Data and sample

In order to answer the research question and to test the hypotheses, this study uses a panel data sample of European companies in the time period of 2013-2016. The companies are listed on major European indices: the FTSE 100 of the United Kingdom, the DAX 30 of Germany, the CAC 40 of France, the IBEX 35 of Spain, the FTSE MIB 40 of Italy, the AEX 25 of the Netherlands, and the BEL 20 of Belgium. The total number of companies from these indices is 290. Panel A of Table 1 presents the final 215 companies that are used in the final data sample, of which 61 of the companies have not published a CSR in a relevant year, 2 companies are listed in multiple indices, and 12 companies have missing data on other variables. Panel B of Table 1 presents a breakdown of the companies of each country. There are 75 companies from the United Kingdom, 26 from Germany, 36 from France, 27 from Spain, 22 from Italy, 20 from the Netherlands, and 9 from Belgium in the final sample. The United Kingdom represents a shareholder-oriented country and the other countries represent stakeholder-oriented countries. Within the final sample, the companies vary in different industry. Table 2 presents the sample companies by industry and by country. A large part of the companies is located in either the manufacturing or finance and insurance industry. Europe is a relevant region since the companies are becoming increasingly aware of their sustainability responsibilities towards society and every year more sustainability reports are published or integrated into the annual report of the company. In 2011, the European Commission introduced the 'Renewed Strategy 2011-2014 for Corporate Social Responsibility'. This new strategy of the European Commission "aims to create conditions favourable to sustainable growth, responsible business behaviour and durable employment generation in the medium and long term" (European Commission, 2011, p.4). Also, the European Parliament shifted their focus to sustainability. In 2013 it adopted two resolutions, including promoting the interests of society and sustainable recovery of the financial crisis, and a report promoting more focus on accountable, transparent and responsible business behaviour (GRI, 2018). This study uses the Global Reporting Initiative (GRI) database in order to observe the corporate sustainability reporting (CSR) quality. The GRI offers a worldwide overview of published sustainability reports and gives an overview of the application of standards and references to guidelines in the CSR of a company. When data of a CSR in the GRI database is missing, corporate websites are used to collect the data. The data of the board directors, including gender, nationality, age, independence and expertise, is primarily obtained from the BoardEx database, which contains company board details for major listed companies in Europe. When data of the board directors is missing, Orbis and ThomsonOne are used. The data of the control variables are obtained from Thomas Reuters Eikon, Thomas Reuters ASSET4, and Orbis. When there was still data missing, corporate websites and annual reports are used.

Table 1 - Data sample

Panel A								
United Kingdom: FTSE 100								100
Germany: DAX 30								30
France: CAC 40								40
Spain: IBEX 35								35
Italy: FTSE MIB 40								40
The Netherlands: AEX 25								25
Belgium: BEL 20								20
<u>Subtotal:</u>								<u>290</u>
<i>Minus:</i> Missing CSR quality data in at least one relevant year								61
<i>Minus:</i> Companies in multiple European indices								2
<i>Minus:</i> Missing data on other variables								12
<u>Final data sample:</u>								<u>215</u>
Panel B								
	<u>Total</u>	United Kingdom	Germany	France	Spain	Italy	The Netherlands	Belgium
2013	215	75	26	36	27	22	20	9
2014	215	75	26	36	27	22	20	9
2015	215	75	26	36	27	22	20	9
2016	215	75	26	36	27	22	20	9

Table 2 – Industry

NAICS code	Industry	<u>Total</u>	United Kingdom	Germany	France	Spain	Italy	The Netherlands	Belgium
11	Agriculture, Forestry, Fishing, and Hunting	0	0	0	0	0	0	0	0
21	Mining	9	6	0	1	0	1	1	0
22	Utilities	16	4	2	1	5	3	0	1
23	Construction	8	3	0	2	3	0	0	0
31-33	Manufacturing	72	19	14	18	3	7	7	4
42	Wholesale Trade	6	4	1	1	0	0	0	0
44-45	Retail Trade	10	5	0	2	1	1	1	0
48-49	Transportation and Warehousing	12	3	2	0	3	2	1	1
51	Information	18	6	2	2	2	1	3	2
52	Finance and Insurance	40	13	4	4	7	7	4	1
53	Real Estate Rental and Leasing	4	3	0	0	0	0	1	0
54	Professional, Scientific, and Technical Services	9	3	0	3	2	0	1	0
55	Management of Companies and Enterprises	0	0	0	0	0	0	0	0
56	Administrative and Support and Waste Management and Remediation Services	4	3	0	0	0	0	1	0
61	Educational Services	0	0	0	0	0	0	0	0
62	Health Care and Social Assistance	2	1	1	0	0	0	0	0
71	Arts, Entertainment, and Recreation	0	0	0	0	0	0	0	0
72	Accommodation and Food Services	5	2	0	2	1	0	0	0
81	Other Services (except Public Administration)	0	0	0	0	0	0	0	0
92	Public Administration	0	0	0	0	0	0	0	0
<u>Total</u>		<u>215</u>	<u>75</u>	<u>26</u>	<u>36</u>	<u>27</u>	<u>22</u>	<u>20</u>	<u>9</u>

3.2. Variables

3.2.1. Dependent variables

In this study the CSR quality is the dependent variable. The CSR quality is measured using the GRI database. The GRI is an independent international organization and its aims to help “businesses and governments worldwide understand and communicate their impact on critical sustainability issues such as climate change, human rights, governance and social well-being. The GRI Sustainability Reporting Standards are the first and most widely adopted global standards for sustainability reporting” (GRI, 2018). The GRI database analyses whether companies apply different sustainability standards and describes these standards in their sustainability and/or annual reports. In order to measure the CSR quality, dummy variables are used. The dummy variable can either have a value of 1 or 0. The dummy variable has a value of 1 if the company’s CSR has applied, refers to or uses a specific standard or guideline, and 0 otherwise. The GRI reports on twelve standards and can be divided into two groups. The first group is on the (external) assurance standards of the CSR and the second group is on the sustainability guidelines. Both the (external) assurance standards and sustainability guidelines are taken into account in order to determine the CSR quality. The (external) assurance standards are taken into account because it shows that another party has critically assessed the CSR, and not exclusively by the company. The sustainability guidelines are taken into account since the GRI indicates whether they make a reference to or use these guidelines. When the company does make a reference to the guidelines the CSR quality is higher, because every single guidelines takes into account different environmental, social, and ethical factors. Also these guidelines come from important institutions, for example the United Nations or the IFC and are therefore a more reliable measure of CSR quality. As discussed before, there are twelve standards used by the GRI, and accordingly twelve dependent variables. In order to reduce the number of dependent variables a principal component analysis (PCA) is performed. For each of the components a regression analysis is performed. In addition, for the additional analysis, the CSR quality is operationalized in a different way. The dependent variables are divided into 2 groups. The first group are the (external) assurance standards and consist of External Assurance, Stakeholder panel/Expert opinion, AA100AS, ISAE300, the general national assurance standard, and the sustainability national assurance standard. The second group are the sustainability guidelines and consist of the OECD, UNGC, CDP, IFC, and the ISO guidelines. For every application, reference to, or use of one of these standards or guidelines, the CSR quality receives a score of 1 or 0. Eventually, every company receives a score for both groups of CSR quality. The 2 groups are also combined, which indicates the total CSR quality score. In the next section, each standard and guideline is described and explained.

External Assurance

External assurance indicates whether the (sustainability) report is externally discussed and approved by an independent company or organization, in most cases an audit company (GRI, 2018). External assurance can provide more confidence in the CSR quality to the board of directors and stakeholders since a certified and independent organization is better able to give an objective review of the (sustainability) report. Other potential benefits of external assurance are increased recognition, trust and credibility, reduced risk and increased value, improved board engagement, strengthened internal reporting and management systems, and improved stakeholder communication (GRI, 2013). In the most cases the (sustainability) report has a section in which the external assurer discusses the sustainability (section of the) report.

Stakeholder panel/expert opinion

Stakeholders' panel or expert opinion "indicates whether there was formalized input to or feedback on the report provided by a panel of stakeholders or expert(s)" (GRI, 2018, p.12). These inputs or feedback from the stakeholders or expert(s) can increase the CSR quality in the same way as the external assurance since another party critically assesses the published sustainability report and is more independent of the outcomes of the sustainability report.

AA1000AS

"Indicates application of the AccountAbility AA1000 Assurance Standard (AA1000AS) as disclosed in the external assurance statement" (GRI, 2018, p.13). These standards are principle-based standards used by different organizations to demonstrate leadership and performance in accountability, responsibility, and sustainability (AccountAbility, 2008a). Its aim is to "provides a platform to align the non-financial aspects of sustainability with financial reporting and assurance" (AccountAbility, 2008b, p.6). When the external assurer indicates in their statement that this AA1000 Assurance Standard is used, the quality of their external assurance statement is higher and therefore the CSR quality is expected to be higher.

ISAE3000

"Indicates application of International Standard on Assurance Engagements (ISAE) 3000 as disclosed in the external assurance statement" (GRI, 2018, p.13). "The purpose of this International Standard on Assurance Engagements (ISAE) is to establish basic principles and essential procedures for, and to provide guidance to, professional accountants in public practice (for purposes of this ISAE referred to as "practitioners") for the performance of assurance engagements other than audits or reviews of historical financial information covered by International Standards on Auditing (ISAs) or International Standards on Review Engagements (ISREs)" (IFAC, 2010, p.293). The principles are focused on: (1) Ethics, (2) Quality Control, (3)

Engagement Acceptance and Continuance, (4) Agreeing on Terms of the Engagement, (5) Planning and Performing the Engagement, (6) Using the Work of an Expert, (7) Obtaining Evidence, (8) Considering Subsequent Events, (9) Documentation, (10) Preparing the Assurance Report and (11) Other Reporting Responsibilities (IFAC, 2010). When the external assurer indicates in their statement that these ISAE3000 Assurance Engagements are used, the quality of their external assurance statement is higher and therefore the CSR quality is expected to be higher.

Assurances standard: national standard (general)

“Indicates application of a general national assurance standard (e.g., general accounting principles developed at the national level or by an organization within the specific national context) as disclosed in the external assurance statement” (GRI, 2018, p.13). When the external assurer indicates in their statement that the general national assurance standards are used, the quality of their external assurance statement is higher and therefore the CSR quality is expected to be higher.

Assurance standard: national standard (sustainability)

“Indicates application of a sustainability (non-financial) specific national assurance standard (e.g., developed at the national level or by an organization within the specific national context) as disclosed in the external assurance statement” (GRI, 2018, p.13). When the external assurer indicates in their statement that the sustainability national assurances standards are used, the quality of their external assurance statement is higher and therefore the CSR quality is expected to be higher.

OECD Guidelines

“Indicates explicit reference to/use of the OECD Guidelines for Multinational Enterprises in the report” (GRI, 2018, p.13). The main focus of these guidelines is on responsible business conduct and are: (1) Concepts and Principles, (2) General Policies, (3) Disclosure, (4) Human Rights, (5) Employment and Industrial Relations, (6) Environment, (7) Combating Bribery, Bribe Solicitation and Extortion, (8) Consumer Interests, (9) Science and Technology, (10) Competition, and (11) Taxation (OECD, 2011). Application of the OECD Guidelines by itself does not directly improve the CSR quality, but by referencing to and using it in the CSR the quality will be higher.

United Nations Global Compact (UNGC)

“Indicates explicit reference to/use of the United Nations Global Compact and its principles in the report” (GRI, 2018, p.13). The United Nations Global Compact states that by incorporating

the Ten Principles of the UN Global Compact into strategies, policies, and procedures, and establishing a culture of integrity, companies are not only upholding their basic responsibilities to people and planet but also setting the stage for long-term success (United Nations Global Compact, n.d.). The Ten Principles are divided into four main subjects: (1) Human Rights, (2) Labour, (3) Environment, and (4) Anti-Corruption. Application of the UNGC principles by itself does not directly improve the CSR quality, but by referencing to and using it in the CSR the quality will be higher.

Carbon Disclosure Project (CDP)

“Indicates explicit reference to the organization responding to one of the annual Carbon Disclosure Project (CDP) questionnaires, or participating in an associated CDP project” (GRI, 2018, p.13). CDP initiates climate change programs, e.g. Climate Change, Water, Supply Chain, Forest, and Cities to encourage companies to have high environmental awareness, sustainability governance and leadership to address climate change. The CDP runs the global disclosure system that enables companies, cities, states, and regions to measure and manage their environmental impacts (CDP, 2018). Participating in a particular CDP project by itself does not directly improve the CSR quality, but by referencing to and using it in the CSR the quality will be higher.

International Finance Corporation (IFC)

“Indicates explicit reference to/use of the IFC Performance Standards in the report” (GRI, 2018, p.13). The IFC provides investment, advice, and asset management on areas including climate change and it has created eight Performance Standards for companies to manage their risks and responsibilities with regard to sustainability risks: (1) Assessment and Management of Environmental and Social Risks and Impacts, (2) Labor and Working Conditions, (3) Resource Efficiency and Pollution Prevention, (4) Community Health, Safety, and Security, (5) Land Acquisition and Involuntary Resettlement, (6) Biodiversity Conservation and Sustainable Management of Living Natural Resources, (7) Indigenous People, and (8) Cultural Heritage (International Finance Corporation, 2012). Application of the IFC Performance Standards by itself does not directly improve the CSR quality, but by referencing to and using it in the CSR the quality will be higher.

ISO 26000

“Indicates explicit reference to/use of the ISO 26000 clauses in the report” (GRI, 2018, p.13). These clauses contribute to the social responsibility of companies and the objective is to provide guidance to companies in how to operate in a socially responsible way (ISO, 2010). The seven key principles are: (1) Accountability, (2) Transparency, (3) Ethical behaviour, (4) Respect for

stakeholder interests, (5) Respect for the rule of law, (6) Respect for international norms and behaviour, and (7) Respect for human rights (ISO, 2010). Application of the ISO 26000 by itself does not directly improve the CSR quality, but by referencing to and using it in the CSR the quality will be higher.

