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DOES IT PAY TO BE GOOD?

An Examination of the moderating effects of board gender diversity and financial leverage on the relationship between corporate social responsibility and firm performance

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Preface

Dear reader,

I'm proud to present to you my thesis ''Does it pay to be good?''. After writing two theses before I started writing this one you would think I knew what to expect, but I can tell you every thesis has its own process with its ups and downs. Let's say it has been an interesting journey. What helped me writing this thesis is my personal interest in the topic of CSR and sustainability. During the past couple of months I've read tons of papers concerning CSR and sustainability and it is safe to say it's a topic that does interests me a lot.

This thesis along with multiple other researches shows that engaging in CSR can increase performance for companies, though in my opinion the ethical aspect of CSR is just as important. Therefore I sincerely hope this research can help to increase attention for this topic and can help convincing companies to increase their CSR activities. For too long the focus has been merely on economic aspects, where social and environmental aspects have been subordinate or even of no concern. The problems we are facing nowadays, like climate change, are extremely urgent. We need to step up and take action. Einstein once said ''we cannot solve our problems with the same thinking we used when we created them''. We need new ideas, new innovations and new types of energy to move to more sustainable types of economies and societies.

There are some persons that made it possible for me to write this thesis and that I would like to thank. First of all I want to thank Rick Aalbers, for being patient and for his guidance throughout the process. I would also like to thank my family for their support and for believing in me. Last, but definitely not least, I want to thank Isa who has been the greatest support I could have imagined.

So I guess that's it. After 6 years at this university, a bachelor's degree and two master's degrees, my days as a students are officially over. It has been a blast and I'm looking forward to new challenges and experiences!

Tom van Hienen

Abstract

Corporate social responsibility has gained a lot of attention the past decades. Problems like resource depletion, environmental pollution and social conditions are more relevant than ever. It is no longer possible for firms to solely focus on creating economic value, because firms are increasingly hold accountable for their social and environmental impact. The concept of CSR has also gained interest of the academic society and has been the topic of lots of previous research. Though there are a lot researches where the relationship between CSR and performance is examined, the results are inconclusive. This research aims to contribute to the CSR and performance literature by examining two variables that are expected to moderate the relationship between CSR and performance. The research question of this research is ''*To what extend do board gender diversity and financial leverage moderate the relationship between corporate social responsibility performance and performance at organisations within the European energy sector?*''.

Data concerning CSR and board gender diversity are extracted from the Asset4 database by Thomson Reuters and data concerning performance and financial leverage are extracted from the database Eikon. A sample of 199 companies within the European energy sector was used to conduct multiple regression analyses. The results show that CSR positively influences performance and that both board gender diversity and financial leverage negatively moderate the relationship between CSR and performance. Thereby the results show that when a one year lag is used board gender diversity negatively affects performance. Financial leverage was not found to have a consistent significant effect on performance.

The result suggest that companies with a better CSR performance do increase performance, based on financial measures. This shows that next to the ethical aspect of CSR it is also financially rewarding to engage in CSR. The results also suggest that companies that do engage in CSR should carefully consider whether they want a more gender diverse board and the amount of financial leverage they want to have. With these results this study contributes to the ongoing CSR and performance debate.

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Chapter 1 – Introduction

1.1 Introduction

The concept of corporate social responsibility (CSR) has gained a lot of attention by society, policymakers and academics in the past decades (Verbeeten, Gamerschlag & Möller, 2016; Wang, Dou & Jia, 2016; Margot & Walsh, 2002). Several issues like rights and status of workers, resource depletion, climate change and environmental pollution have become the focus of increasing attention and concern (Reverte, 2009; Garcia-Sanchez, Cuadrado-Ballesteros & Sepulveda, 2014). Within this trend, companies are increasingly accountable for their environmental and social impacts (Stjepcevic & Siksnelyte, 2017;Kuo & Chen, 2013) and it is no longer possible for firms to solely focus on creating value for its shareholders (Streimikiene, Simanaviciene & Kovaliov, 2009). It has been argued that firms that fail to engage in CSR can lose business opportunities and their competitive advantage (Barnea & Rubin, 2010; Aras & Crowther, 2010)

Human activities are the most important factor in climate change (Mezher, Tabbara & Al-Hosany, 2010; IPCC, 2014). Especially carbon dioxide (CO_2) is one of the most important greenhouse gasses that stimulates climate change. The energy sector is the biggest contributor of CO_2. In 2010 the energy sector was responsible for approximately 35% of the total anthropogenic greenhouse gasses (Bruckner, 2014). Annual emissions of this greenhouse gas grew almost 80% between 1970 and 2004 in the energy sector (Mezher et al., 2010). Reduction of these gasses can be established in three ways: renewable energy, energy efficiency and carbon capturing and sequestration. Renewable energy is an appealing option because it substitutes for fossil fuel and it is getting more economic feasible over time because of improved technologies (Sims, 2004; Clift, 2007). The energy sector has to deal with this challenge.

Simultaneously with the increasing interest in CSR, the relationship between CSR and firm performance gained increasing attention (Pätäri, Arminen, Tuppura & Jantunen, 2014). Although most studies find a positive effect, some studies find a negative effect or no effect between CSR and performance. So far the relationship remains inconclusive (Margolish & Walsh, 2003; McWilliams & Siegel, 2000; Maqbool & Zameer, 2018). Based on multiple theories both positive and negative effects can be explained. Stakeholder theory for example argues that firm that engage in CSR strengthen the relationship with their stakeholders, which results in better performance (Galant & Cadez, 2017; Frynas & Yamahaki, 2016). Based on agency theory the expectation is that CSR negatively affects performance because managers use CSR to improve their own reputation. Besides resources that are invested in CSR could better be used for other purposes (Friedman, 1970).

In this research two moderating variables are examined in order to explain the inconclusive relationship between CSR and performance. The two moderating variables that are analysed are

board gender diversity and financial leverage. Board gender diversity is an issue that has been gaining a lot of attention lately (Labelle, Francoeur & Lakhal, 2015; Post & Byron; 2015). This variable is very relevant for the energy sector because firms in the energy sector have low representation of women in their boards (Carlsson-Kanyama, Juliá & Röhr, 2010; Pearl-Martinez & Stephens 2016). Board gender diversity has been positively linked to firm performance (Post & Byron, 2015). The expectation in this research is that board gender diversity positively moderates the relationship between CSR and performance, based on increased reputation, creativity, innovation and that firms with a more diverse board have a better CSR performance (Campbell & Mínguez-Vera, 2008; Robinson & Dechant, 1997). The second moderating variable is financial leverage. Debt ratios have increased the past decades, which shows the importance of this variable (Mitton, 2008). This variable has been linked negatively to performance (Onaolapo & Kajola, 2010), but the expectation is that this variable positively moderates the relationship between CSR and performance, based on the assumption that firms with more money can better support their CSR activities, reduce risk and cost of capital (Byron & Post, 2016).

This research contributes to the CSR and performance relationship, by studying firms in the European energy sector. By my best knowledge these moderating effects have not been analysed before concerning the relationship between CSR and performance.

1.2 Research question

The aim of this thesis is to gain a better understanding of the relation between corporate social responsibility performance and financial performance. This is done by analysing the effect of two moderating variables in this relationship. These moderating variables are board gender diversity and financial leverage. In order to do so, the following research question will be answered:

To what extend do board gender diversity and financial leverage moderate the relationship between corporate social responsibility and firm performance at organisations within the European energy sector?

The main research question can be split up to several sub-questions, which can be used to answer the main research question. These sub-questions are:

- What is the European energy sector?
- What is corporate social responsibility (CSR)?
- How can the performance of an organisation be measured?

- Do CSR, board gender diversity and financial leverage influence the performance of an organisation?
- What is the role of board gender diversity in the relationship between CSR and performance?
- What is the role of financial leverage in the relationship between CSR and performance?

In the literature review the central concepts of CSR, performance, board gender diversity, financial leverage and the relationships between these concepts are elaborated on. The research methodology of this thesis is quantitative and a multiple regression analysis is used to analyse the relationships between these concepts. The methodology chapter explains this method in more detail.

1.3 Relevance

1.3.1 Scientific relevance

As discussed in the introduction, the relationship between CSR and performance is inconclusive (Margolish & Walsh, 2003; McWilliams & Siegel, 2000; Maqbool & Zameer, 2018). First of all this research examines the direct relationship of CSR on performance and thus contributes to this direct relationship. Secondly this thesis contributes to governance literature by analysing the direct effect of board gender diversity on performance and to finance literature by analysing the direct effect of financial leverage on performance. Thereby both of these variables are analysed as a moderator on the relationship between CSR and performance. Multiple moderators have been used to try to explain the relationship between CSR and performance, for example ownership concentration (Peng & Yang, 2014), state ownership, board size and board independence (Kabir & Thai, 2017). The moderating effects of gender diversity and financial leverage on the relationship between CSR and performance have not been analysed yet, by my best knowledge. Therefore this study contributes to academic literature by testing these effects. Thereby the relationship between CSR and performance has not yet been studied in the European energy sector as described in the next chapter.

1.3.2 Practical relevance

Next to the scientific relevance this thesis is also relevant for practitioners. Society has different expectations of firms nowadays, which leads to increased attention on CSR by firms. In 2005 64% of the 250 largest companies in the world produced a CSR report. This percentage increased to 92% in 2015. In 2018 Fortune Global 500 firms spend 20 billion dollar a year on CSR activities (Meier & Cassar, 2018). The ethical aspect of CSR is important, but it is important for firms to know if it is rewarding to spend this much on CSR. The relationship between CSR and performance is inconclusive, as discussed before. This means a better CSR performance does not always lead to a

better firm performance. This study therefore provides insights in this relationship for European energy companies, by examining the moderating effects of board gender diversity and financial leverage

Firstly, the effect of board gender diversity is analysed. This concept also gained a lot of attention the past decades, from both ethical as business aspects (Labelle, Francoeur & Lakhal, 2015; Post & Byron; 2015). This variable is very relevant for the energy sector because this sector has a low representation of women in boards (Carlsson-Kanyama, Juliá & Röhr, 2010; Pearl-Martinez & Stephens 2016). This study can help firms with decisions concerning the composition of their boards. If this research shows that board gender diversity positively affects performance and positively moderates the relationship between CSR and performance, it might be interesting for firms to consider more gender diverse boards.

Secondly, the effect of financial leverage is analysed. Debt ratios have been increasing (Mitton, 2008). High debt ratios can lead to an increased firm risk and negatively affect performance. Therefore this research analysed the effect of leverage on performance. Firms can then decide if it is beneficial to increase or lower their debt level. Thereby the moderating effect of financial leverage on the relationship between CSR and performance is analysed. This can help firm decide whether they wants to engage in debt financing to improve CSR performance and firm performance.

1.4 Outline

In this chapter this research has been introduced. It is now clear what the research question and relevance are. In the second chapter, relevant literature related to the central concepts will be elaborated on. These concepts are corporate social responsibility, performance, board gender diversity and financial leverage. Based on these concepts and the relation between these concepts hypotheses will be developed. The third chapter contains the research methodology of this research. It will discuss the quantitative research method, data selection and operationalisation of the used variables. Chapter four describes the quantitative analyses, which will provide insight in the relationships between the independent and dependent variables and in the relationships of the moderating variables. The fifth and final chapter presents the conclusion of this thesis, together with the discussion and policy recommendations.

Chapter 2 – Literature review and hypotheses

The second chapter of this thesis will elaborate on the current academic literature related to the research topic. The first part of this chapter describes the European energy sector briefly. The second part elaborates on the concept CSR. In paragraph 2.3 five commonly used theories related to CSR are discussed. In paragraph 2.4 the benefits and costs related to CSR are elaborated on. In the following part the dependent variable organisational performance is discussed and in 2.6 the relationship between CSR and performance is elaborated based on empirical research. In paragraph 2.7 the effect of CSR on performance is discussed, which results in the development of the first hypothesis. Paragraph 2.8 discussed board gender diversity and the direct and moderating effect of this variable. Paragraph 2.9 elaborates on financial leverage and the direct and moderating effect of this variable. Finally, in paragraph 2.10 the conceptual model of this thesis is presented. This chapter will start with a brief introduction in the European energy sector.

2.1 The European Energy sector

The European energy sector is an important sector within the European Union. It is seen as ''one of the pillars of growth, competiveness and development for modern economies'' (European Commission, 2018, p.1). In 2016 the energy sector in the European Union consisted of 110827 firms, which employed 1634431 people and had a turnover of 1 881 351.6 million euro (European Commission, 2018). The worldwide energy sector is the biggest contributor of greenhouse gasses (Bruckner, 2010). In 2010 the energy sector was responsible for 35% of the total anthropogenic greenhouse gasses. Society has an increasing demand for cleaner and safer environments, therefore CSR is important for companies in the energy sector (Kim & Kim, 2014).

There are two types of energy sources within the energy sector: renewable and non-renewable. Renewable energy sources are for example biogases, liquid biofuels, renewable waste, hydropower, geothermal energy, wind energy, solar energy and tide, wave ocean. Non-renewable energy sources are solid fuels like coal, natural gas, crude oil and nuclear energy (Eurostat, n.d.). In 2016 28% of the energy produced in the European Union came from renewable energy sources.

Within Europe all companies have a 'Nomenclature statistique des Activités économiques dans la Communauté Européenne' code (NACE code). The NACE code is used to classify firm based on economic activities. Certain NACE codes are used to classify organisations that operate within the energy sector (European Commission, 2018; European Commission, 2019). Research concerning the energy sector commonly uses these NACE codes (Chang, Li & Zhang, 2013; Viesi, Pozzar, Federici, Crema & Mahbub, 2017). The NACE codes that are used to classify organisations within the European energy sector can be found in table 1 on the next page.

NACE code	Economic activity
A01	Crop and animal production, hunting and related service activities
B05	Mining of coal and lignite
B06	Extraction of crude petroleum and natural gases
B07	Mining of metals
B08	Other mining and quarrying
B09	Mining support services activities
C15	Manufacture of leather and related products
C19	Manufacture of coke and refined petroleum products
C24	Manufacturing of basic materials
D35	Electricity, gas, steam and air conditioning supply
E	Water supply, sewerage, waste management and remediation activities
E38	Electricity, gas, steam and hot water supply
F	Construction
G47.30	Retail sale of automotive fuels in specialized stores
H49.5	Transport via pipeline
M	Professional, scientific and technical activities

Table 1: NACE codes European energy sector.

2.2 Corporate Social Responsibility (CSR)

As stated in the introduction of this thesis, CSR is a concept that has gained a lot of attention the past decades (Alshehhi, Nobanee & Khare, 2018; Verbeeten, Gamerschlag & Möller, 2016; Wang et al., 2016; Margot & Walsh, 2002). Not only by academics, but also by firms, consumers and investors. Even though CSR has a long history (Davis, 1960), there is no consensus about the concept and lots of definitions exist (Sheehy, 2015; Dahsrud, 2008). CSR and sustainability are terms that are often mixed and overlap (Alshehhi et al., 2018). The similarity between the different definitions of CSR is that they are usually made out of the same dimensions. These are the economic, stakeholder, social, voluntariness and environmental dimension. A random definition of CSR has a probability of 97% that at least three of the dimensions as mentioned before are included (Dahsrud, 2008). An example is the definition by the Commissions of the European Communities, which defines CSR as *''a concept whereby companies integrate social and environmental concerns in their business operations and in their interactions with their stakeholders on a voluntary basis''* (Commissions of the European Communities, 2001, p4).

One of the best known models for CSR is the pyramid of corporate responsibility (Carroll, 1991). This pyramid is presented in figure 1 on the next page. The pyramid shows four components of CSR. It starts with economic responsibilities, which undergirds all other components. The second block consists of the legal responsibilities, which a firm is expected to obey because the law shows what is acceptable or not acceptable in a society. The third block are the ethical responsibilities, which tells a firm to do what is right, fair and minimize harm to stakeholders. The highest block includes the philanthropic responsibilities of a firm, which tells a firm that it is expected to contribute financial

and human resources to the community and improve the quality of life. These blocks should not be seen separated from each other, they are connected.

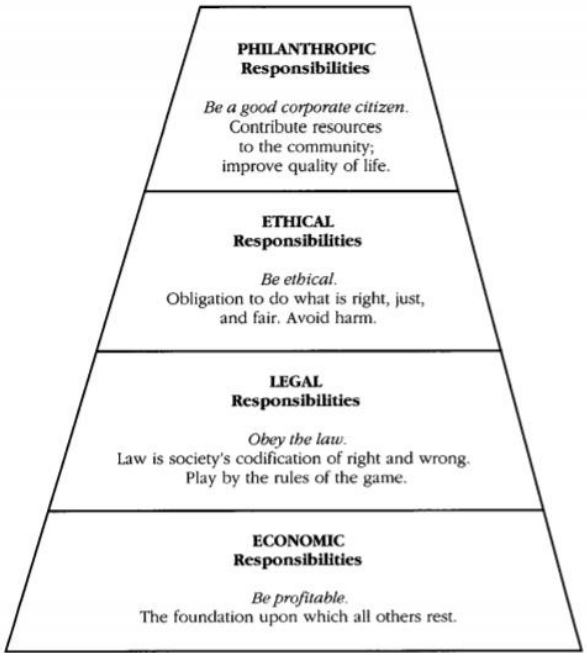

Figure 1: The pyramid of CSR (Carroll, 1991, p42).

Another commonly used concept in CSR is the triple bottom line (TBL), which was coined by Elkington in 1994. Elkington argues that if a firm only focuses on the single bottom line, which is profitability, it would not be successful (Elkington, 1998). Two different aspects next to the economic aspect should be taken into account. These two aspects are the social and environmental aspects. The TBL concept is also referred to as the People, Planet and Profit (3P) concept. These 3P's can be seen as a triangle in which all corners should be balanced. People stands for the focus on people in the organisation, but also people outside of the organisation. Planet stands for a proactive attitude towards the environment, trying to solve environmental problems that a firm may contribute to. Profit stands for the creation of economic value, which is necessary to ensure survival of the organisation and important to improve the two other dimensions. Businesses should focus on all three aspects in order to create value and be successful (Elkington, 1998).

2.3 Theories of CSR

There are several theories explaining why organisations participate in CSR and what outcomes can be expected based on those theories. Mellahi, Frynas, Sun and Siegel (2016) reviewed articles in top-tier journals between 2000 and 2014 to investigate which theories are the most used in the nonmarket strategy literature. In this research five often used theories in CSR research can be found, which are agency theory, institutional theory, resource based view (RBV), resource dependency theory (RDT) and stakeholder theory. All five of these theories can be used to describe why firms do or do not engage in CSR activities. These five theories which describe CSR are commonly used in academic research (E.g. Frynas and Yamahaki, 2016; Frynas & Stephens, 2015). All five theories mentioned before will be elaborated on briefly in the following part of this thesis. Firstly, agency theory will be elaborated.

2.3.1 Agency theory

The relationship between shareholders and managers of a firm is a principal-agent relationship (Ross, Brammer & Millington, 2008; Wang, Dou & Jia, 2016). A principal-agent relationship is a relationship

in which a person or multiple persons (the principals) appoint another person (the agent) to act on their behalf. The principal delegates some decision making power to the agent (Jensen & Meckling, 1976). This type of relationship can be problematic if both parties are utility maximizers, because the agent may act differently than the principal wants (Ross, 1973; Frynas & Yamahaki, 2016). The welfare of the principal depends on the actions of the agent (Brammer & Millington, 2008). Agency costs can occur in this relationship because the principals, for example the shareholders, cannot perfectly control and monitor the agents. Besides preferences for principals and agents for certain decisions may be different. Moreover, problems of risk sharing can arise if principals and agents have different attitudes towards risk (Eisenhardt, 1989).

Friedman (1970) was the first to criticize CSR by firms. According to Friedman (1962) the primarily purpose of a firm is to generate as much profit for the shareholders as possible. Investing in CSR takes money and resources away that could have been spend better, for example in increasing efficiency of the firm (McWilliams & Siegel, 2001). Based on this theory managers tend to overinvest in CSR and use CSR at expense of shareholders to further their own career, social, political agenda, reputation (McWilliams & Siegel, 2001; Brammer & Millington, 2008; Barnea & Rubin, 2010; Petrenko, Aime, Ridge & Hill, 2016).

2.3.2 Institutional theory

According to the institutional theory firms have to conform to social norms in a business environment because firms need legitimacy, which is a kind of external approval (Meyer & Rowan, 1977; Frynas & Yamahaki, 2016; DiMaggio & Powel, 1983). Firms need this legitimacy in order to survive and grow (Frynas & Yamahaki, 2016). Three motivating mechanisms lead to conformation of these social norms. This is also called institutional isomorphism. These mechanisms are coercive, normative and mimic pressure (DiMaggio & Powell, 1983; Hamidu, Haron & Amran, 2015). Coercive isomorphism are the result of cultural expectations of the environment in which a business operates and of both informal and formal pressure exerted on firms by other firms upon which they dependent (DiMaggio & Powell, 1983). A second source of institutional change are mimetic processes. Firms imitate other firms in times of uncertainty. In uncertain times firms copy best practices of successful competitors and try to replicate the path to success and legitimacy (Glover, Champion, Daniels & Dainty, 2014). The third source of isomorphic organisational change is normative pressure. This pressure originates from professional and educational authorities, which set standards for legitimate organisational practices (Matten & Moon, 2008). These three mechanisms can help to understand why firms engage in CSR. Institutional theory has been used to study CSR in multiple researches (E.g. Jennings & Zandbergen, 1995; Matten & Moon, 2008; Campell, 2007; Glover et al., 2014; Tang & Wang, 2011; Helms, Oliver & Webb, 2012). When taking institutional

theory into consideration, the motive for firms to engage in CSR is to get legitimacy by conforming to social norms.

2.3.3 Resource based view (RBV)

Resource based view is a theoretical lens that sees internal resources as a way to achieve a competitive advantage (Wernerfelt, 1984; Peteraf, 1993; Barney, 1991). Resources that are valuable, rare, inimitable and non-substitutable can help developing a sustainable competitive advantage (Barney, 1991).These resources can either be tangible and intangible, for example capital, employment or skilled personnel, machinery, brand-names and reputation (Wernetfelt, 1984). This theory states that organisations should not focus on the competitive environment, but on the resources that can be found in the internal organisation (Barney, 1991). There are two assumptions of the resource-based view leading to a sustainable competitive advantage (Barney, 1991). Firstly, this theory assumes that firms within an industry may be heterogeneous with respect to the strategic resources they have. The second assumption states that resources are not perfectly mobile across firms and this may result in long lasting heterogeneity.

Researches that study CSR based on resource-based view state that capabilities or specialized skills that are related to CSR investments may result in firm specific economic benefits (Russo & Fouts, 1997; Frynas & Yamahaki, 2016; Hart, 1995). From resource-based view investing in CSR can be explained as development and usage of internal capabilities or specialized skills related to environmental and social matters in order to gain economic benefits. These capabilities can be for example reputation for sustainability leadership, green innovations and stakeholder management and strategic proactivity (Frynas & Yamahaki, 2016). RBV is used in multiple studies to understand why firms engage in CSR (E.g Branco & Rodrigues, 2006; McWilliams & Siegel, 2011; Campbell & Park, 2017; Gallego-Alvarez, Prado-Lorenzo & Garcia-Sanchez, 2011; Russo & Fouts, 1997; Hart, 1995)

2.3.4 Resource dependency theory (RDT)

Resource dependency theory argues that firms are dependent on their environment and surrounding in order to obtain critical resources which are needed to survive (Pfeffer & Salancik, 1978). Firms depend on many different external parties that can put demands on a firm (Oliver, 1991). Firms cannot satisfy all these external parties and therefore firms will try to satisfy the actors that control important resources, since firms depend on them (Frooman, 1999; Pfeffer &Salancik, 1978). Within RDT the board of directors plays an important role, because the board can ensure critical resources, like legitimacy, personal ties and knowledge (Frynas & Yamahaki, 2016; Hafsi & Turgut, 2013; De Villiers, Naiker & van Staden, 2011).

Considering CSR resource dependency theory argues that firms will engage in CSR if this engagement will help the firm obtaining critical resources. An example is found in the research of Hess and Warren (2008). They use RDT to explain why gas and oil companies drilling in developing countries often invest the local community, for example education or health care. Research found that if firms interact with external groups, it can help the firm to improve its environmental performance. Kassing and Vafeas (2006) found that firms with a higher dependency on a local community for obtaining critical resources, display better environmental performance in that local community.

2.3.5 Stakeholder theory

Stakeholder theory was developed by Freeman (1984). It is the most used theory in CSR research (Frynas & Yamahaki, 2016; Hörisch, Freeman& Schaltegger, 2014). The core assumption of stakeholder theory is that firms are affected by stakeholders and take action based on the pressure executed by these different stakeholders, which are related to their power distance and legitimacy claim (Jawahar & McLaughlin, 2001; Freeman & Reed, 1983). In this theory shareholders are just one of the multiple different stakeholder groups which should be considered in the decision making process (Wood & Jones, 1995; Ruf, Muralidhar, Brown, Janney & Paul, 2001). Not all of these different stakeholders are equally important. Mitchell, Agle and Wood (1997) created a model in order to classify stakeholders based on their importance to an organisation. The model uses the attributes power, legitimacy and urgency to classify stakeholders on their importance. The more attributes a stakeholder possesses, the more important and dominant the stakeholder is.

Different classifications and interpretations of this theory exist, but the main distinction is made between the normative and descriptive stakeholder theory (Frynas & Yamahaki, 2016). The normative approach is also called the ethical approach. This approach states that all stakeholders are equally important to the firm and the firm should take responsibility to all stakeholders. In this approach stakeholder salience is less relevant. The descriptive approach, also called the empirical approach, states that firms should identify stakeholders that are important, which means salience is relevant (Donaldson & Preston, 1995). In the CSR context normative stakeholder theory has little explanatory power (Gray, Owen & Adams, 1996). Descriptive stakeholder theory, on the other hand, can be used to explain the drivers, processes and outcomes of CSR (Frynas & Yamahaki, 2016; Mellahi et al., 2016).

Based on stakeholder theory engaging in CSR has multiple benefits for firms. Firms that engage in CSR tend to get more positive responds from their stakeholders compared to firms that do not engage in CSR. Getting these positive responses from stakeholders, like customers and employees, can lead to an improved reputation and image, which can lead to improved financial

performance (Surroca, Tribó & Waddock, 2010; Stuebs & Sun, 2010; Vilanova, Lozano & Arenas, 2009). This improved reputation and image can help a firm to create labour resource efficiency advantages (Fombrun & Shanley, 1990). Firms with a good reputation can motivate and attract good employees (Roberts & Dowling, 2002). Employees may be willing to earn less at reputable firms and more persons want to work for reputable firms. This can lead to increased labour supply and can drive down wages. Moreover, motivated employees work harder, which leads to production benefits (Stuebs & Sun, 2010).

2.4 Benefits and costs of CSR

The theories elaborated on above aim to explain why firms engage in CSR activities or do not engage in CSR activities. There are benefits and costs if firms engage in CSR activities. Weber (2008) derives five main areas of CSR business benefits. First of all CSR has a positive effect on firm image and reputation, which can improve the competiveness of a firm (Gray & Balmer, 1998; Schwaiger, 2004; Vilanova, Lozano & Arenas, 2009). Secondly, CSR has positive effects on employee motivation, retention and recruitment (Weber, 2008; Maqbool & Zameer, 2018). Thirdly, CSR practices can lead to cost saving (Maqbool & Zameer, 2018). These costs savings can occur because for example time saving through better contact with stakeholders or improved access to capital (Epstein & Roy, 2001). Fourthly, revenue can increase because of higher sales and increased market share. This may happen because CSR can lead to improved brand image or because of CSR-driven production or market development (Weber, 2008). Finally, CSR can help to reduce the risk of NGO pressure, negative publicity or customer boycotts. In addition, CSR can help to spread positive worth of mouth (Maqbool & Zameer, 2018).

Next to the benefits CSR may also bring costs. Weber (2008) makes the distinction between one-time costs and continuous costs. One-time CSR costs are costs like one-time donations and investment costs. Continuous CSR costs are continuous donations, fees to for example usage of a label or patent, personnel costs and material costs.

2.5 Organisational performance

Organisational performance is one of the most used dependent variable in any area of management research (March & Sutton, 1997). Though it is commonly used in management research, little researches actually specify the structure and definition of organisational performance explicitly (Richard, Devinney, Yip & Johnson, 2009; Kirby, 2005).