United Nations Sustainability Development Goals (SDGs)

“Indicates explicit reference to the UN Sustainability Development Goals (SDGs) in the report. Track whether the reporting organization has indicated that the report addresses any of the UN Sustainability Development Goals (SDGs)” (GRI, 2018, p.13). The main goal of the SDGs is “to end poverty, protect the planet and ensure that all people enjoy peace and prosperity” (United Nations, 2015, nd.). This main goal is divided into seventeen goals in different groups and are: (1) no poverty, (2) zero hunger, (3) good health and well-being, (4) quality education, (5) gender equality, (6) clean water and sanitation, (7) affordable and clean energy, (8) decent work and economic growth, (9) industry, innovation and infrastructure, (10) reduced inequalities, (11) sustainable cities and communities, (12) responsible consumption, (13) climate action, (14) life below water, (15) life on land, (16) peace, justice and strong institutions, and (17) partnership for the goals (United Nations, 2015). Application of the SDGs by itself does not directly improve the CSR quality, but by referencing to and using it in the CSR the quality will be higher.

3.2.2. Principal Component Analysis

As described in a previous section, there are a lot of dependent variables to indicate the CSR quality. In order to reduce the amount of dependent variables, a Principal Component Analysis (PCA) is performed. The dependent variable SDGs is excluded from the PCA, since this sustainability guideline is introduced at the end of 2014. After the PCA is performed, the components are used for the analyses. First, there is a distinction made between two groups, (external) assurance standards and sustainability guidelines. For both groups there is PCA performed separately. In order to determine whether the components fit the data, a Kaiser-Meyer-Olkin (KMO) test is executed. Panel A of Table 3 presents the PCA for the (external) assurance standards. The fit of the components within the data is accepted, as the value of the KMO-test, 0.6233, is higher than the critical value of 0.5. Component 1 represents the “International Assurance and Stakeholder Panel/Expert opinion”, which consists of the External Assurance, AA1000AS, ISAE300, and Stakeholder panel/Expert opinion variables. In this component all the variables have high values, in particular for External Assurance and ISAE3000. Component 2 represents the “National External Assurance”, which consists of the AS: National (general) and AS: National (sustainability) variables. The values for these two variables are clearly the highest and indicate they represent the national assurance standards best. Panel B of Table 3 presents the PCA for the sustainability guidelines. The fit of the components within

the data is accepted, as the value of the KMO-test, 0.6925, is higher than the critical value of 0.5. Component 3 represents the “Sustainability Guidelines”, which consists of all the sustainability guidelines; OECD, UNGC, CDP, IFC, and ISO. Other components of this PCA do not represent these sustainability guidelines better.

Table 3 – Principal Component Analysis

Panel A		
Variables	Component 1	Component 2
	International Assurance and Stakeholder/panel Expert opinion	National External Assurance
External Assurance	0.5555	-0.3010
Stakeholder panel/Expert opinion	0.2256	-0.0398
AA1000AS	0.3272	-0.2439
ISAE3000	0.5139	-0.3554
AS: National (general)	0.3476	0.6301
AS: National (sustainability)	0.3853	0.5700
Total Variance	0.3812	0.1935
Kaiser-Meyer-Olkin Test	0.6233	
Panel B		
Variables	Component 3	
	Sustainability Guidelines	
OECD	0.5076	
UNGC	0.5237	
CDP	0.4967	
IFC	0.2589	
ISO	0.3928	
Total Variance	0.4103	
Kaiser-Meyer-Olkin Test	0.6925	

3.2.3. Independent variables

Board diversity

Board diversity can be measured in multiple ways. In this study board diversity is measured using diversity indicators of three board director characteristics. The first diversity indicator is gender diversity. Gender diversity represents the distribution of female and male board directors. In previous research, gender diversity is measured by the total number of female board directors divided by the total number of board directors (Erhardt et al., 2003; Amram et al., 2014; Carter et al., 2010) or using a dummy variable that indicates whether a board consists of a female director. However, in many scientific fields, including genetics and cultural studies, there are other more complete diversity measures used (Campbell & Minguez-Vera, 2008). These measures take “into account both the number of gender categories (two) and the

evenness of the distribution of board members among them” (Campbell & Minguez-Vera, 2008, p.442). In line with Campbell & Minguez-Vera (2008) the Shannon index is used to measure gender diversity. The Shannon index is measured as $-\sum_{i=1}^n P_i \ln P_i$, where P_i is the percentage of board directors in each category, in this case male or female, and n , the total number of board directors¹. The Shannon index is sensitive to small difference in the composition of gender in the board, since it uses logarithms to determine the diversity (Campbell & Minguez-Vera, 2008). The second indicator of board diversity is nationality diversity. Nationality diversity represents the distribution of different nationalities in the board of directors. This variable is also measured using the Shannon index, in which each different nationality represents a category. The third indicator of board diversity is age diversity. Age diversity represents the distribution of the age of the board directors. In this study age diversity is measured by calculating the average age of the board directors. In comparison to gender diversity and nationality diversity, the Shannon index is not an appropriate measure; due to the many categories the diversity would be too high. In addition, in order to test the robustness of the results, gender diversity, nationality diversity, and age diversity are measured differently. Gender diversity is measured by the total number of female board directors divided by the total number of board directors. Nationality diversity is measured by the total number of board directors with a nationality other than company’s origin divided by the total number of board directors. Age diversity is measured using a dummy variable. The dummy variable of 1, if the company has a lower than average board age, and 0 otherwise. The average board age is calculated based on the country of the company and the year. Finally, in order to test whether there is an interaction effect between board diversity and the stakeholder/shareholder orientation of a country on the CSR quality there is a composition variable made for board diversity, in accordance with Hooghiemstra (2012). For each of the three diversity variables the median is calculated, subsequently it is determined if the company has a higher or lower value than the median. If the company has a higher value than the mean for gender diversity and nationality diversity, it has a value of 1 and 0 otherwise. For age diversity, the company has as value of 1 if the value is lower than the median and 0 otherwise. After that, the values for the three different diversity indicators are combined, and each company obtained a value between 0 and 3 for the interaction term of board diversity.

Board independence

Board independence indicates whether the board directors are independent of the company. An independent board director is a board director that does not have a relationship with the company that possibly affects the independence of their decision. It is argued it can have a

¹ There is an even distribution of female and male board directors if the value of the Shannon index is 0.69. The lower bound of the Shannon index is 0, which indicates that there is only 1 category. A high value for the Shannon index indicates a high diversity level.

positive effect on the monitoring role and responsibilities of the board of directors (Anderson et al., 2004; Fields & Keys, 2003), since they can provide other perspectives to the board and generally have more commitment to the interests of the stakeholders (Westphal & Zojac, 1997). Board independence is measured by the total number of independent board directors divided by the total number of board directors (Bhagat & Black, 2001; Rosenstein & Wyatt, 1990; Kang et al., 2007).

Board expertise

Board expertise indicates whether the board of directors has expertise on company's sustainability issues and responsibilities. Board expertise is measured using a dummy variable. The dummy variable indicates a 1 if there is a corporate sustainability expert on the board or if there is a special corporate sustainability committee in the company and 0 otherwise (Amran et al., 2014). The most common goal of a sustainability committee and the sustainability experts is to support the adoption of the different sustainability principles regarding environment, society and governance and to integrate business and sustainability priorities of the company.

Stakeholder- and shareholder-oriented countries

In order to investigate whether the difference between stakeholder- and shareholder-oriented countries affect the CSR quality and influence the effects of the board composition on the CSR quality, a dummy variable is used to indicate whether the company is located in a stakeholder- or shareholder-oriented country. As described previously, this study investigates countries from Europe. Consistent with previous research (e.g. Campbell & Minguez-Vera, 2008), continental European countries are stated to be more stakeholder-oriented and Anglo-Saxon countries are stated to be more shareholder-oriented. In this study, Germany, France, Spain, Italy, the Netherlands, and Belgium are continental European countries and the United Kingdom is an Anglo-Saxon country. This means that the companies from the DAX 30 of Germany, CAC 40 of France, the IBEX 35 of Spain, the FTSE MIB 40 of Italy, the AEX 25 of the Netherlands, and the BEL 20 of Belgium, have a value of 1 and the companies from the FTSE 100 of the United Kingdom have a value of 0 in the dummy variable.

3.2.4. Control variables

Consistent with previous research several control variables are used. Firstly, this study controls for company size, company leverage, company financial performance, and board size. Previous research shows that company size has a positive effect on the CSR quality (Brammer & Pavlin, 2006; Luo et al., 2012; Amram & Haniffa, 2011; Clarkson et al., 2011; García-Sánchez, 2008). Company size is measured using the natural logarithm of the total assets of the company in the specific year. Previous research also shows a relationship between company leverage and CSR quality (Fernández-Feijóo et al., 2012). Company leverage is calculated by the total debt of the

company divided by the total assets of the company. Also company financial performance is expected to have a relationship with CSR quality, as increased financial performance leads to more available resources to spend on improving the CSR quality. Company financial performance can be measured in different ways. First, the return on equity (ROE) is used. The return on equity measures the profitability of a company by determining the profits that a company generates with the invested money of the shareholders. Second, the return on assets (ROA) is used. The return on assets determines how efficient a company is using its assets to generate profits. Another influence on CSR quality can arise from the visibility of the company. The visibility of the company can be measured in different ways. First, Hahn & Kühnen (2013) argue that in order to mitigate bad press or reputational risks companies increase the depth and quality of disclosure of sustainability reports. In order to measure the visibility of the company, the total amount of media press releases, in (one of) the most prominent financial newspapers, the Financial Times, is measured. Second, attention on the company arises not only from the media; it also arises from financial analysts that follow the company. From previous research it is argued that the coverage of financial analysts help to align the interests of the company and its stakeholders and therefore the number of analyst coverage will results in higher CSR quality (Jo & Harjoto, 2014). Analyst coverage is determined by the number of financial analysts following the company within a year. Previous research also suggests that there is a relationship between the industry in which the company operates and CSR quality (Chan et al., 2014). In order to determine the industry in which the company operates, the NAICS-code is used. The first two digits of the NAICS-code indicate the largest business sector in which the company operates. Since this study investigates the board of directors, there will also be controlled for board size. Previous research shows mixed results of the effect of board size on CSR quality. On the one hand, larger boards can have more different backgrounds and expertise and so increase the CSR quality, on the other hand, larger boards lead to less efficient monitoring of the management, since more board directors want to express their opinion which leads to more discussion (Amram et al., 2014; Frias-Aceituno et al., 2013). Corporate sustainability performance (CSP) is the last control variables in this study. Previous research suggests that there is a relationship between CSP and CSR quality. It is also argued that this relationship can be either positive or negative. Clarkson et al. (2008) argue that poor sustainability performers disclose high CSR quality. Dye (1985) argues that superior sustainability performers disclose high CSR quality. CSP is measured using the ESG-score of the company. The ESG-score is a global used score of Thomas Reuters ASSET4, and it monitors the environmental, social and governance performance of a public company. Since this study focuses on the sustainability disclosure of the company, only the environmental and social pillars of the ESG-score are taken into account. The environmental and social pillars both have a separate variable.

Table 4 – Definition of variables

Variable	Definition	Operationalization	Data source
Dependent variables		<i>*For all dependent variables a dummy variable is used.</i>	
External assurance	Indicates whether the (sustainability) report is externally discussed and approved by another independent company or organization (GRI, 2018).	The dummy variable indicates a 1 if the sustainability or integrated annual report is externally assured and otherwise 0.	Global Reporting Initiative (GRI) Database
Stakeholder panel/expert opinion	“Indicates whether there was formalized input to or feedback on the report provided by a panel of stakeholders or expert(s)” (GRI, 2018, p.12).	The dummy variable indicates a 1 if there is a stakeholder panel or expert opinion in the CSR and otherwise 0.	Global Reporting Initiative (GRI) Database
AA1000AS	“Indicates application of the AccountAbility AA1000 Assurance Standard (AA1000AS) as disclosed in the external assurance statement” (GRI, 2018, p.13).	The dummy variable indicates a 1 if the AA1000AS standard is applied in the external assurance of the CSR and 0 otherwise.	Global Reporting Initiative (GRI) Database
ISAE3000	“Indicates application of International Standard on Assurance Engagements (ISAE) 3000 as disclosed in the external assurance statement” (GRI, 2018, p.13).	The dummy variable indicates a 1 if the ISAE3000 standard is applied in the external assurance of the CSR and 0 otherwise.	Global Reporting Initiative (GRI) Database
Assurances standard: national standard (general)	“Indicates application of a general national assurance standard (e.g., general accounting principles developed at the national level or by an organization within the specific national context) as disclosed in the external assurance statement” (GRI, 2018, p.13).	The dummy variable indicates a 1 if a general national assurance standard is applied in the external assurance of the CSR and 0 otherwise.	Global Reporting Initiative (GRI) Database
Assurances standard: national standard (sustainability)	“Indicates application of a sustainability (non-financial) specific national assurance standard (e.g., developed at the national level or by an organization within the specific national context) as disclosed in the external assurance statement” (GRI, 2018, p.13).	The dummy variable indicates a 1 if a sustainability national assurance standard is applied in the external assurance of the CSR and 0 otherwise.	Global Reporting Initiative (GRI) Database
OECD	“Indicates explicit reference to/use of the OECD Guidelines for Multinational Enterprises in the report” (GRI, 2018, p.13).	The dummy variable indicates a 1 if there is a reference to the OECD guidelines in the CSR and 0 otherwise.	Global Reporting Initiative (GRI) Database
UNGC	“Indicates explicit reference to/use of the United Nations Global Compact and its	The dummy variable indicates a 1 if there is a reference to the UNGC principles in the CSR and 0 otherwise.	Global Reporting Initiative (GRI) Database

	principles in the report” (GRI, 2018, p.13).		
CDP	“Indicates explicit reference to the organization responding to one of the annual Carbon Disclosure Project (CDP) questionnaires, or participating in an associated CDP project” (GRI, 2018, p.13).	The dummy variable indicates a 1 if there is a reference to the CDP principles in the CSR and 0 otherwise.	Global Reporting Initiative (GRI) Database
IFC	“Indicates explicit reference to/use of the IFC Performance Standards in the report” (GRI, 2018, p.13).	The dummy variable indicates a 1 if there is a reference to the IFC principles in the CSR and 0 otherwise.	Global Reporting Initiative (GRI) Database
ISO 26000	“Indicates explicit reference to/use of the ISO 26000 clauses in the report” (GRI, 2018, p.13).	The dummy variable indicates a 1 if there is a reference to the ISO 26000 clauses in the CSR and 0 otherwise.	Global Reporting Initiative (GRI) Database
SDGs	“Indicates explicit reference to the UN Sustainability Development Goals (SDGs) in the report” (GRI, 2018, p.13).	The dummy variable indicates a 1 if there is a reference to the SDGs in the CSR and 0 otherwise.	Global Reporting Initiative (GRI) Database
Independent variables	<i>*A board diversity composition variable is created for the interaction between board diversity and stakeholder/shareholder-orientation (see also result tables).</i>	<i>*Calculated by determine whether the company has a higher (on gender and nationality) or lower value (on age) (Hooghiemstra, 2012). Value of 1 when value is higher (gender and nationality) or lower (age) and 0 otherwise. Minimum value of 0 and maximum value of 3.</i>	
Gender diversity	Distribution of female and male board directors.	Calculated using the Shannon index ² in which the two categories are female and male. For the robustness test, calculated by the total number of female board directors divided by the total number of board directors.	BoardEx
Nationality diversity	Distribution of different nationalities of board directors.	Calculated using the Shannon index ² in which each category represents a different nationality. For the robustness test, calculated by the total number of board directors with a nationality other than the company’s origin divided by the total number of board directors.	BoardEx
Age diversity	The average age of the board directors.	Calculated by averaging the age of the board directors. For the robustness test measured using a dummy variable. The dummy variable indicates a 1 if the board age is lower than the average board age (based on country and year).	BoardEx
Board independence	Indicates whether the board directors are independent of the company. An independent	Calculated by the total number of independent board directors divided by the total number of board directors.	BoardEx