There are several ways to measure organisational performance. It encompasses three areas of organisational outcomes: financial performance, product market performance and shareholder

returns (Richard et al., 2009). In this research the decision was made to focus on financial performance. Measuring performance based on financial indicators is one of the most used methods in all kinds of management research and also in CSR research (Venkatraman & Ramanujam, 1986; Camison & Villar-lopez, 2012; Carton, 2004; Jenatabadi, 2015; Waddock & Graves, 1997; Barnett & Salomon, 2012). Multiple types of financial ratios are used in organisational performance research. More traditional measurement of financial organisational performance are return on investment (ROI) and return on sales (ROS) (Banker, Chang & Majumdar, 1996). ROI and ROS are commonly used (Richard et al., 2009; Li & Zhang, 2007; Strike, Gao & Bansal, 2006; Goerzen, 2007; Waldman et al., 2006; Hubbard, 2009). Other commonly used indicators are return on assets (ROA) and return on equity (ROE) (Richard et al., 2009; Busch & Friede, 2018; Huynh, 2019; Del Sol & Kogan, 2007; Subramaniam & Youndt, 2005; Post & Byron, 2015; Margolis, Elfenbein & Walsh, 2007; Waddock & Graves, 1997; Esteban-Sanchez, de la Cuesta-Gonzalez & Paredes-Gazquez, 2017; Manrique & Marti-Ballester, 2017; Miroshnychenko, Barontini & Testa, 2017; Qiu, Shaukat & Tharyan, 2016; Barnett & Salomon, 2012). Using the ROE and ROA is preferred, because ROI and ROS are not likely to give detailed information about an organisation (Banker et al., 1996). It is not uncommon for researchers who study the energy sector to make use of financial measurements to measure performance (Kishimoto, Goto & Inouie, 2017; Pollitt, 2018; Lech, 2013).

2.6 CSR and performance: empirical review

In this paragraph of this thesis the effect of CSR on performance is elaborated. This relationship has been the topic of many empirical researches before, but the results are inconclusive. Previous studies showed four possible results, a positive, negative, no or a U-shaped relationship. All four of these results are elaborated on below.

2.6.1 Positive relationship between CSR and performance

The positive relationship between CSR and performance is the dominant one in research. Multiple meta-analyses have been conducted. For example Alshehhi et al., (2018) reviewed 132 papers and found that 78% of these papers reported a positive relationship between CSR and performance and 6% showed a negative result. Another review by van Beurden and Gössling (2008) found that 68% of the reviewed articles showed a positive result, 6% a negative result and 26% a not significant relationship. Orlitzky, Schmidt and Rynes (2003) conducted a meta-analysis of 52 studies with a sample size of 33,878 observations and find that social responsibility and to lesser extent environmental responsibility improve financial performance. A meta-analysis by Margolis and Eifenbein (2007) used 192 effects revealed in 167 studies and found that a positive but small effect. Margolis and Walsh (2003) analysed 109 studies, of which 54 found a positive relationship between

corporate social performance and financial performance, 7 a negative relationship, 28 were not significant and 20 studies had mixed findings. A Study by Pätäri, Jantunen, Kyläheiko & Sandström (2012) analysed the relationship between a firm's sustainability effort and financial performance in the worldwide energy sector and found a positive effect of sustainability efforts and financial performance. Based on these researches a positive effect of CSR on performance can be expected.

2.6.2 Negative relation between CSR and performance

Next to the positive association between CSR and performance, there are studies that find a negative effect of CSR on performance. One of the main criticasters of investing in CSR is Friedman (1970), who argues that firms should maximize profits for their shareholders and should not waste resources to CSR because those resources can for example be used to make the firm more efficient. Friedman's view has already been elaborated on in the paragraph about agency theory. As discussed above, most studies find a positive result, but there are studies that find a negative result.

For example Brammer, Brooks and Pavelin (2006) find a negative relationship between CSR and stock returns for UK quoted companies, which shows that CSR expenditures are destructive for shareholders. Similarly López, Garcia & Rodriguez (2007) found a negative short-term result between CSR and multiple accounting indicators at two groups of 55 European firms studied from 1998 until 2004. This research also concluded that this negative effect seemed to reduce over time. Research by Oberndorfer, Schmidt & Wagner (2013) also confirmed this negative relation between CSR and performance. In this research German firms were analysed for the years 1999-2002. The analyses showed that if firms are included in the Dow Jones sustainability index this leads to strong negative impacts. Based on these researches firms should minimize the amount of resources used for CSR activities. More reviewed literature can be found in table 9 Appendix 1.

2.6.3 Neutral and U-shaped relation between CSR and performance

The studies mentioned above all found a relationship between CSR and performance, but not all studies do. McWilliams and Siegel (2001) argue that in equilibrium there should be no relationship between CSR and performance. According to them CSR is just one of the attributes of a firm, like many attributes, and a firm chooses the level of this attribute that maximizes the firm's performance. Research by Aupperle, Carroll & Hatfield (1985) also argues there is no relationship between social responsibility and profitability. This research developed a survey based on Carroll's pyramid (1979) to measure CSR and found no relationship between CSR and financial measures. A conclusion of this research is that CSR is not beneficial, but also not harmful. Aras, Aybars & Kutlu (2010) analysed Istanbul stock exchange companies and found that there is a relationship between firm size and CSR, but no relationship between CSR and financial performance. Nelling and Webb (2009) also analysed

the relationship between CSR and financial performance and found that when using traditional statistical techniques there is a relation between both variables. However, when using a time series fixed effects approach there is a much weaker relationship between both variables. According to Nelling and Webb (2009) CSR does not affect financial performance.

A study by Barnett and Salomon (2012) found that the relationship between CSR and performance is U-shaped. This research finds that firms with low level social performance have higher financial performance than firms that have a moderate social performance and that firms with high social performance have the highest financial performance. Brammer and Millington (2008) also find a u-shaped relationship between social performance and financial performance. They find that firms with both unusual high and low social performance have higher financial performance than other firms. Another research by Teng, Wu and Chou (2014) finds an u-shaped relationship between environmental performance and economic performance by analysing a sample of 975 publicly traded manufacturing firms in Taiwan in the period of 1996-2008. More reviewed literature can be found in table 9 in Appendix 1.

2.7 The effect of CSR on performance

The main relationship in this thesis is the relationship between CSR and performance. As stated before the results concerning this relationship are inconclusive. In the literature review multiple theories were used to describe why firms would engage in CSR. Agency theory, as discussed by Friedman (1970) states that firms should not invest resources in CSR because these resources can be used on better ways. Firms should only invest in activities that maximize the profit for the shareholders. Based on agency theory the expectation is that CSR activities have a negative effect on performance. However, as stated before in this chapter, most literature expects a positive effect of CSR activities on performance. This expectation can be explained using resource-based view and stakeholder theory.

Resource-based view states that resources of a firm can help to develop a sustainable competitive advantage (Barney, 1991; Wernerfelt, 1984). These resources can be tangible and intangible, for example capital, human capital or reputation. CSR activities can be used to increase reputation (Surroca et al., 2010; Stuebs & Sun, 2010; Vilanova et al., 2009). Based on resource-based view reputation can help to create a competitive advantage. Thereby, evidence was found that CSR has a positive effect on intangible resources, including organisational culture, human resources and innovation, which lead to a better performance (Surroca et al., 2010).

Based on stakeholder theory the expectation is also that CSR activities positively affect performance. Stakeholder theory states that firms take actions based on pressure exerted by stakeholders (Jawahar & McLaughlin, 2001). Stakeholders can either help or damage the firm (Frynas

& Yamahaki, 2016). Firms that engage in CSR have got higher stakeholder satisfaction, which results in a stronger stakeholder-company relationship (Bhattacharya, Korschun & Sen, 2009; Aver & Cadez, 2009; Galant & Cadez, 2017). Firms that are sensitive to stakeholder concerns are usually rewarded by investors and other key stakeholders (Frynas & Yamahaki, 2016). This strong relationship can for example help firms to attract talented employees, increase employee motivation and customer satisfaction, lower the cost of capital and satisfy suppliers which may provide discounts (Bhattacharya, Sen & Korschun, 2008; McGuire, Sundgren & Schneeweis, 1988; Galant & Cadez, 2017).

Based on empirical studies the expectation is also that there is a positive relationship between CSR and performance (See paragraph 2.5.1). Consequently, the first hypothesis of this thesis is:

H1: Corporate Social Responsibility positively affects firm performance

2.8 Board gender diversity

In this paragraph the variable board gender diversity is elaborated on. First the relation between board gender diversity and performance is discussed. The second part of this paragraph discusses the moderating effect of board gender diversity on the relation between CSR and performance.

2.8.1 Board gender diversity and performance

In the past decade the relationship between board gender diversity and performance has been receiving more attention by academics, interest groups and policymakers (Labelle, Francoeur & Lakhal, 2015; Mahadeo, Soobaroyen & Hanuman, 2012). It has been the subject of multiple researches, but the evidence is inconclusive (Post & Byron, 2015). Multiple theoretical lenses are used in these researches, for example agency theory (Hillman & Dalziel, 2003), social identity theory (Ashforth & Mael, 1989) and upper echelons theory (Hambrick, 2007). In this thesis resource based view is used to analyse the relationship between board diversity and firm performance.

The board is the highest decision making body of a firm. It is responsible for multiple tasks, like designing, implementing and selecting corporate strategies (Ruigrok, Peck & Keller, 2006). A well-functioning board is expected to create value, increase reputation and increase performance (Bertoni, Meoli & Vismara, 2014). There are multiple arguments to expect board gender diversity to affect performance. These arguments are based on the proposition that firms who do not succeed in selecting the right candidate for a board function, damage their financial performance (Campbell & Mínguez-Vera, 2008). The first argument is that a more diverse board has a better understanding of the market. This may lead to an increased ability to penetrate markets (Robinson & Dechant, 1997).

Secondly, board gender diversity has been related with creativity and innovativity. Creative and innovative personality characteristics are not the same for every person, in fact these characteristics vary with demographic variables such as gender (Campbell & Mínguez-Vera, 2008; Burke, 2003). Besides that, greater diversity can also contribute to a bigger problem-solving ability, as more different perspectives within a board can lead to taking more alternatives into account. This can lead to improved decision making (Robinson & Dechant, 1997). Finally, gender diversity has gained a lot of attention the past decades (Labelle et al., 2015). If a firm's board is more gender diverse it can have a positive effect on reputation and customer's behaviour, which can lead to a competitive advantage and a better performance (Smith, Smith & Verner, 2006; Hillman & Dalziel, 2003; Bear, Rahman & Post, 2010).

Based on the argumentation as elaborated on above the expectation is that board gender diversity has a positive effect performance. Besides, board gender diversity has been linked to a higher performance in multiple researches before (Nguyen & Faff, 2012; Singh, Vinnicombe, & Johnson, 2001; Campbell & Minguez-Vera, 2010; Erhardt, Werbel & Shrader, 2003) and a meta-analysis by Post and Byron (2015) also indicated a positive relation between board gender diversity and firm performance. This results in the following hypothesis:

H2: Board gender diversity positively affects firm performance.

2.8.2 The moderating effect of board gender diversity

In this section the moderating effect of board gender diversity on the relationship between CSR and performance is elaborated. There are several ways board gender diversity moderates this relationship. Firstly, a more gender diverse board increases reputation of a firm (Hillman & Dalziel, 2003; Bear, Rahman & Post, 2010). The same applies to CSR, it increases firm reputation (Surroca, Tribó & Waddock, 2010; Stuebs & Sun, 2010; Vilanova, Lozano & Arenas, 2009). Board gender diversity and CSR therefore strengthen each other which could result in an even more increased reputation, which can lead to a higher firm performance (Fombrun & Shanley, 1990; Roberts & Dowling, 2002; Shamsie, 2003; Boyd, Bergh & Ketchen Jr., 2010).

The second argument is based on the assumption that more gender diverse boards are more creative and innovative and thereby take more perspectives into account (Campbell & Mínguez-Vera, 2008; Robinson & Dechant, 1997). This leads to improved decision-making, also concerning CSR. Creativity and innovation are important to strengthen CSR performance (Visser, 2014).

Thirdly, firms that have a more female board members are more likely to have a higher CSR performance (Boulouta, 2013; McGuinness, Vieito & Wang, 2017; Byron & Post, 2016). This may be the result of women being more likely to enact in female stereotypical behaviour, like care-taking,

empathy and more social sensitivity (Boulouta, 2013). This higher CSR performance can lead to higher firm performance.

Based on the arguments elaborated on above the following hypothesis is developed:

H3: Board gender diversity positively moderates the relation between CSR and firm performance

2.9 Financial leverage

Since the work of Modigliani and Miller (1958) capital structures decision have been one of the most discussed topics among academics and practitioners in corporate finance (Dey, Hossain & Rahnman, 2018). Modigliani and Miller (1958) state that if markets are perfectly competitive, firm performance is not influenced by the capital structure. The assumptions of this theory are for example that there are no transaction costs, no corporate taxes and a perfect capital market. These assumptions however do not hold in the real world (Yazdanfar & Öhman, 2015; El-Sayed Ebaid, 2009). This led to many studies introducing new rationales to find evidence that capital structure does affect firm performance (e.g. Jensen and Meckling 1976).In this paragraph the relation between financial leverage and financial performance will be elaborated on. First the direct effect of leverage on financial performance will be discussed. Secondly, the moderating effect of financial leverage on the relationship between CSR and financial performance will be elaborated.

2.9.1 The direct effect of financial leverage on performance

The financial leverage literature is dominated by two theories, which are trade-off theory and pecking order theory (El-Sayed Ebaid, 2009). These two theories will be elaborated on bellow. Trade-off theory will be elaborated on first, followed by pecking order theory.

Trade-off theory states that an optimal leverage can be determined by balancing the different costs and benefits of debt financing (Kraus & Litzenberger, 1973; Scott, 1977; Kim, 1978; Harris & Raviv, 1991). At a balanced point the debt ratio corresponds to the point where the marginal benefits of debt equal the marginal costs of debt (Serrasqueiro, Armada & Nunes, 2011). Benefits of debt can be tax shields and reduction of agency costs (Williams; 1987; Modigliani & Miller, 1963; Grossman & Hart, 1982). High leverage can, according to this theory, also contribute to firm performance by reducing conflicts between shareholders and management concerning risk, investment strategy and free cash flow (Jensen & Meckling, 1976; El-Sayed Ebaid, 2009; Myers, 1977; Jensen, 1986). There is also a down side on debt financing. A firm with higher leverage has less protection for creditors in case of bankruptcy (El-Sayed Ebaid, 2009). Though several researches state that the benefits outweigh the bankruptcy costs (Warner 1977; Miller, 1977). Thereby, several

researchers have found a positive effect of debt financing on firm performance, which is in line with this theory(E.g. Abor, 2005; Dessi & Robertson, 2003; Roden & Lewellen, 1995; Berger & Di Patti, 2006)

The second theory that dominates the literature concerning the relationship between financial leverage and performance is pecking order theory. In contrast to trade-off theory, there is no optimal level of debt according pecking order theory (Myers & Majluf, 1984; Serrasqueiro et al., 2011). Pecking order theory assumes that there is an information asymmetry between management and shareholders of companies, about the investment options of a company. This information asymmetry may lead to undervaluation by the market of new shares relative to the value that could be achieved if this information asymmetry did not exist. In that case shareholders would have the same information as management and value would be higher (El-Sayed Ebaid, 2009). Issuing new shares is according this theory harmful for existing shareholders. Therefore managers prefer internal financing instead of external financing and debt financing instead of equity financing, but only when external funding is unavoidable (Myers, 1984). According to this theory, firms that have a high performance are expected to have used less debt in their capital structure than firms that have a lower performance. Multiple researches confirmed this theory (E.g. Wiwattanakantang, 1999; Wald, 1999; Fama & French, 2002; Zeitun & Tian, 2014; Soumadi & Hayajneh, 2012; Onaolapo & Kajola, 2010; Minton & Wruck, 2002).

As discussed above, evidence concerning the relationship between financial leverage and firm performance is mixed. Trade-off theory suggests a positive relation between these two variables and pecking order theory suggests a negative relationship. Based on the reviewed literature there is more evidence for pecking theory. This leads to the following hypothesis:

H4: Firm financial leverage negatively affects firm performance.

2.9.2 The moderating effect of financial leverage

In this section the moderating effect of financial leverage on the relationship between CSR and performance is elaborated on. Firms that borrow money have more money to invest, and also to support CSR activities. This can be a risk because managers can over-invest in CSR for private benefits (Zweibel, 1996; Jensen, 1986; Bamea & Rubin, 2010; Moussu & Ohana, 2016; Petrenko et al., 2016). But it can also be positive to invest money to support CSR activities. Participating in CSR activities can enhance the relationship with multiple stakeholders (McWilliams & Siegel, 2001). This stronger relationship can help to reduce firm risk (Boutin-Dufresne & Savaria, 2004). Low levels of CSR investment may increase financial risk and high levels of CSR investment can reduce this risk because of the more stable relations with stakeholders, which may lower the chance of bankruptcy

(Hammond and Slocum, 1996; McGuire et al., 1988; Byron & Post, 2016). Lower risk can have a positive impact on performance (Aebi, Sabato, Schmid, 2012). Thereby CSR activities can help to reduce the cost of capital, which contributes to better performance (Ghoul, Guedhami, Kwok & Mishra, 2011; Post & Byron, 2016). Finally, increased dependence on debt can help firms to increase CSR activities to meet the expectations by multiple shareholders, for example the creditors (Osazuwa & Che-Ahmad, 2016; Roberts, 1992).

Based on the argumentation as described above, it is expected for financial leverage to positively moderate the relationship between CSR and performance.

H5: Financial leverage positively moderates the relationship between CSR and firm performance

2.10 Conceptual model

In this literature review five hypotheses were developed, which means five relationships are being analysed. These hypotheses are shown in figure 2.Three variables are expected to have a direct influence on performance. CSR and board gender diversity are expected to have a positive effect on performance and financial leverage is expected to have a negative effect on performance. Thereby two moderating effects are analysed. These are the moderating effects of board gender diversity and financial leverage on the relationship between CSR and performance. Both of these moderating effects are expected to be positive. In the next chapter the research methodology of this thesis is elaborated.

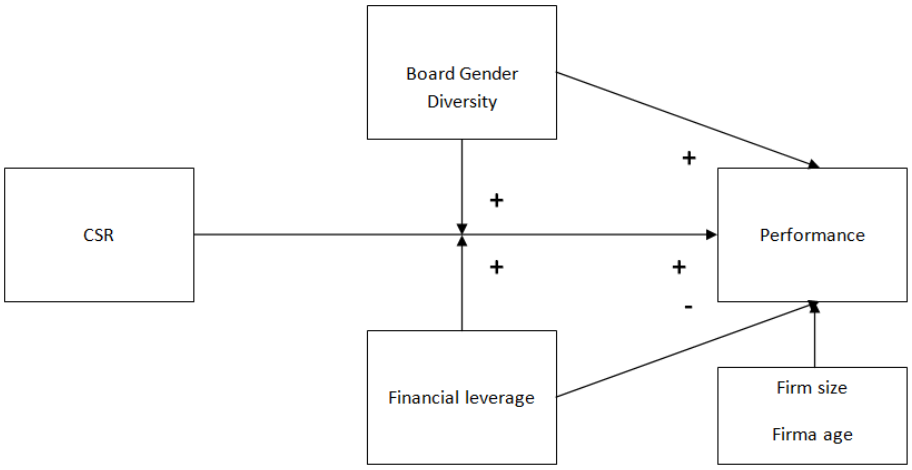

Figure 2: Conceptual model.

Chapter 3 – Research Methodology

In this third chapter the research methodology will be discussed. The first paragraph discusses the methodology. The second paragraph elaborates on the research sample, which is used in the analyses of this research. Paragraph 3.3 discussed the operationalisation of the central concepts that are used. In this part the control variables will be described as well. In the last paragraph the models will be elaborated on.

3.1 Methodology

3.1.1 Regression analysis

In the study the choice is made to use a quantitative research methodology. This choice is made based on the research question as stated in chapter one. The explanatory type of research question can be answered by using a quantitative research methodology. Using a deductive quantitative research methodology theory and hypotheses can be tested. An advantage of quantitative research is that it is easier to collect information of more organisations than it would be while using a qualitative approach. A bigger sample can lead to more valid results (Van Thiel, 2015).

The statistical technique that is used to test the hypotheses as developed in chapter two is a multiple regression analysis. These analyses are conducted using *IBM SPSS 24*. Regression analysis is a statistical dependence technique that can be used to predict a dependent variable by one or multiple independent variables (Hair, Black, Babin & Anderson, 2013). In the this case a multiple regression is used, because there a multiple independent variables. Regression analyses is a popular technique that is often used in all kinds of researches and thus also in management research. An analysis of 132 top-tier papers by Alshehhi et al. (2018) concerning the relationship between sustainability/CSR and financial performance, showed that 48 researches out of those 132 papers used a regression analysis. The second most used method based on the analysis by Alshehhi et al. (2018) is a survey, with 11 counts. This shows that regression analysis is a common method for analysing the relationship between CSR and performance.

Regression is also used in studies that are analysing moderating effects on the relationship between CSR and financial performance. For example Peng and Yang (2014) examine the moderating effect of ownership concentration with a regression analysis. Another example is the research by Kabir and Thai (2017), which investigates the moderating effects of foreign and state ownership, board size and board independence with regression analysis.

3.2 Sample

The focus of this research is the European energy sector. In the second chapter of this thesis the European energy sector was described based on NACE codes. These NACE codes work as an sample restriction, which is a commonly used method (Weiner, 2005). The NACE codes belonging to the European Energy sector had to be converted to SIC codes because the database that contains CSR information only accepts these codes. The NACE codes were converted to SIC codes with ORBIS. When this was done, the SIC codes were used to retrieve CSR information from the *Assets4* ESG database.*Asset4* is a database that contains data about CSR activities of all kinds of firms. This database will be elaborated in paragraph 3.3.2.When searching in the database *Asset4* for organisations with the SIC codes that were converted from NACE codes as mentioned in table 1, 199 companies with an ESG score were found.

3.2.1Data collection

In this research two analyses with performance as dependent variable are conducted. For the main analysis the data of all companies is collected for a single year. The year of which CSR data and data for the other independent variables was collected is 2016 (t-0). The data for performance was also collected for the year 2016 (t-0). Following Simionescu & Gherghina (2014), Lech (2013), Brine, Brown & Hackett (2007) and Santis, Albuquerque & Lizarelli, 2016; Hussain, Rigoni & Cavezzali, 2018). Next to this analysis there is an analysis that uses a one year time lag. In this analysis the data for the independent variables is collected for the year 2016 (t-0). The data for performance and the control variables is collected for the year 2017 (t+1). This time lag is a method that is used frequently in performance research (e.g. Barnett & Salomon, 2012; Kabir & Thai, 2017; Waddock & Graves, 1997; Yu & Zhao, 2014; Isidro & Sobral, 2015; Karagiorgos, 2010). A time lag is common in performance research, because it may take some time before a change in the independent variables can lead to a change in performance.

3.3 Operationalisation of measurement

In this part of this thesis the variables as shown in the conceptual model will be operationalised. The objective of operationalising variables is to make the variables measurable (Swanborn, 1987). This is especially important for deductive research (Van Thiel, 2015). The dependent variable will be operationalised first, followed by the independent variable, moderating variables and control variables.

3.3.1 Dependent variable: performance

The dependent variables of this research is organisational performance. As discussed in the literature review, it is common in management research to use financial indicators to measure performance (Richard et al., 2009). This is also the case in the energy sector (Kishimoto, Goto & Inouie, 2017; Lech, 2013; Pollitt, 2018; Akhtar, Javed, Maryam & Sadia). An indicator that is often used is the Return on assets (ROA) (E.g. Arthaud-Day, Certo, Dalton & Dalton, 2006; Fiss & Zajac, 2006; Lavie & Rosenkopf, 2006; Rodriguez-Fernandez, 2016; Rettab, Brik & Mellahi, 2009; Giannarakis, Konteos, Zafeiriou & Partalidou, 2016; Waddock & Graves, 1997). This research will make use of the ROA to measure performance. The ROA is the ratio of earnings available to common stockholders to the firm's assets (Richard et al., 2009). It is calculated by dividing the net income of a company by the total value of the assets. Data concerning the ROA is collected at the database *Eikon*.

Another performance indicator that is often used in management research is the return on equity (ROE) (Subramaniam & Youndt, 2005; Balabanis, Philips & Lyall, 1998; Albertini, 2013; Wade, Porac. Pollock & Graffin, 2006; Richard et al., 2009; Shen & Chang, 2008; Waddock & Graves, 1997; Rodriguez-Fernandez, 2015). This research will also make use of the ROE to measure performance, which means two dependent variables are used. The ROE measures how much the firm is generating for its owners (Richard et al., 2009). It is calculated by dividing the net profit by the book value of shareholders equity. Data concerning the ROE is collected at the database *Eikon.*

Variable	Proxy	Measurement	
Performance	Return on Assets	Net income divided by total assets	Simionescu & Gherghina, 2014; Lech, 2013; Brine, Brown & Hackett, 2007; Santis et al., 2016; Hussain et al., 2018
	Return on Equity	Net profit divided by the book value of shareholders equity	Simionescu & Gherghina, 2014; Lech, 2013; Brown et al., 2007; Santis et al., 2016; Hussain et al., 2018
	Return on assets one year lagged	Net income divided by total assets	Kabir & Thai, 2017; Barnet & Salomon, 2012; Isidro & Sobral, 2015; Elsayed & Paton, 2005; Waddock & Graves, 1997; Mahoney & Roberts, 2007; Rodriguez & Cruz, 2007; Hirigoyen & Poulain-Rehm, 2015
	Return on equity one year lagged	Net profit divided by the book value of shareholders equity	Waddock & Graves, 1997; Kabir & Thai; Mahoney & Roberts, 2007; Hirigoyen & Poulain-Rehm, 2015

Table 2: Dependent variable performance.

3.3.2 Independent variable: Corporate Social Responsibility

The main independent variable in this research is CSR. There are multiple ways to measure CSR, for example content analyses, indexes, rankings or questionnaire-based surveys (Galant & Cadez, 2017). First of all it is important to decide what dimensions of CSR are measured. In this thesis CSR is

measured with two dimension, which are the social dimension and environmental dimension. This bi-combination is a more often used method (Alshehhi et al., 2018; Verbeeten et al., 2016; Gallego-Alvarez, Prado-Lorenzo, Rodríguez-Domínguez, & García-Sánchez, 2010; Liang & Renneboog, 2017; Qiu et al., 2016).

In this research the decision was made to use a measure of CSR based on scores. The advantage of using scores is, in contrast to for example surveys and content analysis, that the results are more generalizable and are less biased by participants (Malik, 2015). Multiple researches have used scores as measure of CSR before (E.g. Kim & Kim, 2014; Waddock & Graves, 1997; Jo & Na, 2012; Wang, Hsieh & Sarkis, 2018; Liang & Renneboog, 2017; Scholtens 2008; Qui et al., 2016).

Several different databases provide CSR data. One often used database for CSR measures is the Kinder, Lynderberg, Domini Research and Analytics (KLD) database (Chatterji, Durand, Levine & Touboul, 2016). However, the KLD database mainly provides data for listed US companies (Miroshnychenko et al., 2017) and since the sample of this research consists of firms in the European energy sector the KLD database might not be the best option. A widely used alternative is the *Asset4* database by Thomson Reuters (Liang & Renneboog, 2017; Gutsche, Schulz & Gratwohl, 2017; Mervelskemper & Streit, 2017; Chatterji et al., 2016; Manrique & Marti-Ballester, 2017; Miroshnychenko et al., 2017; Esteban-Sanchez et al., 2017; Cheng, Ioannou, Serafeim, 2014; Qiu et al., 2016). This database has a more representative population of publicly traded companies worldwide (Miroshnychenko et al., 2017). Table 10 in Appendix 2 gives an overview of the methodology some previous researchers used that examined the relationship between sustainability or CSR and performance. As can be seen different measures and data sources of CSR are used, but several researches make use of the *Asset4* database.

As stated before, data concerning the CSR performance of a firm can be found in the database *Asset4.* This database can be accessed through the Datastream software of Thomson Reuters. The *Asset4* database contains an environmental, social and governance (ESG) framework based on 250 key performance indicators (KPI) and is one of the most comprehensive sources of ESG data (Bonne & Ribando, 2010). These KPIs are used to construct an ESG score for all individual companies in the database. The overall score of each firm consists of three dimensions, which are the environmental, social and governance dimension. This means that each company has a total ESG score, but all individual dimension scores are also available.