² The Shannon index takes “into account both the number of different categories and the evenness of the distribution of board members among them” (Campbell & Minguez-Vera, 2008, p.442). The Shannon index is measured as $-\sum_{i=1}^n P_i \ln P_i$, where P_i is the percentage of board directors in each category and n , the total number of board directors. There is an even distribution of board directors within different categories if the value from the Shannon index is 0.69. The Shannon index is more sensitive to small difference in the composition of different categories in the board, since it uses logarithms (Campbell & Minguez-Vera, 2008).

	board director is a board director that does not have a relationship with the company that possibly affects the independence of their decision.		
Board expertise	Indicates whether the board of directors has expertise on company's sustainability issues and responsibilities.	Calculated using a dummy variable. The dummy variable indicates a 1 if there is a corporate sustainability expert on the board or if there is a special corporate sustainability committee in the company and 0 otherwise (Amran et al., 2014).	BoardEx/Thomas Reuters Eikon
Stakeholder/Shareholder	Indicates whether the company is located in a stakeholder or shareholder-oriented country.	Calculated using a dummy variable. The dummy variable indicates a 1 if the company is listed on an index of a stakeholder-oriented country and 0 otherwise.	
Control variables			
Company size	Indicates the size of the company.	Calculated using the natural logarithm of the total assets of the company.	Thomas Reuters Eikon/Orbis
Company leverage	Indicates how much of the company's capital is financed with debt and indicates the company's ability to meet its financial obligations.	Calculated by the total debt of the company divided by the total assets of the company.	Thomas Reuters Eikon/Orbis
Company financial performance	Company financial performance is determined in two ways. First, the return on equity (ROE) determines the profitability of a company by determining the profits that a company generates with the invested money of the shareholders. Second, the return on assets (ROA) determines how efficient a company is using its assets to generate profits.	The ROE is calculated by the net income of the company divided by the shareholder's equity. Net income is determined before dividends paid to common stockholders and after dividends to preferred stockholders. Preferred shares are excluded from the shareholder's equity. The ROA is calculated by the net income of the company divided by its total assets. The net income is determined before preferred dividends.	Thomas Reuters Eikon/Orbis
Company visibility	Indicates the company's media attention in the world.	Determined by the total number of media press releases in the Financial Times.	FT.com
Analyst coverage	Indicates whether the company is followed by financial analysts.	Determined by the total number financial analysts following the company.	Thomas Reuters Eikon
Company environmental performance	Indicates the company's performance on environmental issues.	Determined by the score of the environmental pillar of the ESG-score.	Thomas Reuters Asset4
Company social performance	Indicates the company's performance on social issues.	Determined by the score of the social pillar of the ESG-score separately	Thomas Reuters Asset4
Board size	Indicates the total amount of board directors.	Calculated by the total number of board directors.	BoardEx
Industry	Indicates in which industry the company operates.	Determined using the NAICS-code. For each company the first two digits of the NAICS-code are used.	Thomas Reuters Eikon

3.3. Research model

This study uses multiple measures, over multiple companies in different countries, and over a certain time period, so the data can be identified as panel data. This means, the hypotheses are tested using a panel data analysis and the following regression equation is used:

$$\begin{aligned} \text{CSRquality}_i = & \beta_0 + \beta_1 \text{BoardDiversity}_i + \beta_2 \text{BoardIndependence}_i + \beta_3 \text{BoardExpertise}_i \\ & + \beta_4 \text{BoardComposition Interactions}_i + \beta_5 \text{Stakeholder/Shareholder}_i \\ & + \beta_6 \text{BoardComposition}_i * \text{Stakeholder/Shareholder}_i + \beta_7 \text{Controls}_i + \beta_8 \text{Year}_i \\ & + \varepsilon_i \end{aligned}$$

The corporate sustainability reporting (CSR) quality is measured using the components of the PCA. The PCA resulted in three components. Component 1 is the “International Assurance Standards and Stakeholder Panel/Expert opinion”, component 2 is the “National External Assurance”, and component 3 is the “Sustainability Guidelines”. For each component a panel data regression analysis is executed. In the additional regression analyses, the scores on the (external) assurance standards, the sustainability guidelines, and the total CSR quality replace the components. For each score a panel data regression analysis is executed. Board diversity indicates the three different board director characteristics, including gender, nationality, and age diversity. The other independent variables that influence the board composition are board expertise independence, and board expertise. In addition, this study investigates whether the interaction between the board composition variables have a positive effect on CSR quality. Therefore, the interactions between board diversity, board independence, and board expertise are included in the equation. These variables contain both two-way as three-way interactions and are named board composition interactions in the regression equation. This study also investigates whether the distinction between a stakeholder and shareholder-oriented country has an effect on CSR quality and on the relationship between board composition and CSR quality. In the equation, the board composition variable represents board diversity, board independence, and board expertise and interactions with the stakeholder or shareholder-oriented country variable. In addition, specific company controls variables and year dummy variables are included.

Before the regression analyses are executed, it is checked whether there is any correlation between the variables. The correlation matrix is presented in Table 5. From the correlation matrix, it is concluded that there is a significant correlation between the control variables return on assets (ROA) and return on equity (ROE), as it exceeds the critical value of 0.6 with a 1-percent significance value of 0.778 (Studenmund, 2014). This correlation is problematic, and therefore one of the control variables has to be omitted. It is chosen to omit the control variables return on equity from the regression analyses because return on assets represents the

company's financial performance in a better way. This is confirmed by a relative high variance inflation factor (VIF) of 2.75 for the return on equity variable. In addition, from Table 5 it is also observed that there is a high correlation value between Component 1 and External Assurance, with a 1-percent significance value of 0.840. However, external assurance as a control variable is only included in the regression analyses with Component 3 and not in the regression of Component 1 and Component 2. Therefore, external assurance is not omitted from the regression analyses.

When using panel data analysis there is a distinction made between a fixed-effects model and a random-effects model. In order to determine whether a fixed-effects or random-effects model should be used, a Hausman test is performed. The fixed-effects model treats the effects of a company as constant over time, while the random-effects model treats the effects as changing over time. For each of the three components and the corresponding regression analyses, the Hausman test is performed.

Table 5 – Correlation Matrix

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Component 1	1.0000									
2. Component 2	0.0000	1.0000								
3. Component 3	0.462***	-0.101**	1.0000							
4. Gender Diversity	-0.0748*	-0.0173	-0.0125	1.0000						
5. Nationality Diversity	0.00176	0.0242	0.0873*	0.037	1.0000					
6. Age Diversity	0.218***	-0.0475	0.123***	-0.125***	0.104**	1.0000				
7. Board Independence	0.00573	-0.00367	-0.106**	0.212***	0.211***	0.231***	1.0000			
8. Board Expertise	0.0712*	-0.0505	0.105**	0.144***	-0.0362	-0.0161	0.0567	1.0000		
9. Return on Assets	-0.112**	0.0400	-0.162***	0.0767*	0.0494	-0.0948**	0.0324	-0.0814*	1.0000	
10. Return on Equity	-0.102**	0.0143	-0.148***	0.0741*	0.00606	-0.039	0.0642	-0.0327	0.778***	1.0000
11. Company Leverage	0.0853*	-0.0838*	0.0695*	-0.0101	-0.0655	-0.0642	0.0314	0.0331	-0.0980**	-0.00876
12. Company Size	0.174***	-0.0557	0.170***	0.0943**	0.0254	0.203***	-0.0212	0.227***	-0.452***	-0.240***
13. Analyst Coverage	0.162***	-0.0568	0.161***	-0.00481	0.0795*	0.133***	-0.0746*	0.151***	-0.114***	-0.0886**
14. Company Visibility	0.0226	0.0235	-0.0432	0.0572	0.174***	0.00717	0.113***	0.155***	-0.138***	-0.0664
15. Environmental Pillar	0.0750*	-0.0672*	0.104**	0.140***	-0.0910**	0.0431	-0.0205	0.198***	-0.105**	-0.0171
16. Social Pillar	0.230***	-0.115***	0.218*	0.0927**	0.0824*	0.0311	-0.0419	0.1711	0.0047	0.0038
17. Board Size	0.129***	-0.0898**	0.225*	-0.0067	-0.112***	-0.0306	-0.524***	0.143***	-0.233***	-0.147***
18. External Assurance	0.840***	-0.324***	0.484***	-0.0694*	0.0707*	0.234***	0.0366	0.0981**	-0.142***	-0.111**
19. Industry	-0.106**	0.0376	-0.106**	0.144***	-0.0532	-0.106**	-0.0284	-0.0884**	0.0248	0.0495
20. Stakeholder/Shareholder	0.276***	-0.0799*	0.374***	-0.0199	-0.174***	0.136***	-0.372***	-0.0677*	-0.231***	-0.206***
11. Company Leverage	1.0000									
12. Company Size	-0.0611	1.0000								
13. Analyst Coverage	0.0576	0.373***	1.0000							
14. Company Visibility	-0.0356	0.481***	0.191***	1.0000						
15. Environmental Pillar	-0.0837*	0.383***	0.255***	0.206***	1.0000					
16. Social Pillar	0.0149	0.2084	0.2282	0.1239	0.4441	1.0000				
17. Board Size	0.0293	0.454***	0.277***	0.177***	0.2094***	0.169***	1.0000			
18. External Assurance	0.0944**	0.189***	0.171***	0.0189	0.0969**	0.2230***	0.149***	1.0000		
19. Industry	-0.0673*	0.102**	-0.0266	0.0333	0.226***	-0.0310	0.0784*	-0.128***	1.0000	
20. Stakeholder/Shareholder	0.0591	0.154***	0.269***	-0.327***	0.104**	0.160***	0.376***	0.262***	-0.0227	1.000

4. Results

4.1. Summary statistics

The summary statistics of the dependent variables, independent variables, and control variables are presented in Table 6. From Table 6, it can be observed that there are 12 standards or guidelines that are used to determine the CSR quality. In addition, there are 5 independent variables and 9 control variables. Finally, there is a variable included whether the country is stakeholder- or shareholder-oriented. For all the variables, excluding the dummy variables, it is checked whether the values for the company are normally distributed. The variables for gender diversity, the company's leverage, and the social pillar are not completely normal distributed and are transformed in order to obtain a relatively better normal distribution. The gender diversity variable and company leverage variable are transformed using the logarithm of the values, and the social pillar is transformed using the exponential of the values. In addition, for some variables there are outliers found. These variables are winsorized at a 1-percent level.

The value for the dependent variables are either 0 or 1 since it indicates whether the CSR of the company has applied or refers to the (external) assurance standards and sustainability guidelines or has not. External assurance has the highest mean value of the dependent variables, 57-percent of the company's CSR are externally assured. The lowest mean value of the dependent variables is for the reference to the International Finance Corporation (IFC), with a mean value of 0.5-percent. The highest mean value regarding references to a sustainability guideline is for the United Nations Global Compact (UNGC), with a mean value of 53-percent. It can also be observed that there are only 430 observations for a reference to the Sustainability Development Goals (SDGs) since the goals are introduced at the end of 2014 and incorporated in the GRI database as from 2015.

For the independent variables, gender diversity and nationality diversity are measured using the Shannon index and the means are 0.28 and 0.83 respectively. For the Shannon index applies, the higher the value the higher the diversity. The mean age of the board directors is 58.87 years, with low standard deviation. This indicates that the average age of the board of directors is relatively high and equal among the European listed companies. The mean board independence is 56-percent, which indicates that on average 56-percent of the board directors is an independent board director. It is also observed that at least one company, and probably more companies, do not have any independent board directors or primarily independent board directors. Also on average, 89-percent of the companies have a sustainability committee or a sustainability expert on their board of directors.

For the control variables, the mean return on assets (ROA) is 4.02, with the values varying between the minimum and maximum of -10.1 and 25.8. The mean return on equity (ROE) is 11.74, with the values varying between the minimum and maximum of -42.72 and 85.25. After using the logarithmic function, the mean company leverage is 0.26, whereas the company size mean is 24.19, with low standard deviation. This low standard deviation most likely arises because all the company are listed on the major indices of their country and are in general the largest companies in Europe. The mean analyst coverage is 23.06, which indicates that on average the companies are followed by approximately 23 analysts. For company visibility there is a lot of standard deviation, which indicates that there are a lot of differences between the amounts of publications in the Financial Times in a year. These differences could possibly arise as a result of the popularity of the company, or due to a take-over, merger, acquisition, bankruptcy, subsidiary etc. The mean scores on the environmental and social pillar of the ESG-score also show some standard deviation, which indicates that there are differences in the environmental and social performances between the companies. The mean amount of board directors on the board of directors in 15.6, with a minimum of 8 and a maximum of 36 board directors.

Table 6 – Summary Statistics

Variable	N	Mean	Std. Dev.	Min.	Max.
Year	860			2013	2016
External Assurance	860	0.57	0.5	0	1
Stakeholder panel/Expert opinion	860	0.08	0.26	0	1
AA1000AS	860	0.13	0.34	0	1
ISAE3000	860	0.42	0.49	0	1
AS: National (general)	860	0.07	0.25	0	1
AS: National (sustainability)	860	0.09	0.28	0	1
OECD	860	0.25	0.43	0	1
UNGC	860	0.53	0.5	0	1
CDP	860	0.48	0.5	0	1
IFC	860	0.05	0.21	0	1
ISO	860	0.14	0.35	0	1
SDGs	430	0.32	0.47	0	1
Gender Diversity³	860	0.28	0.12	0	0.48
Nationality Diversity	860	0.83	0.52	0	1.97
Age Diversity	860	58.87	3.1	51.36	66.9
Board Independence	860	0.56	0.22	0	0.92
Board Expertise	860	0.89	0.31	0	1
Return on Assets	860	4.02	4.98	-10.1	25.8
Return on Equity	860	11.74	15.37	-42.73	85.25

³ For Gender Diversity, the logarithmic function of the values is used in order to obtain a more normally distributed variable.

Company Leverage⁴	860	0.26	0.32	0	8.24
Company Size	860	24.19	1.7	21.01	28.19
Analyst Coverage	860	23.06	7.06	4	37
Company Visibility	860	36.99	58.48	0	321
Environmental Pillar	860	79.01	13.16	36.22	98.67
Social Pillar⁵	860	6085.91	2013.67	1198.07	9691.14
Board Size	860	15.6	5.89	8	36
Stakeholder/Shareholder	860			0	1
Industry	860			21	72

Table 7a presents a breakdown of the summary statistics for the relevant years. As shown by this table, for the dependent variables there are low deviations over the years, since the mean values are almost the same year. It can be noted that the references to the Sustainability Development Goals (SDGs) are on average twice as high in 2016 relative to 2015. This difference could arise from the fact that the SDGs have just been introduced in 2014. Contrary to the dependent variables, there are some differences between the independent variables over the years. The mean gender diversity increases each year, from 0.23 in 2013 to 0.33 in 2016. This means that on average there are becoming more female board directors. This is also the case for nationality diversity, increasing from 0.79 in 2013 to 0.87 in 2016. Age diversity, board independence, and board expertise do not change a lot over the years. For the control variables, the most emerging differences come from the environmental and social pillar ESG-score, which both increases over the years.

Table 7a – Summary Statistics breakdown by year

Variable	N	Mean	Std. Dev.	Min.	Max.	N	Mean	Std. Dev.	Min.	Max.
2013						2014				
External Assurance	215	0.59	0.49	0	1	215	0.53	0.50	0	1
Stakeholder Panel/Expert Opinion	215	0.07	0.26	0	1	215	0.07	0.26	0	1
AA1000AS	215	0.15	0.36	0	1	215	0.13	0.34	0	1
ISAE3000	215	0.40	0.49	0	1	215	0.39	0.40	0	1
AS: National (general)	215	0.09	0.29	0	1	215	0.09	0.29	0	1
AS: National (sustainability)	215	0.12	0.32	0	1	215	0.10	0.30	0	1
OECD	215	0.27	0.44	0	1	215	0.21	0.41	0	1
UNGC	215	0.57	0.50	0	1	215	0.50	0.50	0	1
CDP	215	0.49	0.50	0	1	215	0.44	0.50	0	1
IFC	215	0.07	0.26	0	1	215	0.05	0.22	0	1
ISO	215	0.18	0.38	0	1	215	0.14	0.35	0	1

⁴ For Company Leverage, the logarithmic function of the values is used in order to obtain a more normally distributed variable.

⁵ For the Environmental Pillar, the exponential function of the values is used in order to obtain a more normally distributed variable.

Gender Diversity	215	0.23	0.12	0	0.47	215	0.27	0.12	0	0.48
Nationality Diversity	215	0.79	0.5	0	1.97	215	0.81	0.51	0	1.91
Age Diversity	215	58.69	3.05	51.36	66.9	215	58.77	3.06	51.4	66.9
Board Independence	215	0.55	0.22	0	0.92	215	0.55	0.22	0	0.92
Board Expertise	215	0.90	0.30	0	1	215	0.89	0.31	0	1
Return on Assets	215	4.26	5.40	-6.937	25.80	215	4.06	4.81	-10.1	25.8
Company Leverage	215	0.25	0.17	0.0004	1.14	215	0.28	0.57	0	8.24
Company Size	215	24.09	1.72	21.012	28.19	215	24.16	1.72	21	28.2
Analyst Coverage	215	23.26	7.20	4	37	215	23.4	7.21	4	37
Company Visibility	215	39.23	55.48	0	321	215	36.92	60.15	0	321
Environmental Pillar	215	78.56	12.49	36.22	98.67	215	78.39	13.432	36.2	98.7
Social Pillar	215	5822.7	2012	1198.1	9691.1	215	6008	2023	1198	9691
Board Size	215	15.67	6.13	8	36	215	15.81	5.6892	8	34
Stakeholder/Shareholder	215			0	1	215			0	1
Industry	215			21	72	215			21	72

Variable	N	Mean	Std. Dev.	Min.	Max.	N	Mean	Std. Dev.	Min.	Max.
2015						2016				
External Assurance	215	0.58	0.49	0	1	215	0.59	0.49	0	1
Stakeholder panel/Expert opinion	215	0.07	0.25	0	1	215	0.09	0.28	0	1
AA1000AS	215	0.13	0.34	0	1	215	0.11	0.32	0	1
ISAE3000	215	0.46	0.50	0	1	215	0.44	0.50	0	1
AS: National (general)	215	0.05	0.21	0	1	215	0.04	0.19	0	1
AS: National (sustainability)	215	0.07	0.26	0	1	215	0.06	0.25	0	1
OECD	215	0.24	0.43	0	1	215	0.27	0.44	0	1
UNGC	215	0.49	0.50	0	1	215	0.53	0.50	0	1
CDP	215	0.50	0.50	0	1	215	0.50	0.50	0	1
IFC	215	0.04	0.20	0	1	215	0.02	0.15	0	1
ISO	215	0.12	0.33	0	1	215	0.12	0.33	0	1
SDGs	215	0.21	0.41	0	1	215	0.42	0.50	0	1
Gender Diversity	215	0.30	0.11	0	0.48	215	0.33	0.11	0	0.48
Nationality Diversity	215	0.83	0.53	0	1.97	215	0.87	0.55	0	1.97
Age Diversity	215	58.98	3.19	51.364	66.9	215	59.03	3.10	51.364	66.9
Board Independence	215	0.56	0.22	0	0.92	215	0.57	0.22	0	0.92
Board Expertise	215	0.89	0.31	0	1	215	0.89	0.32	0	1
Return on Assets	215	3.78	5.04	-10.103	25.7	215	3.97	4.64	-10.1	25.8
Company Leverage	215	0.25	0.16	0.00003	1.05	215	0.25	0.16	0.00003	0.96
Company Size	215	24.23	1.68	21.015	28.19	215	24.27	1.66	21.015	28.19
Analyst Coverage	215	23.02	7.13	4	37	215	22.56	6.72	4	37
Company Visibility	215	33.22	57.84	0	321	215	38.57	60.54	0	321
Environmental Pillar	215	79.27	13.58	36.22	98.67	215	79.82	13.17	36.22	98.7
Social Pillar	215	6188	2038	1198.1	9691.1	215	6325.3	1959	1198.1	9691
Board Size	215	15.34	5.66	8	36	215	15.58	6.09	8	36
Stakeholder/Shareholder	215			0	1	215			0	1
Industry	215			21	72	215			21	72

Table 7b presents a breakdown of the summary statistics for the relevant countries. From this table, it is concluded that the average of the dependent variables, incl. (external) assurance standards and sustainability guidelines, for Spain is 0.41, for Germany is 0.33, for the Netherlands is 0.33, for Italy is 0.32, for France is 0.25, for Belgium is 0.25, and for the United Kingdom is 0.15. This suggests that the CSR quality for companies listed in Spain the highest and for companies listed the United Kingdom the lowest. Gender diversity is the highest for companies listed in Belgium and the lowest for companies listed in Spain. Nationality diversity is the highest for companies listed in the Netherlands and the lowest for companies listed in Italy. The age diversity is the highest for companies listed in Germany, since the average age is the lowest, and the age diversity is the lowest for companies listed in Spain since the average age is the highest. Board independence is the highest for companies listed in the United Kingdom, and the lowest for companies listed in Germany. Board expertise is the highest for companies listed in France and the lowest for companies listed in Belgium.

Table 7b – Summary Statistics breakdown by country (index)

	United Kingdom					Germany					France					Spain				
Variable	N	Mean	Std. Dev.	Min.	Max.	N	Mean	Std. Dev.	Min.	Max.	N	Mean	Std. Dev.	Min.	Max.	N	Mean	Std. Dev.	Min.	Max.
External Assurance	300	0.39	0.49	0	1	104	0.65	0.48	0	1	144	0.49	0.50	0	1	108	0.88	0.33	0	1
Stakeholder Panel/Expert Opinion	300	0.04	0.20	0	1	104	0.13	0.34	0	1	144	0.11	0.32	0	1	108	0.10	0.30	0	1
AA1000AS	300	0.10	0.30	0	1	104	0.04	0.19	0	1	144	0.06	0.23	0	1	108	0.51	0.50	0	1
ISAE3000	300	0.22	0.42	0	1	104	0.57	0.50	0	1	144	0.39	0.49	0	1	108	0.69	0.46	0	1
AS: National (general)	300	0.05	0.21	0	1	104	0.08	0.27	0	1	144	0.08	0.27	0	1	108	0.10	0.30	0	1
AS: National (sustainability)	300	0.04	0.19	0	1	104	0.08	0.27	0	1	144	0.07	0.26	0	1	108	0.21	0.41	0	1
OECD	300	0.07	0.26	0	1	104	0.42	0.50	0	1	144	0.35	0.48	0	1	108	0.31	0.47	0	1
UNGC	300	0.26	0.44	0	1	104	0.79	0.41	0	1	144	0.57	0.50	0	1	108	0.77	0.42	0	1
CDP	300	0.34	0.48	0	1	104	0.54	0.50	0	1	144	0.40	0.49	0	1	108	0.69	0.46	0	1
IFC	300	0.04	0.20	0	1	104	0.05	0.21	0	1	144	0.01	0.08	0	1	108	0.06	0.23	0	1
ISO	300	0.04	0.20	0	1	104	0.15	0.36	0	1	144	0.27	0.45	0	1	108	0.19	0.39	0	1
SDGs	150	0.21	0.41	0	1	52	0.42	0.50	0	1	72	0.26	0.44	0	1	54	0.37	0.49	0	1
Gender Diversity	300	0.29	0.10	0	0.48	104	0.24	0.10	0.00	0.43	144	0.37	0.09	0.05	0.48	108	0.20	0.12	0.00	0.46
Nationality Diversity	300	0.93	0.54	0	1.97	104	0.75	0.30	0.12	1.37	144	0.89	0.44	0.00	1.97	108	0.45	0.34	0.00	1.55
Age Diversity	300	58.20	2.54	51.36	65.0	104	56.84	1.74	51.50	60.50	144	59.97	2.93	51.36	65.53	108	61.49	3.21	53.71	66.9
Board Independence	300	0.67	0.12	0.14	0.92	104	0.19	0.26	0.00	0.79	144	0.60	0.17	0.24	0.92	108	0.49	0.14	0.19	0.80
Board Expertise	300	0.92	0.27	0	1	104	0.92	0.27	0	1	144	0.93	0.26	0	1	108	0.85	0.36	0	1
Return on Assets	300	5.61	6.29	-10.10	25.8	104	3.43	3.66	-10.10	12.28	144	3.28	2.99	-5.37	15.31	108	3.19	4.09	-10.10	17.3
Company Leverage	300	0.27	0.49	0.00	8.24	104	0.22	0.13	0.00	0.51	144	0.20	0.11	0.01	0.52	108	0.28	0.18	0.00	0.69
Company Size	300	23.80	1.81	21.02	28.1	104	24.97	1.34	22.48	28.17	144	24.57	1.42	22.64	28.19	108	24.09	1.73	21.02	27.9
Analyst Coverage	300	20.37	5.92	4	36	104	28.00	7.93	4	37	144	25.61	4.91	8	37	108	24.49	7.01	4	37
Company Visibility	300	61.34	72.73	0	321	104	51.70	76.56	0.00	321	144	26.76	35.92	0	188	108	10.58	18.83	0	98
Environmental Pillar	300	77.06	13.61	36.22	98.6	104	82.74	9.98	53.06	97.04	144	82.88	11.27	51.54	97.57	108	79.49	11.95	50.49	97.9
Social Pillar	300	5623.5	1893.2	1198.1	9327	104	7213	1796	1529	9691	144	6306	2008	1198	9691	108	6810	1690	1198	9691
Board Size	300	12.64	3.41	8	32	104	25.63	5.25	15	3	144	16.15	3.26	10	25	108	15.09	3.63	9	24
Stakeholder/ Shareholder	300	0	0	0	0	104	1	0	1	1	144	1	0	1	1	108	1	0	1	1
Industry	300			21	72	104			22	62	144			21	72	108			22	72

Table 7b (continued)