As stated above this research makes use of the environmental score and social score to measure CSR. The governance dimension is not used because it also includes board gender diversity, which is already used as moderating and independent variable in this research. The average of the social dimension score and environmental dimension score is used to calculate a CSR score for each firm (Cheng et al., 2014; Waddock & Graves, 1997; Waldman, Siegel & Javidan, 2006).

Variable	Proxy	Measurement	Reference
CSR	CSR score	Average of the environmental and social score	Liang & Renneboog, 2017; Gutsche, Schulz & Gratwohl, 2017; Mervelskemper & Streit, 2017; Chatterji et al., 2016; Manrique & Marti-Ballester, 2017; Miroshnychenko et al., 2017; Esteban-Sanchez et al., 2017; Cheng, Ioannou, Serafeim, 2014; Qiu et al., 2016; Alshehhi et al., 2018; Verbeeten et al., 2016; Gallego-Alvarez et al., 2010

Table 3: Independent variable CSR.

3.3.3 Moderating variables

The first moderating variable that is analysed in the research is board gender diversity. The proxy of this variable is the percentage of female board members (Campbell &Mínguez-Vera, 2008; Marinova et al., 2016; Byron & Post, 2016). This can be measured by analysing the compositions of the board of a firm. The data concerning board gender diversity can be found in the database *Asset4*. If there is data of certain firms missing, annual reports will be consulted to check if the missing data can be collected manually. The percentage female board members is calculated by dividing the number of female board member by the total amount of board member and multiply this by 100.

The second moderating variable is financial leverage. Financial leverage will be calculated by dividing the total debt by the total assets of a firm. This a method that is commonly used in management research (Waddock & Graves, 1997; Barnett & Salomon, 2012; Reverte, 2009; Cox, Brammer & Millington, 2004). The total debt and total assets of a firm can be found in the database *Eikon*.

Both moderating variables will be centered when used in the analyses. This is done by subtracting the mean of the variable of each score (Field, 2013). These centered variables will then each be multiplied with the centered CSR scores of each firm. When this is done interaction variables are created which are ready to be used in the analyses. Centering scores is done to tackle multicollinearity.

Variables	Proxy	Measurement	
Board gender diversity	Female members in the board	Percentage of female board members, calculated by the number of female board members divided by the total number of board members	Campbell &Mínguez-Vera, 2008; Marinova et al., 2016; Byron & Post, 2016
Financial leverage	Debt to assets ratio	Dividing the total debt by the total assets	Waddock & Graves, 1997; Barnett & Salomon, 2012; Reverte, 2009; Cox, Brammer & Millington, 2004

Table 4: Board gender diversity and financial leverage.

3.3.4 Control variables

In this research two control variables are used. These variables can be used to rule out alternative explanations for findings, to increase statistical power or reduce error terms (Schmitt & Klimoski, 1991; Schwab, 1999). The control variables that are used in the thesis are firms size and firm age. Firms size will be elaborated on first, followed by firm age.

Firm size is a variable that is often used as control variable in the relationship between CSR and financial performance (Lu, Chau, Wang & Pan, 2014; Andersen & Dejoy, 2011; Orlitzky et al., 2003).Firms size is expected to have a positive effect on performance, because big firms have more competitive power and more capital (Fiegenbam & Karani, 1991; Akbas & Karaduman, 2012; Dogan, 2013). Firms size is commonly measured by the number of employees or total assets of a firm (Barnett & Salomon, 2012; Kabir & Thai, 2017). In this research firm size will be measured by the natural logarithm of the total assets of a firm (Karagiorgos, 2010; Orlitzky et al., 2003). Taking the logarithm of the total assets is done because the variation is large between firms in the sample. All amounts of total assets will be converted to euro. Data concerning firm size can be collected at *Eikon*.

The second control variable used in the research is firm age. This variable is also commonly used in performance research (Lu et al., 2014; Andersen & Dejoy, 2011; Coad, Segarra & Teruel, 2013; Dogan, 2013). Older firms tend to have a better financial performance, because they have more experience which is beneficial (Coad et al., 2013; Vassilakis, 2008).Besides, younger firms can experience liabilities of newness, which can lead to more failures (Stinchcombe, 2000). Firm age will be measured using the logarithm of the amount of years since the firm was founded, because there is a lot of variation between the firms. The data will be retrieved at *Eikon*.

Variables	Proxy	Measurement	Reference
Firm size	Size of the firm	Logarithm total assets	(Lu et al., 2014; Andersen & Dejoy, 2011; Coad et al., 2013; Karagiorgos, 2010; Orlitzky et al., 2003)
Firm age	Years since foundation of the firm	Logarithm of the number of years since the firm was established	(Lu et al., 2014; Andersen & Dejoy, 2011; Coad, Segarra & Teruel, 2013; Dogan, 2013)

Table 5: Control variables.

3.4 Models

Based on the operationalisation as described above the following models will be used to test the five hypotheses as described in chapter two. In these equation βi represents the coefficient and εi the error term (Field, 2013).The letter β_t specifies the year of which data was collected for that specific variable. The equation for the main analysis will be the following:

$$\textbf{PERFORMANCE}_{t-0} = \beta 0 + \beta 1 \text{CSR}_{t-0} + \beta 2\ BOARD\_GENDER\_DIVERSITY_{t-0} + \beta 3\ FINANCAL\_LEVERAGE_{t-0} + B4\ CSR_{t-0} * BOARD\_\text{GENDER\_DIVERSITY}_{t-0} + \beta 5 CSR_{t-0} * FINANCIAL\_LEVERAGE_{t-0} + \beta 6 FIRM\_SIZE_{t-0} + \beta 7 FIRM\_AGE_{t-0} + + \varepsilon i.$$

The equation for the analysis that used a one year lag will be the following:

$$\textbf{PERFORMANCE}_{t+1} = \beta 0 + \beta 1 \text{CSR}_{t-0} + \beta 2\ BOARD\_GENDER\_DIVERSITY_{t-0} + \beta 3\ FINANCAL\_LEVERAGE_{t-0} + B4\ CSR_{t-0} * BOARD\_\text{GENDER\_DIVERSITY}_{t-0} + \beta 5 CSR_{t-0} * FINANCIAL\_LEVERAGE_{t-0} + \beta 6 FIRM\_SIZE_{t+1} + \beta 7 FIRM\_AGE_{t+1} + + \varepsilon i.$$

So far in this chapter the research methodology of this thesis is elaborated and the operationalisation of the variables is discussed. Now this is done, the next chapter will present the results of the analyses that are conducted.

Chapter 4 – Results

This chapter will present the results of this research. First of all the preparation of the data is elaborated on, which is necessary before conducting the analyses. Next the assumptions of multiple regression are discussed and tested. In the third paragraph the descriptive statistics are presented and discussed. Following the descriptive statistics the results of the multiple regression analyses are presented. This chapter will end with a short summary of the results.

4.1.2 Outliers and influential cases

Before testing the assumptions and conducting the multiple regression analyses the collected data has to be prepared. Data can for example contain outliers. Outliers are one or multiple observations that are very different from the other observations (Field, 2013). There are various ways to identify outliers, in this research boxplots were used. These boxplots showed that the variables ROA and ROE contained extreme outliers. All cases that contained extreme outliers were checked on suspicious data, but no suspicious data was found. One way to deal with outliers is to winsorize the data (Reifman & Keyton, 2010; Ghosh & Vogt, 2012; Field, 2013). This technique was used to mitigate the effect of the extreme scores for the variables ROA and ROE for both the main and the one year lagged analysis. The variables ROA and ROE were winsorized at the 5th and 95th percentiles in the main analysis, following Giroud, Mueller, Stomper & Westenkamp (2010) and Gosh & Vogt (2012). In the analysis with a one year time lag the ROA and ROE were winsorized at the 2.5th and 97.5th percentiles. The ROA and ROA with a one year lag had less extreme outliers and therefore needed less winsorizing.

Besides, this research used the cook's distance test to analyse the effect of single cases on the model as a whole (Field, 2013). It measures the overall influence of one case on the complete model. According to Cook and Weisberg (1982) values greater than 1 may be a cause for concern. The cook's distance values in all analyses were far below 1, which means there are no cases that have a high influence on the model. No cases were deleted based on this test.

4.2 Regression assumptions

Regression analyses is not always the right statistical method to use. The data has to meet certain assumptions in order to conduct a regression analysis. When these assumptions are not met, the model is not able to generalize the results (Field, 2013). The assumptions data has to meet are normality and normal distributed errors, linearity, homoscedasticity, independent errors and multicollinearity (Field, 2013). These assumptions will be tested and described below.

4.2.1 Normality and normal distributed errors

The first assumption a regression analysis has to meet is the assumption of normality. Normality is important to make results from the regression analysis valid (Field, 2013). Regression analysis is method that is relatively robust to violations concerning normality (Schmidt & Finan, 2018). To check the normality skewness and kurtosis were analysed. Skewness and kurtosis values are allowed to vary between -3 and +3. The original variables of ROA and ROE had a kurtosis value that was outside this range. Both a natural logarithmic transformation and square root transformation were used in order to try to fix this, but this did not work. Therefore the decision was made to winsorize these variables as explained in paragraph 4.2.1. After winsorizing the skewness and kurtosis were within the -3 and +3 range. Firm size and firm age also had skewness and kurtosis values outside the -3 and +3 range, therefore these variables were transformed using a logarithmic transformation, following Karagiorgos (2010) and Orlitzky et al. (2003). After the transformation all values for skewness and kurtosis were within the -3 and +3 range.

The data is also checked on normally distributed errors. This means it is assumed that the residuals in the model are random normally distributed variables with a mean of 0 (Field, 2013). This assumption can be checked by analysing the histograms and normal P-P plots of regression standardized residuals. When the residuals follow the straight line perfectly normally distributed errors are assumed, however when the residuals follow a S-form the residuals are not normally distributed. For both dependent variables the normal P-P plot shows that the residuals have a bit of a deviation of the straight line. This deviating is not extreme and therefore it is assumed that the errors are normally distributed. These plots can be found in Appendix 3.1.

4.2.2 Linearity

The assumption of linearity is the most important assumption (Field, 2013). This assumption means that it is expected that the dependent variable is linearly related to the predictor variables. If this assumption is not met, the model is not valid (Field, 2013). For all variables a scatter plot was created. All scatter plots indicated a linear relationship between the dependent variables and the independent variables. These scatter plots can be found in Appendix 3.2.

4.2.3 Homoscedasticity

This assumption tests whether the variance of the residual terms are constant at each level of the predictor variable. The residual of each level of the predictors should have the same variance (Field, 2013). A scatter plot with the *ZRESID on the Y-axis and *ZPRED on the X-axis can be created to analyse the assumption of homoscedasticity. These graphs can be found in Appendix 3.3. No patterns like a funnel should be visible and the dots should be dispersed randomly in the graph. The analysis

without a one year lag that used the ROA as dependent variable shows a bit of a funnel pattern. Therefore the analysis that used this dependent variable was conducted with a weighted least squares (WLS) regression. However, after doing this WLS regression and comparing the results to the same analysis using an ordinary least squares (OLS) regression, the results of the WLS regression showed some extreme improvements in R^2 values. Therefore the decision was made to use a OLS regression. If this assumption is violated the estimates of the model parameters are still valid when using OLS, however not optimal (Field, 2013). This is something to keep in mind when interpreting the results.

4.2.4 Independent errors

Another assumption that is important in order to conduct a regression analysis is the assumption of independent errors. ''For any two observations the residual terms should be uncorrelated (i.e., independent)'' (Field, 2013, p.311). This assumption can be checked by analysing the Durbin-Watson value. The Durbin-Watson value can vary between 0 and 4, where 2 means the errors are uncorrelated. Values between 1 and 3 are considered to be acceptable. All analyses showed a Durbin-Watson value between 1.5 and 2.5, which indicates that it is unlikely there is a problem with independence of errors and therefore it is assumed that the errors are uncorrelated.

4.2.5 Multicollinearity

The assumption of multicollinearity is important if multiple predictor variables are used in a model. Multicollinearity can exist when there is a strong correlation between two or more predictor variables (Field, 2013). Multicollinearity can cause three problems: untrustworthy beta's, limited size of R and it makes it hard to assess the individual impact of each predictor. Multicollinearity can be identified by checking the variance inflation factor (VIF). The VIF value can be used to indicate linear relationships between predictor variables. VIF values of 10 or higher indicate a cause for concern. Next to the VIF value, tolerance can be used to identify multicollinearity. Tolerance values below 0.10 indicate a serious problem (Field, 2013). As described in the previous chapter the moderating variables are centred to deal with multicollinearity. The analysis showed that all VIF values were far below 10. In fact no VIF value exceeded a value of 2, which shows there is no cause for concern.

4.3 Descriptive statistics

Table 6, which can be found on the next page, provides an overview of the descriptive statistics of all variables that are used in the analysis. The mean, standard deviation, maximum and minimum can be found in this table. In Appendix 4four tables with correlations can be found. The first two tables show the correlations for the main analysis. The first table shows the correlations of the analysis where the

ROA is the dependent variable and the second table shows the correlations of the analysis where the ROE is the dependent variable. The third and fourth table show the correlations for the analyses that uses a one year lag. In the third table the ROA is the dependent variable and in the fourth table the ROE is the dependent variable.

	N	Mean	SD	Max	Min
ROA 2016	195	2.70	8.71	19.91	-28.17
ROE 2016	190	6.07	20.79	54.69	-58.03
ROA 2017	199	4.25	6.71	15.73	-12.68
ROE 2017	199	10.10	16.03	41.29	-26.54
CSR score 2016	187	66.40	25.87	95.64	4.90
Board gender diversity 2016	186	23.41	13.45	57.14	0.00
Financial leverage 2016	199	26.22	18.44	104.11	0.00
logFirm size 2017	196	15.77	1.72	19.61	11.92
logFirm age 2017	193	3.37	0.98	6.10	0.00
logFirm size 2016	199	15.82	1.84	22.10	11.57
logFirm age 2016	193	3.37	0.98	6.10	0.00

Table 6: Descriptive statistics.

4.4 Results of the analyses

In this paragraph the results of the regression analyses will be elaborated on. First the main analysis will be elaborated on, followed by the one year lagged analysis. For the main analysis table 7 and 8 present the results of the regression analyses. Table 7 presents the result of the analysis with the ROA as dependent and table 8 the results of the analysis with the ROE as dependent variable. Both tables contain ten models. All of these models will be elaborated on for every table. The first regression table can be found on the next page. When the main analysis is described the one year lagged analysis is described. The tables with the results of this analysis can be found in Appendix 5.

4.4.1 Main analyses

The first model in table 7 shows the results of the regression analysis where only the control variables were included. These control variables are firm size and firm age. As can be seen in table 7

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Constant	-9.51	-5.31	-9.59	-8.86	-4.54	-4.82	-4.10	-3.53	-3.58	-2.98
	(5.71)	(5.85)	(5.72)	(5.68)	(5.83)	(5.83)	(5.80)	(5.78)	(5.80)	(5.76)
Control variables										
logFirm size 2016	0.72*	0.25	0.77*	0.81*	0.37	0.27	0.34	0.30	0.33	0.29
	(0.34)	(0.39)	(0.35)	(0.34)	(0.39)	(0.39)	(0.39)	(0.38)	(0.39)	(0.39)
logFirm age 2016	0.21	-0.24	0.18	0.10	-0.40	-0.23	-0.34	-0.41	-0.44	-0.38
	(0.64)	(0.65)	(0.64)	(0.64)	(0.66)	(0.65)	(0.65)	(0.65)	(0.65)	(0.64)
Independent variables										
CSR2016		0.07*			0.08**	0.08**	0.08**	0.07*	0.07*	0.07**
		(0.03)			(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Board gender diversity 2016			-0.03		-0.03	-0.04	-0.04		-0.02	-0.03
			(0.05)		(0.05)	(0.05)	(0.05)		(0.05)	(0.05)
Financial leverage 2016				-0.06	-0.07		-0.06	-0.07*	-0.07*	-0.06
				(0.04)	(0.03)		(0.03)	(0.03)	(0.03)	(0.03)
Moderating effects										
CSR X Board gender diversity 2016						-0.00	-0.00			-0.003*
						(0.00)	(0.00)			(0.00)
CSR X Financial leverage 2016								-0.003*	-0.003*	-0.003*
								(0.00)	(0.00)	(0.00)
R^2	0.03	0.06	0.03	0.05	0.09	0.08	0.10	0.11	0.11	0.13
Adj. R^2	0.02	0.05	0.01	0.03	0.06	0.06	0.07	0.08	0.08	0.09
F	2.37	3.82*	1.68	2.74*	3.16**	3.09*	3.16**	4.04**	3.38**	3.51**
N	177	177	177	177	177	177	177	177	177	177

Table 7: Dependent variable ROA 2016. Std. Error between parentheses. * Significant at the 0.05 level (2-tailed); ** Significant at the 0.01 level (2-tailed); * Significant at the 0.001 level (2-tailed).**

firm sizes has a positive significant effect on the return on assets ($\beta = 0.72$, $p < .05$), which indicates that bigger firms perform better. The second control variable is firm age. This variable does not show a significant effect with the return on assets($\beta = 0.21$, $p > .05$). This first model will be used as a baseline model. Both control variables will be included in the all of the following models. The F statistic however is not significant. This shows that the model is not a significant fit of the data overall.

In the second model the effect of CSR on performance is analysed. Next to the variable CSR both control variables are included in this analysis. The results show that CSR has a positive significant effect on the return on assets ($\beta = 0.07$, $p < .05$). This result indicates that firms that have a higher CSR score have a better performance, as was expected based on theory. This result shows evidence that supports hypothesis 1.

In the third model the variable board gender diversity and the two control variables are included. It analyses the effect of board gender diversity on the return on assets. The results of the analysis show that board gender diversity does not have a significant effect on performance ($\beta = -0.03$, $p > .05$). Based on this analysis there is no supports for hypothesis 2. Thereby the F value for this model is not significant, which means this model cannot be used.

The fourth model includes the variable financial leverage and two control variables. The expectation was that financial leverage would negatively affect the return on assets. Based on the results of this analysis financial leverage does not have a significant relationship with performance ($\beta = -0.06$, $p > .05$). This result shows there is no evidence for hypothesis 4.

In the fifth model all independent variables are includes, together with the control variables. The results of this model are quite similar as the previous models where the effects of the independent variables were examined one by one. In this model CSR also has a significant positive effect on performance ($\beta = 0.08$, $p < .01$), which shows evidence for hypothesis 1. The other two independent variables do not have significant effects on performance.

The sixth model examines the moderating effect of board gender diversity on the relationship between CSR and performance. This model shows a significant positive effect of CSR on the return on assets ($\beta = 0.08$, $p < .01$). This indicates there is evidence for hypothesis 1. There is no significant moderating effect of board gender diversity on the relationship between CSR and performance ($\beta = -0.003$, $p > .05$). This model does not provide evidence for hypothesis 3.

In the seventh model, next to the variables that were included in the sixth model, the variable financial leverage was added. In this model the effect of all independent variables and the effect of the moderating variable of board gender diversity are analysed. The results show that CSR positively influences the ROA ($\beta = 0.08$, $p < .01$). The other independent variables do not have a significant effect on the ROA in this model. The moderating variable of board gender diversity also

does not have a significant moderating effect (β = -0.003, p > .05). Therefore this model does not provide evidence for hypothesis 3.

The eighth model examines the moderating effect of financial leverage on the relationship between CSR and performance. The first significant effect in this model is the effect of CSR on performance (β = 0.07, p < .05), which provides support for hypothesis 1. The results of the analysis also shows there is a significant direct effect of financial leverage on performance (β = -0.07, p < .05), which indicates there is evidence that supports hypothesis 4. The results do also indicate a significant small moderating effect of financial leverage on the relationship between CSR and the return on assets (β = -0.003, p < .05). However, the expectation was that the moderating effect of financial leverage would be positive. This means this model does not provide evidence that supports hypothesis 5.

In the ninth model the effect of all independent variables and the effect of the moderating variable of financial leverage are analysed. The results show that CSR positively influences the ROA (β = 0.07, p < .05). Thereby this model provides evidence for hypothesis 4, because financial leverage has a significant negative effect on performance (β = -0.07, p < .05). However, financial leverage is only significant in two out of six models it is analysed in. Therefore the result is not consistent. The moderating variable of financial leverage is significant (β = -0.003, p <.05). The effect is negative and the expectation was that the effect would be positive. Therefore this results does not indicate evidence for hypothesis 5.

The last model includes all independent variables, all moderating variables and the control variables. The results of this analysis show that CSR also has a significant effect on performance in this model (β = 0.07, p < .05), which supports hypothesis 1. Thereby both moderating variables show a significant small negative effect (board gender diversity, β = -0.003, p < .05 and financial leverage, β = -0.003, p < .05). Both moderating effects were expected to be positive, which shows there is no support for hypotheses 3 and 5.

Both these moderating variables are plotted in a graph, which can be found on the next page. Figure 3 shows the interaction effect of financial leverage on the relationship between CSR and the ROA. Figure 4 shows the moderating effect of board gender diversity on the relationship between CSR and the ROA.

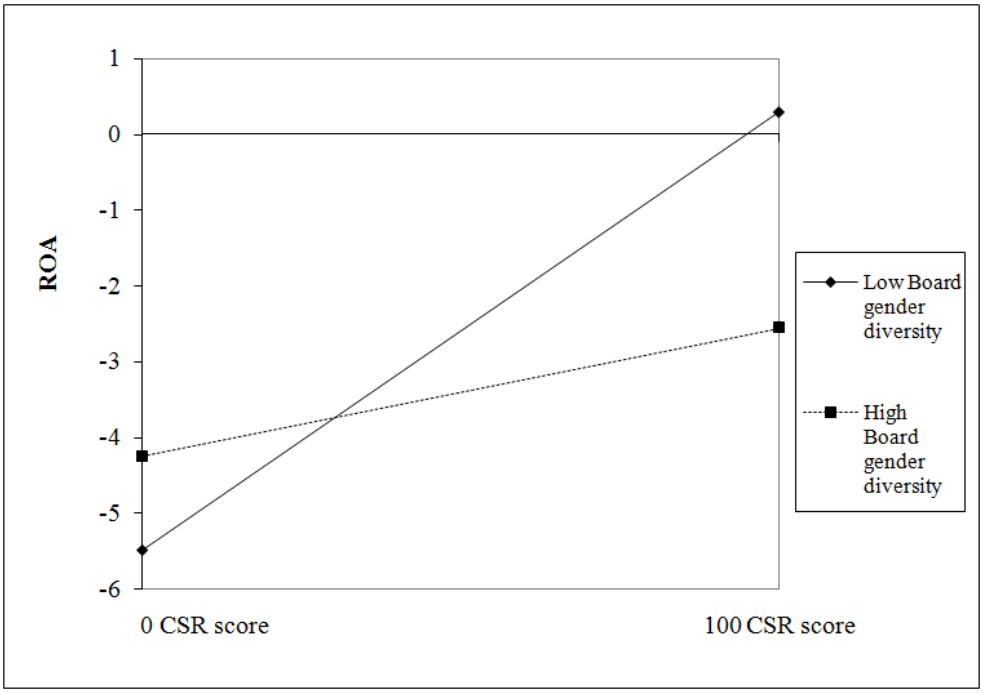

Figure 3: Moderating effect of board gender diversity on the relationship between CSR and the ROA.

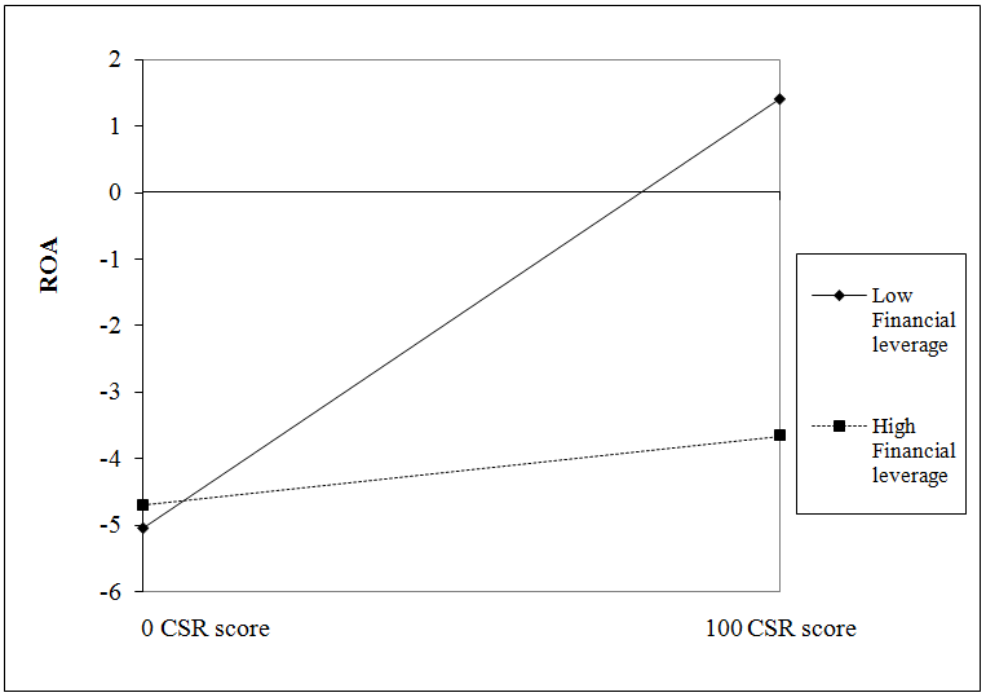

Figure 4: Interaction-effect of financial leverage on the relationship between CSR and the ROA.

Now that all eight models of the main analysis with ROA as dependent variable are described, the following part presents the results of the main analyses that uses the ROE as dependent variable. the results of this analyses can be found in table 8 on the next page.

The first model is the baseline model, where firm size and firm age are included. Neither of these control variables shows a significant positive effect on performance. The F statistic of this

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Constant	-19.85	-8.76	-19.85	-19.97	-8.87	-8.09	-8.26	-8.89	-8.90	-8.43
	(14.36)	(14.60)	(14.40)	(14.42)	(14.70)	(14.32)	(14.37)	(14.85)	(14.89)	(14.56)
Control variables										
logFirm size 2016	1.67	0.38	1.66	1.64	0.37	0.33	0.30	0.36	0.37	0.30
	(0.86)	(0.95)	(0.88)	(0.87)	(0.98)	(0.95)	(0.96)	(0.97)	(0.99)	(0.96)
logFirm age 2016	-0.32	-1.41	-0.34	-0.32	1.40	-1.22	-1.19	-1.39	-1.39	-1.17
	(1.57)	(1.58)	(1.58)	(1.58)	(1.60)	(1.56)	(1.57)	(1.61)	(1.62)	(1.59)
Independent variables										
CSR2016		0.19**			0.20**	0.21**	0.21**	0.20**	0.20**	0.21**
		(0.07)			(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Board gender diversity 2016			0.00		-0.01	-0.04	-0.04		-0.01	-0.05
			(0.12)		(0.12)	(0.11)	(0.11)		(0.12)	(0.12)
Financial leverage 2016				0.02	0.02		0.03	0.02	0.02	0.03
				(0.09)	(0.09)		(0.09)	(0.09)	(0.09)	(0.09)
Moderating effects										
CSR X Board gender diversity 2016						-0.01**	-0.01**			-0.01**
						(0.00)	(0.00)			(0.00)
CSR X Financial leverage 2016								0.00	0.00	0.00
								(0.00)	(0.00)	(0.00)
R^2	0.02	0.07	0.02	0.02	0.07	0.11	0.11	0.07	0.07	0.11
Adj. R^2	0.01	0.05	0.01	0.01	0.04	0.09	0.08	0.04	0.03	0.08
F	1.91	4.02**	1.27	1.28	2.39*	4.24**	3.53**	2.39*	1.98	3.01**
N	172	172	172	172	172	172	172	172	172	172

Table 8: Dependent variable ROE 2016. Std. Error between parentheses. * Significant at the 0.05 level (2-tailed); ** Significant at the 0.01 level (2-tailed); * Significant at the 0.001 level (2-tailed).**

model is not significant, which the model is not a good predictor of the outcome. The control variables will be included in all of the following models.

The second model examines the effect of CSR on performance. The analysis shows CSR has a significant positive effect on the return on equity ($\beta = 0.19$, $p < .01$). This result shows there is support for hypothesis 1.

The third model examines the effect of board gender diversity on performance. The result of this analysis shows there is no significant effect of board gender diversity on the return on equity ($\beta = 0.00$, $p > .05$). This result indicates there is no support for hypothesis 2. Thereby the F statistic of this model is not significant, which means the model cannot be used.

The fourth model examines the effect of financial leverage on performance. The expectation was that financial leverage would negatively affect performance. As can be seen in table 8, there is no significant effect of financial leverage on the return of equity ($\beta = 0.02$, $p > .05$). Thereby the F statistic of this model is not significant, so this model cannot be used.