	Italy					The Netherlands					Belgium				
Variable	N	Mean	Std. Dev.	Min.	Max.	N	Mean	Std. Dev.	Min.	Max.	N	Mean	Std. Dev.	Min.	Max.
External Assurance	88	0.78	0.41	0	1	80	0.69	0.47	0	1	36	0.42	0.50	0	1
Stakeholder Panel/Expert Opinion	88	0.06	0.23	0	1	80	0.06	0.24	0	1	36	0.03	0.17	0	1
AA1000AS	88	0.15	0.36	0	1	80	0.04	0.19	0	1	36	0.00	0.00	0	0
ISAE3000	88	0.69	0.46	0	1	80	0.36	0.48	0	1	36	0.42	0.50	0	1
AS: National (general)	88	0.06	0.23	0	1	80	0.11	0.32	0	1	36	0.00	0.00	0	0
AS: National (sustainability)	88	0.03	0.18	0	1	80	0.25	0.44	0	1	36	0.00	0.00	0	0
OECD	88	0.16	0.37	0	1	80	0.51	0.50	0	1	36	0.19	0.40	0	1
UNGC	88	0.49	0.50	0	1	80	0.69	0.47	0	1	36	0.83	0.38	0	1
CDP	88	0.64	0.48	0	1	80	0.60	0.49	0	1	36	0.58	0.50	0	1
IFC	88	0.07	0.25	0	1	80	0.09	0.28	0	1	36	0.06	0.23	0	1
ISO	88	0.23	0.42	0	1	80	0.11	0.32	0	1	36	0.14	0.35	0	1
SDGs	44	0.45	0.50	0	1	40	0.48	0.51	0	1	18	0.28	0.46	0	1
Gender Diversity	88	0.27	0.13	0.00	0.47	80	0.27	0.10	0.00	0.45	36	0.30	0.14	0.00	0.48
Nationality Diversity	88	0.42	0.46	0.00	1.78	80	1.21	0.47	0.00	1.97	36	1.16	0.54	0.22	1.91
Age Diversity	88	58.44	3.80	51.36	66.90	80	59.81	2.34	54.56	65.50	36	56.94	2.86	51.36	62.50
Board Independence	88	0.62	0.15	0.30	0.92	80	0.66	0.12	0.44	0.92	36	0.40	0.14	0.15	0.63
Board Expertise	88	0.81	0.40	0	1	80	0.90	0.30	0	1	36	0.78	0.42	0	1
Return on Assets	88	1.27	2.56	-10.10	9.74	80	4.12	4.99	-10.10	19.69	36	4.49	4.87	-5.90	15.01
Company Leverage	88	0.33	0.19	0.03	0.89	80	0.25	0.14	0.00	0.59	36	0.31	0.30	0.03	1.14
Company Size	88	24.30	1.66	21.02	27.48	80	24.29	1.52	21.79	27.80	36	23.41	1.88	21.21	26.34
Analyst Coverage	88	19.76	8.10	6	34	80	25.40	5.15	13	37	36	19.56	6.96	8	34
Company Visibility	88	11.86	18.87	0	107	80	19.58	31.83	0	128	36	11.78	26.98	0	119
Environmental Pillar	88	77.56	16.93	36.22	98.67	80	78.42	12.85	46.86	98.67	36	72.40	12.23	49.61	92.95
Social Pillar	88	5549.9	2503.9	1198.1	9529.7	80	6123.8	1664.9	1198.1	9288.5	36	4848.8	1618.7	1905.4	8387.9
Board Size	88	16.40	7.84	8	36	80	12.94	2.96	8	25	36	14.67	4.47	8	24
Stakeholder/Shareholder	88	1	0	1	1	80	1	0	0	1	36	1	0	1	1
Industry	88			21	52	80			21	56	36			22	52

4.2. Regression analyses

Table 8 presents the results of the regression analyses of the effects of board composition on the three components of CSR quality. A Hausman test is performed to check whether a fixed-effects model or a random-effects model is more appropriate to use for the different regression analyses. For all three components, the Hausman test is not significant, indicated by a p-value higher than 0.5, which means the random-effects model is the most appropriate model to use in the regression analyses. As a result, next to the year dummies, the stakeholder/shareholder dummy, and the industry dummies are added to the model. The first three columns indicate the effects of board composition on component 1, Internal Assurance and Stakeholder panel/Expert opinion. The first column only includes the effects of the board composition variables and the control variables. The second column includes the effects of the board composition variables, control variables, and interactions between the board composition variables themselves. The third column includes the effects of the board composition variables, control variables, and interactions between the board composition variables and the stakeholder/shareholder orientation of the country. The three columns thereafter indicate the effects of board composition on component 2, National External Assurance, and the different interactions effects in the same way as for component 1. Finally, the last three columns indicate the effects of board composition on component 3, Sustainability Guidelines and the different interactions effects in the same way as for component 1 and 2.

For component 1, International Assurance and Stakeholder panel/Expert opinion, there are no significant effects found for the board composition variables, gender diversity, nationality diversity, age diversity, board independence, and board expertise. This means that hypothesis 1 until 5 cannot be accepted. For the interactions effects between the board composition variables themselves, there are also no significant effects found. This means that also hypothesis 6 cannot be accepted. Moreover, there is a significant positive effect ($p < 0.01$) of the stakeholder/shareholder orientation on component 1, which indicates that component 1 increases 0.802 more for companies located in stakeholder-oriented countries relative to companies located in shareholder-oriented countries. This means that hypothesis 7a cannot be rejected. Also, there is no significant result that the effect of the board composition variables on component 1 is higher for companies located in stakeholder-oriented countries relative to companies located in shareholder-oriented countries. This means that hypothesis 7b cannot be accepted. Finally, some control variables indicate a significant positive effect on component 1. These are the company size ($p < 0.1$) and the social pillar of the ESG-score ($p < 0.05$), with coefficients of 0.171 and 0.0001 respectively.

For component 2, National External Assurance, there are no significant effects found for the board composition variables, gender diversity, nationality diversity, age diversity, board independence, and board expertise. This means that hypotheses 1 until 5 cannot be accepted. For the interactions effects between the board composition variables themselves, there are some significant effects found. The three-way interaction between nationality diversity, age diversity, and board independence, and the three-way interaction between nationality diversity, board independence, and board expertise have a significant effect ($p < 0.1$) on component 2, with coefficients of -0.323 and 4.290 respectively. This means that hypothesis 6 cannot be rejected. Moreover, there is no significant effect of stakeholder/shareholder orientation on component 2, which indicates that hypothesis 7a cannot be accepted. Also, there is no significant result that the effect of the board composition variables on component 2 is higher for companies located in stakeholder-oriented countries relative to companies located in shareholder-oriented countries. This means that hypothesis 7b cannot be accepted. The year dummy variable indicates for both 2015 and 2016 a significant negative effect ($p < 0.1$) relative to 2013 on component 2. Finally, no control variables have a significant effect on component 2.

For component 3, Sustainability Guidelines, there are no significant effects found for the board composition variables, gender diversity, age diversity, board independence, and board expertise. This means that hypotheses 1, 3, 4, and 5 cannot be accepted. Nationality diversity has a significant positive effect ($p < 0.1$) on component 3, with a coefficient of 0.296. For the interactions effects between the board composition variables themselves, there are no significant effects found. This means that also hypothesis 6 cannot be accepted. Moreover, there is a significant positive effect ($p < 0.01$) of stakeholder/shareholder orientation on component 3, which indicates that component 3 increases 0.793 more for companies located in stakeholder-oriented countries relative to companies located in shareholder-oriented countries. This means that hypothesis 7a cannot be rejected. Also, there is no significant result that the effect of the board composition variables on component 3 is higher for companies located in stakeholder-oriented countries relative to companies located in shareholder-oriented countries. This means that hypothesis 7b cannot be accepted. The year dummy variable indicates for 2014 ($p < 0.1$), 2015 ($p < 0.05$), and, 2016 ($p < 0.1$) a significant negative effect relative to 2013 on component 3. Finally, the control variable external assurance has a significant positive effect ($p < 0.01$) on component 3, with a coefficient of 1.013.

Table 8 - Regression analyses

Variables	International Assurance and Stakeholder panel/Expert opinion			National External Assurance			Sustainability Guidelines		
Gender Diversity	-0.594 (-1.03)	-1.027 (-0.71)	-0.545 (-0.87)	0.259 (0.61)	-0.0167 (-0.01)	0.107 (0.23)	0.709 (1.46)	0.125 (0.10)	0.757 (1.41)
Nationality Diversity	0.0084 (0.06)	0.496 (1.05)	0.0199 (0.12)	-0.0312 (-0.30)	0.358 (0.96)	-0.0746 (-0.66)	0.296* (2.39)	0.236 (0.58)	0.308* (2.28)
Age Diversity	0.0431 (1.87)	0.0762 (1.27)	0.0450 (1.87)	-0.0151 (-0.93)	-0.0351 (-0.72)	-0.0204 (-1.20)	-0.0045 (-0.23)	0.0001 (0.00)	-0.0036 (-0.18)
Board Independence	0.575 (1.45)	1.118 (1.07)	1.760 (1.85)	-0.368 (-1.34)	-0.419 (-0.52)	-1.592* (-2.29)	-0.389 (-1.19)	-0.500 (-0.56)	-0.331 (-0.41)
Board Expertise	0.134 (0.67)	0.313 (1.33)	-0.213 (-0.54)	-0.0927 (-0.60)	-0.266 (-1.49)	0.263 (0.93)	0.0992 (0.58)	0.0689 (0.34)	0.165 (0.50)
Return on Assets	-0.0022 (-0.18)	-0.0011 (-0.09)	-0.0018 (-0.15)	-0.0012 (-0.12)	-0.0040 (-0.40)	-0.0016 (-0.16)	-0.0086 (-0.80)	-0.0080 (-0.74)	-0.0083 (-0.77)
Company Leverage	0.0400 (0.68)	0.0487 (0.83)	0.0433 (0.74)	-0.0510 (-1.24)	-0.0628 (-1.52)	-0.0527 (-1.30)	0.0401 (0.83)	0.0362 (0.74)	0.0392 (0.81)
Company Size	0.171* (1.99)	0.195* (2.24)	0.167 (1.93)	-0.0082 (-0.14)	-0.0077 (-0.13)	-0.0063 (-0.11)	-0.0337 (-0.48)	-0.0077 (-0.11)	-0.0347 (-0.49)
Analyst Coverage	-0.0063 (-0.57)	-0.0121 (-1.08)	-0.0069 (-0.62)	-0.0036 (-0.47)	-0.0024 (-0.30)	-0.0024 (-0.32)	-0.0023 (-0.25)	-0.0043 (-0.46)	-0.0022 (-0.24)
Company Visibility	0.0001 (0.67)	0.0010 (0.72)	0.0007 (0.48)	0.00135 (1.32)	0.0015 (1.50)	0.0017 (1.64)	-0.0007 (-0.60)	-0.0008 (-0.68)	-0.0008 (-0.62)
Environmental Pillar	-0.0104 (-1.85)	-0.0100 (-1.76)	-0.0100 (-1.78)	-0.0001 (-0.01)	-0.0012 (-0.30)	-0.0009 (-0.21)	0.0007 (0.15)	-0.0009 (-0.18)	0.0007 (0.15)
Social Pillar	0.0001** (3.22)	0.0001** (2.73)	0.0001** (3.12)	-0.0001 (-1.04)	-0.0000 (-0.78)	-0.0000 (-0.85)	0.0001 (1.49)	0.0000 (1.31)	0.0001 (1.49)
Board Size	0.0098 (0.69)	0.0121 (0.83)	0.0078 (0.55)	-0.0201 (-1.94)	-0.0222* (-2.10)	-0.0176 (-1.71)	0.0066 (0.55)	0.0078 (0.63)	0.0065 (0.54)
External Assurance							1.013*** (10.27)	1.008*** (10.05)	1.011*** (10.17)
Stakeholder/Shareholder	0.802*** (3.99)	0.838*** (4.16)	0.537 (1.11)	-0.0390 (-0.30)	-0.0235 (-0.18)	0.166 (0.48)	0.793*** (4.92)	0.805*** (4.89)	0.913* (2.25)
2014	-0.142 (-1.37)	-0.136 (-1.30)	-0.148 (-1.43)	0.0410 (0.43)	0.0656 (0.69)	0.0472 (0.50)	-0.220* (-2.31)	-0.212* (-2.21)	-0.221* (-2.31)
2015	-0.133 (-1.21)	-0.136 (-1.23)	-0.142 (-1.29)	-0.228* (-2.32)	-0.193 (-1.96)	-0.218* (-2.22)	-0.261** (-2.61)	-0.255* (-2.54)	-0.262** (-2.61)
2016	-0.190 (-1.61)	-0.194 (-1.63)	-0.204 (-1.73)	-0.251* (-2.44)	-0.215* (-2.08)	-0.235* (-2.29)	-0.246* (-2.33)	-0.231* (-2.17)	-0.247* (-2.33)
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NN*AG*ID					-0.323* (-2.01)				
NN*ID*EX					4.290* (2.36)				
BD*SS			-0.0259 (-0.25)			0.0775 (0.96)			-0.0207 (-0.23)
ID*SS			-1.386 (-1.37)			1.380 (1.91)			-0.0506 (-0.06)
EX*SS			0.477 (1.08)			-0.512 (-1.61)			-0.0875 (-0.24)
Constant	-6.610** (-3.15)	-9.661** (-2.60)	-7.108** (-3.26)	1.951 (1.39)	3.066 (1.07)	2.783 (1.91)	0.693 (0.41)	0.197 (0.06)	0.524 (0.29)
Wald-Chi²	105.85***	129.34***	109.95***	55.97**	84.21***	65.92***	301.37***	323.44***	298.42***
N	860	860	860	860	860	860	860	860	860

*, **, and *** indicate (two-tailed) statistical significance at 10-percent, 5-percent, and 1-percent level. The values indicate the regression coefficients. The values between the parentheses indicate the t-values.

Note: Only the statistical significant interactions between the board composition variables themselves are presented, where GD = Gender Diversity, NN = Nationality Diversity, ID = Board Independence, EX = Board Expertise, BD = Board Diversity, and SS = Stakeholder/shareholder- oriented.

4.3. Additional regression analyses

The components from the PCA are not able to explain the total variance, and therefore additional regression analyses are executed. The different (external) assurance standards and sustainability guidelines are all variables that have either a value of 1 and otherwise 0. Therefore, for every company, a score is created by summing the values depending on whether the company received a value of 1 or 0 for each external assurance standard or sustainability guideline. First, there is a distinction made between the (external) assurance standards and the sustainability guidelines, resulting in two different scores. For the sustainability guidelines, the SDGs are still omitted, since the data for 2015 and 2016 is not available. The minimum and maximum score for the (external) assurance standards are 0 and 6 respectively and contain the external assurance, stakeholder panel/expert opinion, AA1000AS, ISAE300, AS: National (general), and AS: National (sustainability). The minimum and maximum score for the sustainability guidelines are 0 and 5 respectively and contain the OECD, UNGC, CDP, IFC, and ISO. Finally, the two scores are combined, resulting in an overall score of CSR quality, with a minimum and maximum score of 0 and 11 respectively. Before executing the additional regression analyses, it is checked again whether there is a correlation between the three scores and the independent, and control variables. Besides to the correlation between the return on assets (ROA) and the return on equity (ROE), both the Pearson correlations and the Variance Inflation Factor (VIF) do not indicate any other correlation between the variables, as all correlations are below the critical value of 0.6, the highest VIF is 2.43, and the mean VIF is 1.51. Furthermore, A Hausman test is performed to check whether the fixed-effects model or random-effects model is more appropriate to use. For all three the scores and associated regression analyses, the Hausman test was not significant, indicated by a p-value higher than 0.5, which means the random-effects model is the most appropriate model to use in these regression analyses. As a result, next to the year dummies, the stakeholder/shareholder orientation dummy, and the industry dummies are added to the models.