The fifth model examines the effect of all independent variables on performance. The results are quite similar compared to the models where the independent variables are examined one by one. This model shows there is a significant positive effect of CSR on performance ($\beta = 0.20$, $p < .01$). The other two independent variables do not have a significant effect on performance.

In the sixth model the moderating effect of board gender diversity on the relationship between CSR and performance is analysed. The expectation based on theory was that board gender diversity would positively moderate the relationship between CSR and performance. The analysis shows two significant results. Firstly, there is a significant positive effect of CSR on performance ($\beta = 0.21$, $p < .01$). This is evidence that supports hypothesis 1. Secondly, the model shows that board gender diversity has a significant negative moderating effect on the relationship between CSR and return on equity ($\beta = -0.01$, $p < .01$). This an opposed effect of what was expected based on theory, as elaborated in chapter two. Therefore no evidence that supports hypothesis 3 was found.

In the seventh model all independent variables and the moderating variable of board gender diversity are analysed. The model shows that CSR has a significant positive effect on the ROE ($\beta = 0.20$, $p < .01$). The rest of the independent variables do not show a significant relation with the ROE. The moderating effect of board gender diversity has a significant negative effect on the relationship between CSR and the ROE in this model ($\beta = -0.01$, $p < .01$). The expectation was that this effect would be positive, but as can be seen it is the other way around. This model does not present evidence that supports hypothesis 3.

The eighth model examines the moderating effect of financial leverage on the relationship between CSR and performance. The results of the analysis show that the direct effect of CSR on the return on equity is positive and significant ($\beta = 0.20$, $p < .01$). The moderating variable of financial

leverage does not show a significant moderating relationship (β = 0.00, p > .05). This means no support for hypothesis 5 was found.

The ninth model includes all independent variables and the moderating variable of financial leverage. Next to the variables that were included in the eighth model, the board gender diversity is added. The results show that CSR also has a significant positive effect on performance in this model (β = 0.20, p < .01). The other independent variables do not show a significant relationship with performance. The moderating variable of financial leverage also does not show a significant moderating effect (β = 0.00, p > .05).

The last model includes all independent, moderating and control variables. This model shows two significant effect. The first significant effect is the effect of CSR on the return on equity (β = 0.21, p < .01). This result provides evidence that supports hypothesis 1. The second significant effect is the moderating effect of board gender diversity on the relationship between CSR and the return on equity (β = -0.01, p < .01). The expectation was that the moderating effect would be positive. Therefore this result does not provide evidence for hypothesis 3. The moderating effect of financial leverage on the relationship between CSR and the return on equity is not significant. Therefore no evidence that supports hypothesis 5 was found.

As described above there is a significant negative interaction-effect of board gender diversity on the relationship between CSR and the ROE. This effect is plotted in figure 5.

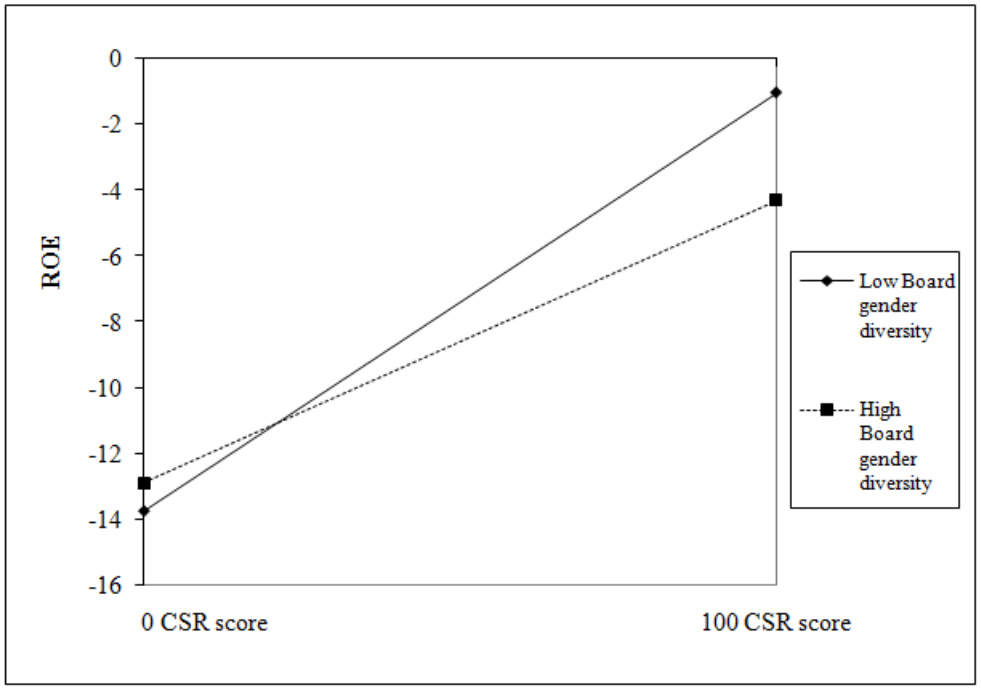

Figure 5: Moderating effect of board gender diversity on the relationship between CSR and the ROE.

4.4.2 One year lagged analyses

As described in the methodology chapter of this thesis, next to the main analysis, the analysis is conducted with a one year time lag. The analysis with a one year time lag was conducted because it may take a while before a change in an independent variable has an effect on the dependent variable, following previous researches (see methodology chapter). The way these analyses will be elaborated on is the same as for the main analysis. The regression tables for the one year lagged analyses can be found in Appendix 5. Table 15 in Appendix 5.1 presents the results of the one year lagged analysis with the ROA as dependent variable and Table 16 in Appendix 5.2 presents the results of the one year lagged analyses with the ROE as dependent variable. First the analysis with the ROA as dependent variable will be elaborated.

The first model shows the effect of the control variables, which are of firm age and firm size, on the ROA. As can be seen in table 15, firm size has a significant positive effect on the ROA ($\beta = 0.90$, $p < .01$). Firm age however does not have a significant effect on the ROA (($\beta = 0.34$, $p > .05$). These control variables will be added in every following model.

The second model includes CSR next to the control variables. The expectation was that CSR would positively influence the ROA. The results of the analysis however show that CSR does not influence the ROA ($\beta = 0.01$, $p > .05$). Therefore no evidence that supports hypothesis 1 is found.

Model three analysed the effect of board gender diversity on the ROA. The expectation based on theory was that this effect should be positive. The results show that board gender diversity negatively affects the ROA ($\beta = -0.08$, $p < .05$). This result does not provide evidence that supports hypothesis 2, because the effect was expected to be positive.

Model number four examines the effect of financial leverage on performance. The expectation was that financial leverage would negatively influence the ROA. The result of the analysis shows that there is no significant relationship between financial leverage and the ROA ($\beta = -0.01$, $p > .05$). This means no evidence that supports hypothesis 4 was found.

In the fifth model all independent variables are examined together. When adding all three of the independent variables, together with the control variables, the results do not change a lot compared to the model where the independent variables were examined one by one. CSR and financial leverage still do not show a significant relationship with performance. Board gender diversity still has a significant negative effect on performance ($\beta = -0.08$, $p < .05$). No evidence to support any hypothesis was found in this model.

The sixth model analysed the moderating effect of board gender diversity on the relationship between CSR and performance. Next to the moderating variable, the variables CSR and board gender diversity are added to the analysis. CSR does not show a significant relationship with the ROA. Board

gender diversity does show a significant negative effect on the ROA (β = -0.08, p < .05), though this was not expected based on theory. The moderating variable of board gender diversity does not show a significant moderating effect (β = 0.00, p > .05). This results shows no evidence for hypothesis 3 was found.

In model seven next all independent variables are added, plus the moderating variable of board gender diversity. As can be seen, board gender diversity has a significant negative effect on the ROA (β = -0.08, p < .05). The rest of the independent variables does not show a significant relationship with the ROA. The moderating variable of board gender diversity does not show a significant effect (β = 0.00, p > .05). No evidence for any hypothesis was found in this model.

The eighth model analyses the moderating effect of financial leverage on the relationship between CSR and performance. No significant relationship were found in this model, not for CSR or financial leverage with performance and not for the moderating variable financial leverage on the relationship between CSR and the ROA (β = 000, p > .05). No evidence that supports any of the five hypothesis is found in this model.

In the ninth model, next to the variables that were examined in model eight, board gender diversity is added. In this model the moderating effect of financial leverage is not significant (β = 0.00, p > .05). The direct effect of board gender diversity on the ROA is significant again (β = -0.08, p < .05), though this does not provide evidence to support hypothesis 2, because the effect was expected to be positive.

In the tenth model, all independent variables and both moderating variables are examined. This model does not show any surprises based on the results of the previous models. The only independent variable that shows a significant relationship with performance is board gender diversity (β = -0.08, p < .05). Besides, both moderating variables do not show significant effects (β = 0.00, p > .05).

In summary, in this analysis no evidence for any of the five hypothesis was found. An interesting finding is the significant negative effect of board gender diversity on performance in all models it is present. This however does not provide evidence for hypothesis 2, because the effect was expected to be positive.

In the previous part of this thesis the results of the analysis with a one year lag and the ROA as dependent variable were described. In the next part the analysis with a one year lag and the ROE as dependent variable will be discussed. The results of this regression analysis can be found in table 16, which can be found in Appendix 5.2.

The first model both control variables are examined. The control variable firm size shows a significant positive effect on performance (β = 2.89, p <.001). The variable Firm age does not show a

significant relationship with performance (β = 1.11, p > .05). Both of these control variables will be included in all following models.

In the second model the effect of CSR on performance is analysed. The results show that CSR does not have a significant effect on the ROE (β = 0.04, p > .05). Therefore no evidence for hypothesis 1 is found in this model.

The third model examines the effect of board gender diversity on performance. The expectation was that board gender diversity would positively affect performance, but the result show there is no significant relationship between both variables (β = -0.10, p > .05). This means no evidence that supports hypothesis 2 is found.

In the fourth model the effect of variable financial leverage on performance is analysed. The expectation as that financial leverage would negatively affect the ROE. As can be seen in the table, there is no significant relationship between financial leverage and the ROE, which means no evidence was found to support hypothesis 4.

In the fifth model all independent variables are included to examine their effect on performance. The results do not change a lot compared to the models that analysed the individual effects of the independent variables on the ROE. No significant relationships were found.

Model number six analyses the moderating effect of board gender diversity on the relationship between CSR and performance. The expectation was that board gender diversity would have a positive moderating effect on this relationship, but as can be seen in the table no significant moderating effect of board gender diversity on the relationship between CSR and the ROE was found (β = 0.00, p > .05). This result indicates there is no evidence to support hypothesis 3. Thereby no independent variable shows a significant relationship with the ROE in this model.

In the seventh model, next to the variables that were included in the previous model, the variable financial leverage is added. This does not influence the results. Still no significant relationships between the independent variables and the ROE was found. Thereby the moderating variable of board gender diversity remains insignificant (β = 0.00, p > .05).

In the eight model the moderating effect of financial leverage on the relationship between CSR and performance is analysed. The expectation was that financial leverage would positively moderate this relationship. The results however do not provide evidence to support hypothesis 5,because no significant moderating effect of financial leverage was found (β = 0.00, p > .05). The independent variables also do no show significant relationships.

The ninth model includes, next to the variables that were included in the previous model, the variable board gender diversity. When adding this variable the results do not change. Still no significant moderating effect on the relationship between CSR and the ROE or direct effects on the ROE were found.

The final model analyses all independent variables and both moderating effects. Based on the results of the analysis no evidence to support any of the five hypothesis were found in this model.

In summary, no significant relationships were found in the analysis that used a one year lag with the ROE as dependent variable. This means no evidence for any of the five hypothesis was found.

4.5 Summary of the results

In this chapter the results of this research were discussed. The results showed that in the main analyses CSR had a significant positive effect on performance, for both the ROA as ROE. This result provides evidence that supports hypothesis 1. Thereby in two models evidence was found that financial leverage negatively affects performance. Therefore hypothesis 4 is partially confirmed. Next to this result, the main analysis showed that financial leverage and board gender diversity both negatively moderated the relationship between CSR and performance. The analysis that used a one year time lag showed that board gender diversity has a negative effect on performance. In the next chapter a conclusion is drawn and the results of this research are discussed.

Chapter 5 – Conclusions

In this final chapter of this thesis a conclusion is drawn. This will be done by answering the research question as stated in chapter 1. Thereby the results are discussed and policy recommendations, limitations and possibilities for future research are given. First of all the research question will be answered.

5.1 Conclusion

This research started by pointing out that CSR has gained a lot of attention over the past decades, which is also the case for the relationship between CSR and organisational performance. Though lots of researchers have examined this relationship before, the results remained inconclusive. The objective of this thesis was to contribute to the understanding of this relationship by researching the effect of two moderating variables. The moderating variables that were analysed are board gender diversity and financial leverage. The research question that was drafted to investigate these relationships was ''*to what extend do board gender diversity and financial leverage moderate the relationship between corporate social responsibility and firm performance of companies within the European energy sector?*''.

Five hypotheses were developed and tested in this research. For every hypothesis two measures of performance were used, which are the return on assets and the return on equity. The first hypothesis examined the relationship between CSR and performance. The results show that CSR does positively influence performance when no time lag is used, for both the return on assets as the return on equity. This is conform resource-based view which expects CSR to increase reputation and conform stakeholder theory, which states CSR leads to improved stakeholder relationships. The second hypothesis examined the relationship between board gender diversity and performance. No relationship was found between board gender diversity and performance in the analysis without a time lag. However the analysis with a one year time lag showed that board gender diversity negatively influences performance, where a positive effect was expected. The third hypothesis examined the moderation effect of board gender diversity on the relationship between CSR and performance. The expectation based on theory was that board gender diversity would positively moderate this relationship. The results of the analysis showed that there was a moderating effect of board gender diversity on the relationship between CSR and performance, however the effect was negative. This means no support for hypothesis 3 was found. The fourth hypothesis examined the relationship between financial leverage and CSR. The expectation based on pecking order theory is that financial performance would negatively affect performance. The results of the main analysis showed that in two models financial leverage did negatively affect performance, which shows this

hypothesis is partially confirmed. The fifth hypothesis examined the moderating effect of financial leverage on the relationship between CSR and performance. The expectation was that financial leverage would have a positive effect on the relationship between CSR and performance, but the results of the analysis showed that financial leverage has a negative moderating effect on this relationship.