Table 9 presents the regression results of the effects of board composition on the three scores of CSR quality. The first three columns indicate the effects of board composition on the first score, the External Assurance Standards. The first column only includes the effects of the board composition variables and the control variables. The second column includes the effects of the board composition variables, control variables, and interactions between the board composition variables themselves. The third column includes the effects of the board composition variables, control variables, and interactions between board composition variables and the stakeholder/shareholder orientation. The three columns thereafter indicate the effects of board composition on the second score, Sustainability Guidelines, and the different interactions effects

in the same way as for score 1. Finally, the last three columns indicate the effects of board composition on the combined score of 1 and 2, indicating the total CSR quality, and the different interactions effects in the same way as for score 1 and 2.

For score 1, External Assurance Standards, there are no significant effects found for the board composition variables, gender diversity, nationality diversity, age diversity, board independence, and board expertise. This means that hypothesis 1 until 5 cannot be accepted. For the interactions effects between the board composition variables themselves, there are also no significant effects found. This means that also hypothesis 6 cannot be accepted. Moreover, there is a significant positive effect ($p < 0.01$) of stakeholder/shareholder orientation on the first score, which indicates that score 1 increases 0.718 more for companies located in stakeholder-oriented countries relative to companies located in shareholder-oriented countries. This means that hypothesis 7a cannot be rejected. Also, there is no significant result that the effect of the board composition variables on score 1 is higher for companies located in stakeholder-oriented countries relative to companies located in shareholder-oriented countries. This means that hypothesis 7b cannot be accepted. Finally, some control variables indicate a significant positive effect on score 1. These are the company size ($p < 0.1$) and the social pillar of the ESG-score ($p < 0.05$), with coefficients of 0.152 and 0.0001 respectively.

For score 2, Sustainability Guidelines, there are no significant effects found for the board composition variables, gender diversity, age diversity, board independence, and board expertise. This means that hypotheses 1, 3, 4, and 5 cannot be accepted. Nationality diversity has a significant positive effect ($p < 0.1$) on score 2, with a coefficient of 0.277. For the interactions effects between the board composition variables themselves, there are no significant effects found. This means that hypothesis 6 cannot be accepted. Moreover, there is a significant positive effect ($p < 0.01$) of the stakeholder/shareholder orientation on the second score, which indicates that score 2 increases 0.719 more for companies located in stakeholder-oriented countries relative to companies located in shareholder-oriented countries. This means that hypothesis 7a cannot be rejected. Also, there is no significant result that the effect of the board composition variables on score 2 is higher for companies located in stakeholder-oriented countries relative to companies located in shareholder-oriented countries. This means that hypothesis 7b cannot be accepted. The year dummy variable indicates for 2014, 2015 and, 2016 a significant negative effect ($p < 0.1$) relative to 2013 on score 2. Finally, the control variable external assurance has a significant positive effect ($p < 0.01$) on score 2, with a coefficient of 0.961.

For score 3, Total CSR quality, there are no significant effects found for the board composition variables, gender diversity, nationality diversity, age diversity, board independence, and board

expertise. This means that hypothesis 1 until 5 cannot be accepted. For the interactions effects between the board composition variables themselves, there is a significant effect found. The three-way interaction between nationality diversity, age diversity, and board expertise has a significant positive effect ($p < 0.1$) on the total CSR quality, with a coefficient of 0.370. This means that hypothesis 6 cannot be rejected. Moreover, there is a significant positive effect ($p < 0.01$) of the shareholder/stakeholder orientation on the third score, which indicates that component 3 increases 1.646 more for companies located in stakeholder-oriented countries relative to companies located in shareholder-oriented countries. This means that hypothesis 7a cannot be rejected. Also, there is no significant result that the effect of the board composition variables on score 3 is higher for companies located in stakeholder-oriented countries relative to companies located in shareholder-oriented countries. This means that hypothesis 7b cannot be accepted. The year dummy variable indicates for 2014 ($p < 0.05$), 2015 ($p < 0.1$), and 2016 ($p < 0.1$) a significant negative effect relative to 2013 on component 3. Finally, the Social Pillar of the ESG-score as control variable has a significant positive effect ($p < 0.01$) on score 3, with a coefficient of 0.0002.

Table 9 - Additional regression analyses

Variables	External Assurance Standards			Sustainability Guidelines			Total CSR Quality		
Gender Diversity	-0.550 (-1.07)	-1.045 (-0.81)	-0.509 (-0.91)	0.663 (1.49)	0.154 (0.13)	0.713 (1.45)	-0.136 (-0.16)	-1.134 (-0.54)	0.0942 (0.10)
Nationality Diversity	0.0020 (0.01)	0.433 (1.03)	0.0109 (0.07)	0.277* (2.45)	0.216 (0.57)	0.289* (2.34)	0.325 (1.49)	0.578 (0.85)	0.382 (1.63)
Age Diversity	0.0372 (1.80)	0.0729 (1.37)	0.0388 (1.80)	-0.0024 (-0.14)	0.0010 (0.02)	-0.0015 (-0.08)	0.0489 (1.47)	0.0788 (0.92)	0.0552 (1.60)
Board Independence	0.535 (1.50)	1.012 (1.09)	1.749* (2.06)	-0.375 (-1.26)	-0.483 (-0.59)	-0.299 (-0.40)	0.404 (0.71)	0.921 (0.61)	2.121 (1.55)
Board Expertise	0.103 (0.57)	0.296 (1.41)	-0.223 (-0.64)	0.0863 (0.55)	0.0641 (0.35)	0.155 (0.51)	0.219 (0.76)	0.452 (1.34)	-0.136 (-0.24)
Return on Assets	-0.0019 (-0.17)	-0.0009 (-0.09)	-0.0015 (-0.14)	-0.0082 (-0.83)	-0.0077 (-0.78)	-0.0078 (-0.79)	-0.0128 (-0.73)	-0.0114 (-0.65)	-0.0117 (-0.66)
Company Leverage	0.0388 (0.74)	0.0466 (0.88)	0.0422 (0.80)	0.0386 (0.87)	0.0348 (0.77)	0.0378 (0.85)	0.0880 (1.05)	0.0981 (1.15)	0.0912 (1.08)
Company Size	0.152* (1.96)	0.172* (2.20)	0.147 (1.89)	-0.0342 (-0.53)	-0.0102 (-0.16)	-0.0354 (-0.55)	0.186 (1.50)	0.238 (1.89)	0.178 (1.43)
Analyst Coverage	-0.0041 (-0.41)	-0.0090 (-0.90)	-0.0046 (-0.46)	-0.0023 (-0.28)	-0.00417 (-0.49)	-0.0022 (-0.27)	-0.0078 (-0.49)	-0.0171 (-1.06)	-0.0086 (-0.54)
Company Visibility	0.0009 (0.65)	0.0009 (0.68)	0.0006 (0.45)	-0.0007 (-0.68)	-0.0008 (-0.75)	-0.0008 (-0.70)	-0.0004 (-0.17)	-0.0004 (-0.17)	-0.0008 (-0.36)
Environmental Pillar	-0.0090 (-1.81)	-0.0088 (-1.73)	-0.0087 (-1.74)	0.0011 (0.25)	-0.0003 (-0.07)	0.0011 (0.25)	-0.0103 (-1.28)	-0.0113 (-1.38)	-0.0097 (-1.20)
Social Pillar	0.0001** (3.25)	0.0001** (2.77)	0.0001** (3.15)	0.0001 (1.45)	0.0001 (1.26)	0.0001 (1.45)	0.0002** (3.34)	0.0001** (2.84)	0.0002** (3.25)
Board Size	0.0099 (0.78)	0.0121 (0.94)	0.0080 (0.63)	0.0063 (0.57)	0.0073 (0.65)	0.0062 (0.56)	0.0211 (1.04)	0.0245 (1.18)	0.0181 (0.89)
External Assurance				0.961*** (10.63)	0.955*** (10.38)	0.959*** (10.52)			
Stakeholder/Shareholder	0.718*** (3.95)	0.744*** (4.08)	0.475 (1.10)	0.719*** (4.88)	0.732*** (4.86)	0.844* (2.27)	1.646*** (5.68)	1.711*** (5.85)	1.545* (2.23)
2014	-0.128 (-1.40)	-0.124 (-1.35)	-0.133 (-1.47)	-0.200* (-2.28)	-0.194* (-2.20)	-0.200* (-2.28)	-0.392** (-2.65)	-0.382* (-2.56)	-0.401** (-2.71)
2015	-0.0964 (-1.00)	-0.102 (-1.04)	-0.106 (-1.09)	-0.234* (-2.55)	-0.230* (-2.49)	-0.235* (-2.55)	-0.349* (-2.22)	-0.354* (-2.23)	-0.363* (-2.30)
2016	-0.141 (-1.36)	-0.145 (-1.39)	-0.155 (-1.49)	-0.220* (-2.26)	-0.208* (-2.12)	-0.220* (-2.26)	-0.374* (-2.23)	-0.373* (-2.20)	-0.396* (-2.35)
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NN*AG*EX							0.370* (2.29)		
BD*SS			-0.0212 (-0.23)			-0.0212 (-0.26)			-0.104 (-0.71)
ID*SS			-1.425 (-1.58)			-0.0701 (-0.09)			-1.965 (-1.35)
EX*SS			0.449 (1.14)			-0.0903 (-0.27)			0.502 (0.79)
Constant	-4.569* (-2.41)	-7.608* (-2.30)	-5.057* (-2.57)	1.990 (1.29)	1.581 (0.54)	1.811 (1.11)	-4.400 (-1.46)	-7.494 (-1.40)	-5.522 (-1.76)
Wald-Chi²	105.99***	130.80***	111.05***	311.78***	333.25***	308.73***	160.1***	182.51***	164.38***
N	860	860	860	860	860	860	860	860	860

*, **, and *** indicate (two-tailed) statistical significance at 10-percent, 5-percent, and 1-percent level. The values indicate the regression coefficients. The values between the parentheses indicate the t-values.

Note: Only the statistical significant interactions between the board composition variables themselves are presented, where GD = Gender Diversity, NN = Nationality Diversity, ID = Board Independence, EX = Board Expertise, BD = Board Diversity, and SS = Stakeholder/shareholder- oriented.

4.4. Robustness test

In addition to the additional analyses, a robustness test is executed in order to determine whether the results are robust and to rule out whether some measures of variables have a significant effect on the results. Different from the regression analyses of Table 8, gender diversity is measured by the total number of female board directors divided by the total number of board directors. Nationality diversity is measured by the total number of board directors with a nationality other than company's origin divided by the total number of board directors. Age diversity is measured using a dummy variable. The dummy variable of 1, if the company has a lower than average board age, and 0 otherwise.

For component 1, International Assurance and Stakeholder panel/Expert opinion, in the original regression analysis there are no significant effects found for the board composition variables, gender diversity, nationality diversity, age diversity, board independence, and, board expertise. On the contrary, in the robustness test, it is found that board independence has a significant positive effect ($p < 0.1$) on component 1, with a coefficient of 0.775. This means that hypothesis 1, 2, 3, and 5 cannot be accepted. Hypotheses 4 cannot be rejected. For the interactions effects between the board composition variables themselves, there are also no significant effects found in the original regression analysis. In the robustness test, it is found that the three-way interaction between age diversity, board independence, and board expertise has a significant positive effect ($p < 0.1$) on component 1, with a coefficient of 3.286. This means that hypothesis 6 cannot be rejected. Moreover, there is a still significant positive effect ($p < 0.01$) of the stakeholder/shareholder orientation on component 1, with the difference that the coefficient changed from 0.802 to 0.861. This means that component 1 increases 0.861 more for companies located in stakeholder-oriented countries relative to companies located in shareholder-oriented countries. This means again that hypothesis 7a cannot be rejected. Also, there are still no significant results that the effect of the board composition variables on component 1 higher for companies located in stakeholder-oriented countries relative to companies located in shareholder-oriented countries after the robustness test. This means that hypothesis 7b cannot be accepted. Finally, also the same control variables indicate a significant positive effect on component 1. These are the company size ($p < 0.1$) and the social pillar of the ESG-score ($p < 0.05$), with coefficients of 0.205 and 0.0001 respectively.

For component 2, National External Assurance, in the original regression analysis, there are no significant effects found for the board composition variables, gender diversity, nationality diversity, age diversity, board independence, and board expertise. On the contrary, in the robustness test it is found that age diversity has a significant positive effect ($p < 0.1$) on the component 2, with a coefficient of 0.189. This means that for companies with a lower than

average board age relative to companies with a higher than average board age it has a significant positive effect on component 2. Eventually, this means that hypothesis 1, 2, 4, and 5 cannot be accepted and hypotheses 3 cannot be rejected. For the interactions effects between the board composition variables themselves, there are some significant effects found in the original regression analysis. The three-way interaction between nationality diversity, age diversity, and board independence and the three-way interaction between nationality diversity, board independence, and board expertise have a significant effect ($p < 0.1$) on component 2, with coefficients of -0.323 and 4.290 respectively. These three-way interactions are still found to be significant in the robustness test. In addition, the two-way interactions between nationality diversity and board independence, age diversity and board independence, board independence and board expertise and the three-way interaction between age diversity, board independence, and board expertise are also found to be significant in the robustness test. This means that hypothesis 6 cannot be rejected. Moreover, there are still no significant effects found of the stakeholder/shareholder orientation on component 2, which indicates that hypothesis 7a cannot be accepted. Also, there are no significant results found in the original regression analysis, that the effect of the board composition variables on component 2 is higher for companies located in stakeholder-oriented countries relative to companies located in shareholder-oriented countries. On the contrary, the interaction between board independence and the shareholder/stakeholder orientation has in the robustness test a significant effect ($p < 0.1$) on component 2. This means that for companies with more board independence located in stakeholder-oriented countries relative to companies located in shareholder-oriented countries it has a significant positive effect on component 2. This means that hypothesis 7b cannot be rejected. The year dummy variable indicates for both 2015 and 2016 still a significant negative effect ($p < 0.1$) relative to 2013 on component 2. Finally, in the original regression analysis no control variables are found to have a significant effect on component 2. In the robustness test, board size has a significant negative effect ($p < 0.1$) on component 2.

For component 3, Sustainability Guidelines, in the original regression analysis, there are no significant effects found for the board composition variables, gender diversity, age diversity, board independence, and board expertise, while nationality diversity had a significant positive effect ($p < 0.1$) on component 3, with a coefficient of 0.296. In the robustness test, there are no significant effects found for all the board composition variables, which means that hypotheses 1 until 5 cannot be accepted. For the interactions effects between the board composition variables themselves, there are no significant effects found in the original regression analysis and the robustness test. This means that also hypothesis 6 cannot be accepted. Moreover, there is still a significant positive effect ($p < 0.01$) found, in the robustness test, of the stakeholder/shareholder orientation on component 3, which indicates that component 3 increases 0.758 more for

companies located in stakeholder-oriented countries relative to companies located in shareholder-oriented countries. This means that hypothesis 7a cannot be rejected. Also, there are still no significant results found that the effect of the board composition variables on component 3 is higher for companies located in stakeholder-oriented countries relative to companies located in shareholder-oriented countries. This means that hypothesis 7b cannot be accepted. In the original regression analysis, the year dummy variables indicated for 2014 ($p < 0.1$), 2015 ($p < 0.05$), and, 2016 ($p < 0.1$) a significant negative effect relative to 2013 on component 3. Also in the robustness test, these year dummy variables indicate a significant negative effect for 2014 ($p < 0.1$), 2015 ($p < 0.1$), and 2016 ($p < 0.1$) relative to 2013 on component 3. Finally, the control variable external assurance has still a significant positive effect ($p < 0.01$) on component 3, with a coefficient of 1.019.

Table 10 – Robustness test

Variables	International Assurance and Stakeholder panel/Expert Opinion			National External Assurance			Sustainability Guidelines		
Gender Diversity	-1.109 (-1.65)	1.446 (0.34)	-0.687 (-0.91)	0.151 (0.31)	5.230 (1.52)	0.155 (0.28)	0.520 (0.91)	1.518 (0.40)	0.351 (0.54)
Nationality Diversity	0.0131 (0.04)	-0.572 (-0.39)	0.167 (0.47)	-0.214 (-0.99)	1.198 (1.03)	-0.233 (-0.97)	0.190 (0.71)	-0.826 (-0.64)	0.122 (0.41)
Age above Average	-0.0154 (-0.14)	1.108 (1.06)	0.0485 (0.37)	0.189* (2.15)	-0.496 (-0.59)	0.193 (1.86)	0.0691 (0.71)	0.793 (0.86)	0.0370 (0.32)
Board Independence	0.775* (1.99)	4.149 (1.38)	1.971* (2.10)	-0.260 (-0.96)	-5.903* (-2.45)	-1.656* (-2.46)	-0.253 (-0.78)	-3.392 (-1.28)	-0.115 (-0.14)
Board Expertise	0.120 (0.60)	0.654 (0.75)	-0.197 (-0.50)	-0.105 (-0.69)	-0.623 (-0.92)	0.271 (0.97)	0.0631 (0.36)	0.471 (0.62)	0.137 (0.41)
Return on Equity	0.0002 (0.06)	0.0009 (0.25)	0.0002 (0.06)	-0.0010 (-0.37)	-0.0012 (-0.44)	-0.0012 (-0.43)	-0.0035 (-1.16)	-0.0038 (-1.24)	-0.0035 (-1.15)
Company Leverage	0.0357 (0.62)	0.0372 (0.65)	0.0398 (0.69)	-0.0514 (-1.29)	-0.0478 (-1.18)	-0.0556 (-1.41)	0.0267 (0.56)	0.0172 (0.35)	0.0262 (0.55)
Company Size	0.205* (2.46)	0.217** (2.64)	0.195* (2.32)	-0.0067 (-0.12)	-0.0033 (-0.06)	-0.0013 (-0.02)	-0.0011 (-0.02)	0.0238 (0.34)	-0.0034 (-0.05)
Analyst Coverage	-0.0063 (-0.57)	-0.0074 (-0.67)	-0.0067 (-0.60)	-0.0045 (-0.58)	-0.0031 (-0.39)	-0.0034 (-0.44)	-0.0025 (-0.27)	-0.0021 (-0.22)	-0.0025 (-0.27)
Company Visibility	0.0008 (0.56)	0.0012 (0.80)	0.0007 (0.47)	0.0013 (1.33)	0.0016 (1.51)	0.0017 (1.65)	-0.0007 (-0.59)	-0.0008 (-0.68)	-0.0008 (-0.65)
Environmental Pillar	-0.0105 (-1.87)	-0.0115* (-2.03)	-0.0103 (-1.82)	0.0003 (0.08)	-0.0008 (-0.20)	-0.0004 (-0.11)	0.0001 (0.02)	-0.0023 (-0.46)	0.0002 (0.04)
Social Pillar	0.0001** (3.19)	0.0001** (2.94)	0.0001* (3.03)	-0.0000 (-1.05)	-0.0000 (-0.85)	-0.0000 (-0.91)	0.0000 (1.65)	0.0000 (1.56)	0.0000 (1.68)
Board Size	0.0091 (0.64)	0.0082 (0.58)	0.0072 (0.51)	-0.0204* (-1.98)	-0.0245* (-2.32)	-0.0187 (-1.82)	0.0068 (0.57)	0.0071 (0.57)	0.0071 (0.59)
External Assurance							1.019*** (10.32)	1.022*** (10.14)	1.022*** (10.28)
Stakeholder/Shareholder	0.861*** (4.29)	0.869*** (4.43)	0.800 (1.66)	-0.0437 (-0.34)	-0.0166 (-0.13)	0.275 (0.80)	0.758*** (4.68)	0.723*** (4.38)	0.772 (1.90)
2014	-0.130 (-1.26)	-0.113 (-1.07)	-0.143 (-1.38)	0.0455 (0.48)	0.0648 (0.68)	0.0514 (0.54)	-0.210* (-2.20)	-0.203* (-2.11)	-0.207* (-2.17)
2015	-0.106 (-0.97)	-0.0931 (-0.84)	-0.120 (-1.09)	-0.220* (-2.25)	-0.200* (-2.03)	-0.210* (-2.15)	-0.239* (-2.41)	-0.242* (-2.40)	-0.238* (-2.39)
2016	-0.149 (-1.27)	-0.157 (-1.33)	-0.168 (-1.42)	-0.235* (-2.29)	-0.221* (-2.14)	-0.219* (-2.14)	-0.212* (-2.00)	-0.215* (-2.00)	-0.211* (-1.99)
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NN*ID					-8.966* (-2.34)				
AG*ID					4.924** (2.80)				
ID*EX					4.838* (2.08)				
NN*AG*ID					5.192* (2.43)				
NN*ID*EX					8.182* (2.24)				
AG*ID*EX		3.286* (2.01)							
BD*SS			-0.129 (-1.18)			0.0130 (0.15)			0.0529 (0.55)
ID*SS			-1.442 (-1.45)			1.624* (2.33)			-0.147 (-0.18)
EX*SS			0.437 (0.99)			-0.540 (-1.71)			-0.0980 (-0.26)
Constant	-4.878** (-2.60)	-7.413** (-3.10)	-5.295** (-2.76)	0.996 (0.81)	2.528 (1.46)	1.450 (1.17)	-0.136 (-0.09)	1.351 (0.66)	-0.195 (-0.13)
Wald-Chi ²	101.01***	136.91***	105.55***	61.65***	83.70***	71.66***	289.20***	306.14***	286.57***
N	860	860	860	860	860	860	860	860	860

*, **, and *** indicate (two-tailed) statistical significance at 10-percent, 5-percent, and 1-percent level. The values indicate the regression coefficients. The values between the parentheses indicate the t-values.

Note: Only the statistical significant interactions between the board composition variables themselves are presented, where GD = Gender Diversity, NN = Nationality Diversity, ID = Board Independence, EX = Board Expertise, BD = Board Diversity, and SS = Stakeholder/shareholder- oriented.

4.5. Additional robustness test

In addition, the additional analysis in Table 9 uses three scores to operationalize CSR quality. The scores of this analysis are based on the different (external) assurance standards and the sustainability guidelines. For the sustainability guidelines, the reference to the Sustainability Developments Goals (SDGs) is left out the analysis, due to the fact that the SDGs are introduced at the end of 2014 and therefore no values for the years 2013 and 2014 are available. In this additional robustness test, the same analysis as the additional analysis is executed, with the difference that the SDGs values are included in the scores of the Sustainability Guidelines and Total CSR quality. Therefore, in the additional robustness test, there is a separation made between the years excluding (2013-2014) and including (2015-2016) the values for the SDGs. Again, external assurance is only included as a control variable in the additional robustness test for Sustainability Guidelines. Also, the additional robustness test investigates only the main effects and therefore no interaction effects are included.

The first column indicates the effects of board composition, control variables, and year dummies on the first score, the External Assurance Standards in the years 2013-2014, whereas the second column indicates the effects in the years 2015-2016. The two columns thereafter indicate the effects of board composition, control variables, and year dummies on the second score, Sustainability Guidelines, whereas for the first of the two columns the SDGs are excluded and for the years 2013-2014 and the second of the two columns the SDGs are included and for the years 2015-2016. Finally, the last two columns indicate the effects of board composition, control variables, and year dummies on the combined score of 1 and 2, indicating the total CSR quality, whereas for the first of the two columns the SDGs are excluded and for the years 2013-2014 and the second of the two columns the SDGs are included and for the years 2015-2016.

For score 1, External Assurance Standards, there are still no significant effects found for the board composition variables, gender diversity, nationality diversity, age diversity, board independence, and board expertise for both 2013-2014 and 2015-2016. This means that hypothesis 1 until 5 still cannot be accepted. There is still a significant positive effect ($p < 0.01$) of the stakeholder/shareholder orientation on the first score, which indicates that score 1 increases more for companies located in stakeholder-oriented countries relative to companies located in shareholder-oriented countries in both 2013-2014 and 2015-2016. This means that hypothesis 7a cannot be rejected. Finally, some control variables indicate a significant effect on score 1. For 2013-2014, the Social Pillar of the ESG-score has a significant positive effect ($p < 0.1$) with a coefficient of 0.0001 on score 1 and for 2015-2016, the Social Pillar of the ESG-score ($p < 0.05$) and the company size ($p < 0.1$) have a significant positive on score 1, with coefficients of 0.0001 and 0.215 respectively.

For score 2, Sustainability Guidelines, there are no significant effects found for the board composition variables, gender diversity, nationality diversity, age diversity, board independence, and board expertise for 2013-2014. Nationality diversity has a significant positive effect ($p < 0.05$) on score 2, with a coefficient of 0.478 in 2015-2016. This means that hypotheses 1, 3, 4, and 5 cannot be accepted. Hypothesis 2 cannot be rejected. There is still a significant positive effect ($p < 0.01$) of the stakeholder/shareholder orientation on the second score, which indicates that score 2 increases more for companies located in stakeholder-oriented countries relative to companies located in shareholder-oriented countries in both 2013-2014 and 2015-2016. This means that hypothesis 7a cannot be rejected. The year dummy variable indicates for 2014 a significant negative effect ($p < 0.05$) relative to 2013 and for 2016 a significant positive effect ($p < 0.1$) relative to 2015 on score 2. Finally, the control variable external assurance has a significant positive effect ($p < 0.01$) on score 2 for both 2013-2014 and 2015-2016 with coefficients of 0.884 and 1.280 respectively.

For score 3, Total CSR quality, there are no significant effects found for the board composition variables, gender diversity, nationality diversity, age diversity, board independence, and board expertise in 2015-2016. Age diversity has a significant positive effect ($p < 0.1$) on score 3, with a coefficient of 0.0875 in 2013-2014. This means that hypothesis 1, 2, 4, and 5 cannot be accepted. Hypothesis 3 cannot be rejected. There is still a significant positive effect ($p < 0.01$) of the stakeholder/shareholder orientation on the third score, which indicates that score 3 increases more for companies located in stakeholder-oriented countries relative to companies located in shareholder-oriented countries in both 2013-2014 and 2015-2016. This means that hypothesis 7a cannot be rejected. Also, there is no significant result that the effect of the board composition variables on score 3 is higher for companies located in stakeholder-oriented countries relative to companies located in shareholder-oriented countries. This means that hypothesis 7b cannot be accepted. The year dummy variable indicates for 2014 a significant negative effect ($p < 0.1$) relative to 2013 on score 3. Finally, the Social Pillar of the ESG-score as control variable has a significant positive effect ($p < 0.01$) on score 3, with a coefficient of 0.0002 in both 2013-2014 and 2015-2016 and company leverage has a significant positive effect ($p < 0.1$) on score 3, with a coefficient of 0.214.

Table 11 – Additional robustness test

Variable	External Assurance Standards		Sustainability Guidelines		Total CSR Quality	
	2013-2014	2015-2016	2013-2014 (Excl. SDGs)	2015-2016 (Incl. SDGs)	2013-2014 (Excl. SDGs)	2015-2016 (Incl. SDGs)
Gender Diversity	-1.149	-0.945	0.853	0.0334	-0.771	-1.195
	(-1.67)	(-1.32)	(1.43)	(0.05)	(-0.72)	(-0.93)
Nationality Diversity	0.0661	-0.0827	0.218	0.478**	0.370	0.441
	(0.37)	(-0.50)	(1.40)	(2.99)	(1.32)	(1.50)
Age Diversity	0.0428	0.0444	0.0273	-0.0381	0.0875*	0.0267
	(1.52)	(1.73)	(1.12)	(-1.49)	(1.99)	(0.58)
Board Independence	0.667	0.395	-0.597	0.0775	0.310	0.824
	(1.46)	(0.90)	(-1.51)	(0.18)	(0.43)	(1.05)
Board Expertise	0.276	-0.147	0.0996	0.148	0.493	0.0381
	(1.04)	(-0.60)	(0.43)	(0.60)	(1.18)	(0.09)
Return on Assets	-0.0026	0.0066	-0.0024	-0.0020	-0.0076	0.0062
	(-0.16)	(0.44)	(-0.17)	(-0.12)	(-0.30)	(0.22)
Company Leverage	0.0927	-0.0354	0.101	0.0704	0.214*	0.0502
	(1.39)	(-0.52)	(1.76)	(1.06)	(2.05)	(0.41)
Company Size	0.187	0.215*	-0.0232	-0.0734	0.214	0.216
	(1.94)	(2.21)	(-0.28)	(-0.77)	(1.43)	(1.24)
Analyst Coverage	0.0088	-0.0095	0.0004	-0.0064	0.0106	-0.0165
	(0.69)	(-0.74)	(0.04)	(-0.50)	(0.54)	(-0.72)
Company Visibility	-0.0009	0.0005	-0.0004	-0.0013	-0.0018	-0.0014
	(-0.54)	(0.28)	(-0.29)	(-0.81)	(-0.65)	(-0.47)
Environmental Pillar	-0.0105	-0.0114	0.0037	0.0066	-0.0086	-0.0091
	(-1.53)	(-1.65)	(0.61)	(0.98)	(-0.80)	(-0.74)
Social Pillar	0.0001*	0.0001**	0.0001	0.0000	0.0002*	0.0002*
	(2.10)	(3.12)	(1.61)	(0.35)	(2.52)	(2.48)
Board Size	0.0061	-0.0009	-0.0002	0.0227	0.0124	0.0298
	(0.37)	(-0.06)	(-0.02)	(1.36)	(0.47)	(1.02)
External Assurance			0.884***	1.280***		
			(6.91)	(8.67)		
Stakeholder/Shareholder	0.593**	0.739***	0.719***	0.839***	1.480***	1.898***
	(2.65)	(3.50)	(3.70)	(4.08)	(4.24)	(5.07)
2014^a	-0.114		-0.214**		-0.377*	
	(-1.22)		(-2.59)		(-2.55)	
2016^b		-0.0354		0.234*		0.202
		(-0.44)		(2.38)		(1.37)
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-5.840*	-5.934*	-0.444	4.600*	-8.139*	-3.463
	(-2.56)	(-2.51)	(-0.22)	(2.01)	(-2.28)	(-0.83)
Wald-Chi²	91.42***	79.09***	178.14***	246.85***	136.95***	117.79***
N	430	430	430	430	430	430

*, **, and *** indicate (two-tailed) statistical significance at 10-percent, 5-percent, and 1-percent level. The values indicate the regression coefficients. The values between the parentheses indicate the t-values.

Note: The interactions between the board composition variables themselves and the board composition and stakeholder/shareholder oriented countries are not included in these regression analyses, since it investigates only the main effects.

a: Indicates the year effect of 2014 on CSR quality relative to 2013.

b: Indicates the year effect of 2016 on CSR quality relative to 2015.

5. Discussion

5.1. Interpretation of the results

The descriptive statistics in Table 6 and 7 present that on average the CSR quality is relatively low, which indicates that the standards of the GRI are met poorly by the European companies in this dataset in the period 2013-2016. On average, the external assurance has the highest mean, with a value of 0.57. For the sustainability guidelines, the United Nations Global Compact (UNGC) has the highest mean, with a value of 0.53. The lowest mean is for IFC, with a value of 0.05 and the general national assurance standards with a value of 0.07. Also the board diversity for the companies is relatively low, indicated by the low means for gender diversity, nationality diversity, and a high average age on the board of directors which is consisted with previous research (e.g. Bear et al., 2010; Boulouta, 2013; Erhardt et al., 2003; Campbell & Mínguez-Vera, 2008). The mean of board independence is 0.56, which indicates that more than half of the board directors are independent. Also the mean of board expertise is relatively high, with a value of 0.89, which indicates that 89-percent of the companies have at least a CSR committee or a CSR expert on the board of directors.

In the regression analyses of Table 8, the additional regression analyses in Table 9, and both the robustness tests in Table 10 and 11 there are no significant results found for the effect of gender diversity on CSR quality. These results provide no evidence for hypothesis 1 and indicate that gender diversity has no significant effect on the CSR quality. This conclusion contradicts the results of some previous research that found a positive effect of gender diversity on CSR (e.g. Fernandez-Feijoo et al., 2012). One of the explanations of the insignificant effects is that for most of the board of directors the gender diversity is low and therefore the female board directors are not able to influence the CSR quality, which is also concluded in Amran et al., (2014). Another explanation is that more gender diversity individually cannot affect the CSR quality; possibly other effects are needed and gender diversity does not bring enough different perspectives, solutions and commitment to sustainability issues, in order to have an effect of gender diversity on CSR quality.

In the regression analysis of Table 8 and the additional regression analysis in Table 9, there are some significant positive results found for the effect of nationality diversity on CSR quality. These results provide some evidence for hypothesis 2. The significant positive effects are in both cases found for the effects of nationality diversity on the sustainability guidelines, which indicates that more nationality diversity leads to higher CSR quality, and in particular to more references to sustainability guidelines. Nationality diversity leads to more different perspectives on the board of directors and therefore the monitoring ability of the board of directors is higher which also results in higher CSR quality. On the other hand, some of the other results of

nationality diversity indicate no significant effect of nationality diversity on CSR quality, which can arise from the fact that on average there is low nationality diversity on the board of directors and therefore it is hard for the board directors of other nationalities to influence the CSR quality in the same way as for the female board directors..

Also for age diversity there are almost no significant results found for an effect on CSR quality. The regression analyses of Table 8, the additional regression analyses of Table 9, the robustness test of Table 10, and most of the results of the additional robustness test of Table 11 show no significant effects of age diversity on CSR quality. Only in additional robustness test, age diversity has a significant positive effect on the total CSR quality. Therefore these results provide very little evidence for hypothesis 3. This result is likely to arise from the result that the average age on the board of directors is relatively high, with a mean of almost 59 years, and therefore the relative younger board directors are not able to discuss their concerns regarding the environmental and ethical issues of the company (Kang et al., 2007). As they are also more friendly towards the interests of the society and the environment (Bekiroglu et al., 2011) than older board directors, this minority of younger board director can result in the effect that age diversity has no effect on board composition.

Moreover, also for board independence, there are almost no significant results found for an effect on CSR quality. The regression analyses of Table 8, the additional regression analyses of Table 9, most of the results of the robustness test of Table 10, and the additional robustness test of Table 11 show no significant effects of board independence on CSR quality. Only in the robustness test, board independence has a significant positive effect on component 1 of CSR quality. Therefore these results provide very little evidence for hypothesis 4. This very little evidence for an effect of board independence on CSR quality is consistent with previous research, which concludes that board independence has a positive effect on CSR (e.g. Rupley et al., 2012). The other insignificant effects are likely to arise due to the fact that independent board directors have little influence on the decision-making process of the board of directors regarding CSR, and therefore are not able to effectively execute their monitoring role and increase the CSR quality.

Moreover, in the regression analyses of Table 8, the additional regression analyses in Table 9, and both the robustness tests in Table 10 and 11 there are no significant results found for the effect of board expertise on CSR quality. These results provide no evidence for hypothesis 5 and indicate that board expertise has no significant effect on the CSR quality. These results contradict previous research, which indicates that board expertise has a positive effect on CSR quality (e.g. Adnan et al., 2010). These insignificant results are likely to arise due to the fact that

being a CSR expert or having a CSR committee alone is not enough to be able to influence the decision-making process of the board of directors regarding CSR quality. These experts and committee can potentially provide advice to the board of directors, but cannot influence their decision-making process.

Further, the results of the interaction between the different board composition characteristics show more significant results, most of them positive and some negative. These results apply to the two-way and three-interactions and have a significant effect on the different components and scores of CSR quality. In the regression analyses of Table 8, the three-way interaction between nationality diversity, age diversity, and board independence and the three-way interaction between nationality diversity, board independence, and board expertise show a significant positive effect on the national external assurance component. These results are after the robustness test in Table 10 still significant positive. In addition, especially the robustness test of Table 10 shows a lot more significant interaction effects on board composition characteristics on the national external assurance score. Furthermore, all the significant interactions show that at least board independence or board expertise is needed in order to have an effect on CSR quality. These results indicate evidence for hypothesis 6, in particular regarding the interactions with board independence and board expertise. These results confirm the different conclusions that the board composition variables individually, do not have a significant effect on the CSR quality, but when they interact with each other they have a positive effect on the CSR quality.

Finally, the regression analyses of Table 8 show significant results of an effect of the differences between companies located in stakeholder-or shareholder-oriented countries. These significant effects indicate that the effect on CSR quality is higher for companies located in stakeholder-oriented countries than for companies located in shareholder-countries. Also in the other regression analyses, these significant positive results are found. These results are consistent with previous research, which concludes that companies with more focus on the interests of stakeholder are more likely to react to their social responsibilities sustainability reports (Kolk & Perego, 2010). Therefore, the results show evidence for hypothesis 7a. On the contrary, the results show no evidence for hypothesis 7b, which indicates that it does not matter whether the board composition characteristics interact with the differences between companies located in stakeholder- or shareholder oriented countries. This is consistent with the other results of the board composition characteristics, as these characteristics are not able to influence the CSR quality individually. Therefore, in order to have a moderating effect of the differences between stakeholder-and shareholder-oriented countries on the relationship between board composition and CSR quality, there are potentially board composition interactions necessary.

5.2. Limitations and further research

Nevertheless, this study is subjected to multiple limitations. First, the data sample consists of 215 European companies and 860 observations. With a wider data sample, including more European companies from different European countries, the results might change when they are included. Also, in order to investigate the differences between companies located in stakeholder- or shareholder-oriented countries, more companies located in shareholder-oriented countries might be included. The distribution of this study is 75 companies located in a shareholder-oriented country and 140 companies located in stakeholder-oriented countries. Thereby, it is sometimes not completely correct to classify a country strictly as a stakeholder- or shareholder-oriented country. In addition to this data limitation, including more relevant years to the data sample might also have changed the results, since the disclosure of CSR has been a quickly developing process within the European framework and each year more companies are disclosing these reports. Second, the CSR quality is measured using the guidelines used in the GRI database. These GRI guidelines determine the CSR quality on a somewhat abstract level, and do not really look deeper into the content of the CSR. Therefore, it is hard to determine whether these GRI guidelines really measure the CSR quality as good as possible. Another alternative is a content analysis, which might result in different conclusions regarding the effects of board composition on CSR quality. Also, due to the amount of dependent variables a PCA is used which resulted in three different components to measure CSR quality. Using the PCA or a score, as used in the additional analyses and additional robustness test, is not necessarily the only way to reduce the amount of dependent variables. An analysis might also have been executed on the different dependent variables separately or by assigning different weights of CSR quality to the dependent variables. Third, both gender diversity and nationality diversity are measured using the Shannon index. The Shannon index is used because it is a more complete diversity measure than using a percentage of female board directors or board directors with a nationality other than the company's origin (Campbell & Minguez-Vera, 2008). However, using the Shannon index for gender diversity could have caused some problems, since it uses only two possible categories and therefore the diversity could be either too high or too low. The Blau index could also have been used in addition to or as replacement for the Shannon index, since it also is widely used in diversity studies. In addition, from previous research it is known that gender diversity is still very low among board of European companies. Some European countries introduced a guideline for companies, which indicate that the companies should pursue that at least 30-percent of the board directors is female. Therefore, the study might have included a dummy variable indicating whether a company has satisfied these guidelines or has not. Fourth, age diversity is measured calculating the average age of the board of directors, and it is found that there is very low deviation between the different board of directors. Therefore some other age diversity measures

might have been more representative and useful, for example using different generation categories or age groups and applying the Shannon index (Li et al., 2011). Fifth, board independence is measured by determining whether the board director has the official title of being an independent board director. As a consequence, it is not considered whether the board director really acts independent from the other board directors. It might also be possible that the independent board directors in fact do have a connection with the company, the company's management, or depend on the financial results of the company. A possibly connection, resulting from a friendship, between the independent and other board directors or management might lower the monitoring ability of the independent board directors (Bruynseels & Cardinaels, 2013). Finally, board expertise is measured by determining whether there is a CSR committee or expert on the board of directors. These committee or experts do have expertise on sustainability responsibilities and issues, but possibly not enough to influence the board regarding the CSR quality. Therefore, a different measure for board expertise might be more appropriate.

6. Conclusion

This study investigated the effects of board composition on CSR quality in a comparison of stakeholder- and shareholder-oriented countries. From literature and previous research, this study argues that more board diversity (Frias-Aceituno et al., 2013; Fernandez-Feijoo et al., 2012; Richard, 2000; Hafsi & Turgut, 2013), board independence (Cheng & Courtenay, 2006; Cerbioni & Perbonetti, 2007), and board expertise (Adnan et al., 2009; Harjoto et al., 2015) has a positive effect on the monitoring ability of the board of directors, in particular since it provides a wider range of perspectives, discussions, and commitment on sustainability issues which therefore increases the CSR quality (Bear et al., 2010; Chan et al., 2014; Anderson et al., 2004). It is also argued that two-way and three-way interactions between board composition variables result in an even higher CSR quality. In addition, companies with more focus on the interests of stakeholder are more likely to react to their social responsibilities and will earlier disclose sustainability reports (Kolk & Perego, 2010). Therefore it is argued that the CSR quality is higher for companies located in stakeholder-oriented countries compared to companies located in shareholder-oriented countries and the positive effect of board composition on CSR quality is moderated with the effect of the differences between stakeholder- and shareholder-oriented countries (Ball et al., 2000; Smith et al., 2005). In order to determine these effects, multiple panel data regression analyses are executed in which the CSR quality is measured by the (external) assurance standards and sustainability guidelines used by the GRI database. The results of the panel data regressions analyses show little support for the positive effect of board diversity on CSR quality, only nationality diversity shows some significant positive effects on CSR quality. Also for board independence and board expertise there is little support for a positive effect on CSR quality. The results of the interactions between the different board composition variables confirm the conclusion that the board composition variables individually, do not have a significant effect on the CSR quality, but when they interact with each other they have in most of the cases a positive effect on CSR quality. In particular, the significant interactions show that at least board independence or board expertise is useful in order to have an effect on CSR quality. Also the results show that CSR quality is higher for companies located in stakeholder-oriented countries than for companies located in shareholder-oriented countries. On the contrary, there is no evidence that there is a moderating effect of the differences between stakeholder- and shareholder-oriented countries on the board composition and CSR quality relationship. These different results of this study have multiple implications. A important scientific implication is that the most board composition characteristics do not have an effect on the CSR quality, contrary to the expectations. This means that there is need for further research into the factors that can affect the CSR quality. Another implication is that for companies in order to have high CSR quality, it is not necessarily needed to have or to appoint more female board directors or

younger board directors. It could be beneficial to have or appoint board directors with a different nationality than of the company's origin, but there is little evidence. In addition, more independent board directors and board directors with more expertise are potentially beneficial, since owning one of the characteristics in combination with other characteristics can increase the CSR quality. Another implication of this study is that it shows that the CSR quality in the European countries is relatively low and for companies located in shareholder-oriented countries even lower than for stakeholder-oriented countries. Therefore it might be useful for standards setters to consider whether any regulations or laws are needed to guarantee the CSR quality in the same way as annual (financial) reports. Overall, this study shows that there is need for further research into the CSR quality and what mechanisms, besides interactions between board composition variables and the differences between stakeholder- and shareholder-oriented countries, determine CSR quality.

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