Regarding the research question, based on the results of this research it can be concluded that both board gender diversity as financial leverage negatively moderate the relationship between CSR and performance for organisation in the European energy sector.

5.2 Discussion

The main finding of this research were summarized in the paragraph above. When analysing these results some interesting findings occurred. The effect of the relationship between CSR and performance was positive, as expected, but the other relationships did not show the relationship that was expected based on theoretical assumptions. The expectation was that board gender diversity would positively affect performance (Nguyen & Faff, 2012; Singh, Vinnicombe, & Johnson, 2001; Campbell & Minguez-Vera, 2008; Erhardt, Werbel & Shrader, 2003; Post & Byron, 2015). This was expected because boards with more gender diversity are expected to be more creative, innovative and are expected to consider more alternatives and have an increased reputation. The results of the analysis without a time lag show no significant relationship was found. This result was found before by for example Rose (2007). Thereby, a meta-analysis by Pletzer, Nikolova, Kedzior & Voelpel (2015) also found there was no relationship between female board representation and performance measured by the ROA and ROE. Interestingly, when using a one year lag board gender diversity had a negative impact on performance measured by the ROA. This result has been found before when using a time lag (Daunfeldt & Rudholm, 2012). This negative effect can be caused by over-monitoring (Adams & Ferreira, 2009). More research is necessary to gain more insight in the relationship between board gender diversity and performance.

Interestingly, based on the results of this research board gender diversity does negatively moderate the relationship between CSR and performance, where the expectation was it would positively moderate this relationship. An explanation for this result could be that a more diverse board considers more alternatives, which can enhance performance as discussed in chapter two of this thesis. However in competitive environments this can be a disadvantage, because organizations should be able to react quickly and that is less likely when boards are more diverse and more alternatives have to be considered (Williams & O'Reilly, 1998; Halkos, 2019). It can slow down the decision-making process. As said before, to my best knowledge this moderating effect has not been studied before and more research is necessary.

Financial leverage was expected to have a negative relationship with performance. The expected negative relationship was based on pecking order theory, which states that firms should first use their internal resources and only when there is no other option they should use external financing. Based on this theory high performing firms are the firms with low debt levels. The results of the main analysis that used the ROA as dependent variable showed that financial leverage had a significant negative effect on performance. This result was found in two out of the six models that analysed the effect of financial leverage. Therefore the result was not consistent and more research is necessary. In the other analyses no significant relationship was found. A non-significant relationship between financial leverage and performance has been found before, by for example Yoon & Jang (2005) and Yeh (2019).

Next to the direct effect of financial leverage, the moderating effect of financial leverage on the relationship between CSR and performance was examined. The expectation was that there would be a positive moderating effect. This was based on the expectation that firms that have a higher leverage have more money to support CSR activities, which improves the relationship with multiple shareholders and this can help to reduce firm risk. The results showed that financial leverage negatively moderates this relationship between CSR and financial performance. An explanation may be that financial leverage increases risk (El-Sayed Ebaid, 2009). The risk can have a negative effect on CSR activities and performance. More research is necessary to get a better understanding of this moderating effect.

5.3 Policy recommendations

Next to the scientific contributions as discussed above, this thesis provides information for practitioners. This research shows that it is worth investing in CSR activities based on performance measures, next to the ethical aspect. If the objective of an organisation is to increase performance it is beneficial to invest in CSR, because CSR helps to increase financial performance measures.

This research also shows that if companies want to increase performance, board gender diversity and financial leverage are detrimental. Based on the results of this research both of these variables negatively influence performance. Though some caution is needed with these effects, because they were not present in all analyses and models. However based on ethical aspects board gender diversity remains an important issue.

If firms are interested in increasing performance by investing in CSR activities, financial leverage and board gender diversity should be taken into consideration. The analysis showed that both financial leverage and board gender diversity have a negative moderating influence on the relationship between CSR and performance. Therefore based on this analysis firms should carefully consider the maximum amount of debt they want to have. Next to that, firms should carefully

consider the percentage board gender that is optimal for them. Based on this analysis it has a negative moderating effect on the relationship between CSR and performance, but next to the business case of board gender diversity, there is the ethical case which is also important (Campbell & Minguez-Vera, 2008).

5.4 Limitations and future research

This research has several limitations, which gives possibilities for future research concerning this topic. First of all the sample that is used is relatively small. Although has CSR gained more attention lately, databases containing CSR data are still developing and more data is becoming available every year. The database used for this research *Asset4,* did not contain a lot organisations when using the NACE codes for the European energy sector. This database is expanding every year, so the expectation is that within a few years more and more companies will have a CSR score and bigger samples could be used for research similar to this. The dataset used for this research is also very divers. The NACE codes that were used in this thesis are not just the NACE codes that belong to the strict European energy sector, but also codes that belong to the broad energy sector were used. A reason to use the broad European energy sector is because of the limited size of the CSR database. When using the strict European energy sector the sample would be smaller. If CSR databases keep developing and expanding, then in the near future there will be enough organisations to research the strict European energy sector. So future research should use bigger sample when conducting similar research and when possible use the strict energy sector.

The second limitation concerns the variables used in this research. Both dependent variables that were used, the ROA and ROE are accounting based measures. Performance of an organisation is much more than accounting based measures and it can be operationalised in many different ways. Even when examining financial performance different measures like for example earnings per share and return on invested capital can be used. Performance can also be measured in completely different ways, for example by using customer satisfaction, since CSR and board gender diversity might not directly influence financial performance but could have a positive impact on non-financial performance. Using non-financial in addition to financial measures can contribute to a better and more complete understanding of the relationship between the variables as used in this thesis. There are also limitations concerning the independent variables. CSR score can have a value of 0 to 100 in the database that is used. All organisations that have data available in *assets4* CSR database engage in CSR. It would be interesting to compare a group that does engage in CSR to a similar group that does not engage in CSR at all and examine whether there is a difference in performance. Besides this study used the ESG framework as proxy for CSR, which is a decent proxy to measure CSR, but as discussed relatively little data is available. Future research could use multiple proxies to measure

CSR, as long as not more data is available in this database. By using several proxies a more complete understanding of the relationship between CSR and performance can be achieved.

Finally, two moderating variables were analysed that were expected to moderate the relationship between CSR and performance. These variables were board gender diversity and financial leverage. Both of them had a significant moderating effect on the relationship between CSR and performance, though the beta's are small. Therefore more research is necessary to variables that possibly also moderate the relationship between CSR and performance.

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Appendix

Appendix 1: Literature review relationship CSR and performance

Author and year	CSR type	Performance measure	Effect
Positive			
Waddock & Graves (1997)	KLD	ROA, ROE, ROS	Positive
Rettab, Brik & Mellahi (2008)	CSR survey	ROI, ROA, sales growth, profit growth	Positive
Shen & Chang (2008)	Binary variable. '1'for CSR award winner, '0' for non winner.	ROA, ROE, RPTI, RGM, EPS	Positive
Verbeeten, Gamerschlag & Möller (2016)	CSR disclosures	Share price, Return per share	Positive
Gallego-Álvarez, Prado-Lorenze, Rodríguez-Domínguez & García-Sánchez (2010)	CSR Ranking	Market value, Capital	Positive
Surroca, Tribó & Waddock (2010)	CRP rating	Tobin's Q	Positive
Kang & Liu (2014)	Binary CSR variable. '0' a firm is not represent in the top 50 and '1' if a firm is represent	ROA, ROE, Pre-tax income to net sales, GPS, EPS	Positive
Rodriguez-Fernandez (2015)	Multi dimensional measurement of CSR	ROA, ROE, Tobin's Q	Positive
Negative			
Brammer, Brooks & Pavelin (2006)	Numerical data on multiple dimension	Stock returns	Negative
López, Garcia & Rodriguez (2007)	Dow Jones Sustainability index	PBT, REV, ROE, ROA, cost of capital	Negative
Oberndorfer, Wagner & Ziegler (2013)	Inclusion in Dow jones sustainability index and world sustainability index	Stock returns	Negative
Neutral			
Ortas, Burritt & Moneva (2013)	Down jones sustainability index	Social responsible investment	Neutral
Cunha & Samanez (2013)	Corporate sustainability index	Liquidity level, return and risk indicators, Sharpe, Treynor, Sortino and Omega	Neutral

Table 9: Empirical researches concerning the relationship between CSR and performance.

Appendix 2: Previous CSR research, measurement and data source

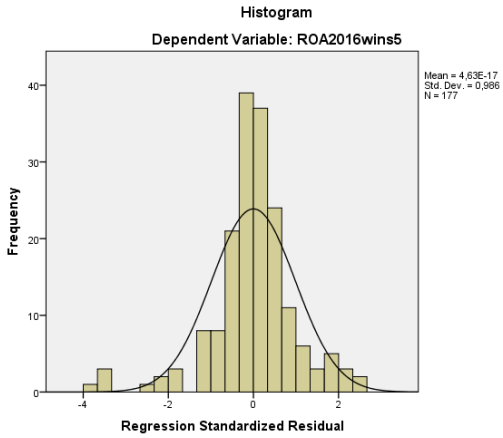
Author(s) & journal	Independent variables	Dependent variable	CSR/Sustainability data source
Esteban-Sanchez et al., 2017. *Journal of cleaner production.*	Corporate governance, relationship with employees, relationship with community, product responsibility.	ROA, ROE	Asset4
Miroshnychenko et al., 2017. *Journal of cleaner production.*	Internal pollution prevention, Green Product Index, Green Supply Management, Green Product Index, ISO.	Tobin's Q, ROE	Asset4
Manrique & Marti-Ballester, 2017. *Sustainability.*	Emission reduction, product innovation, Resource reduction.	ROA, Tobin's Q	Asset4
Gallego-Alvarez et al., 2010. *Management decision.*	Marketing, CSR marketing.	Reputation, shareholder value creation	The good ranking
Liang & Renneboog. 2017. *Journal of finance.*	Legal origin, political institutions, regulatory quality, blockholder ownership.	Firm level CSR rating	Vigeo, Asset4
Waddock & Graves. 1997. *Strategic management journal.*	Corporate social performance, corporate financial performance	Corporate social performance, ROA, ROE, ROS	KLD
Qui et al., 2016. *British accounting review.*	Environmental and social disclosure scores, environmental and social performance scores	ROE, ROA, ROS	Bloomberg, Asset4

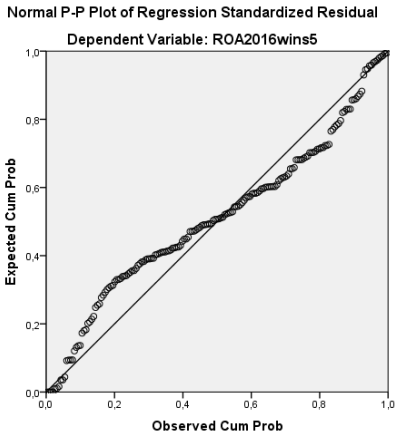
Table 10: Previous CSR research, measurement and data source.

Appendix 3: Assumption testing

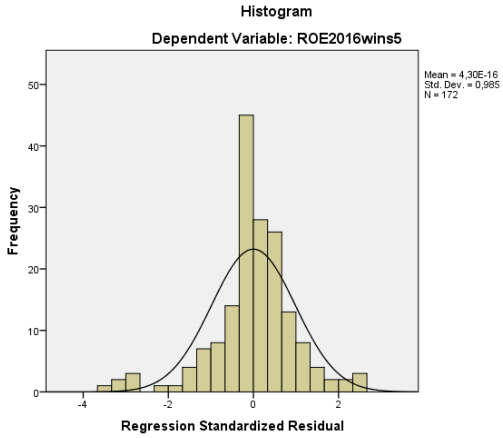
3.1 Normal distributed errors

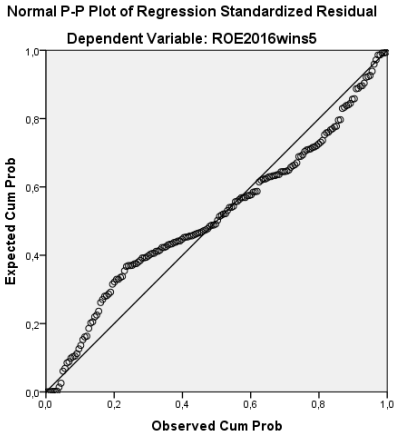
Main analysis ROA

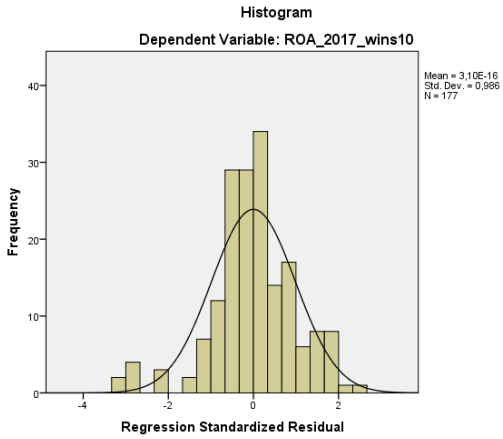


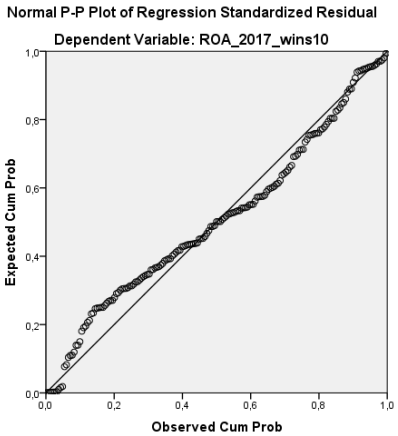


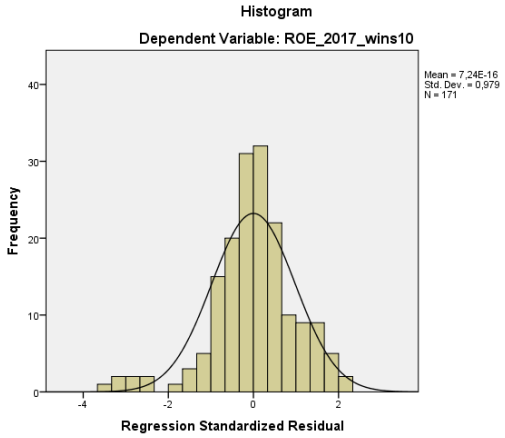
Main analysis ROE

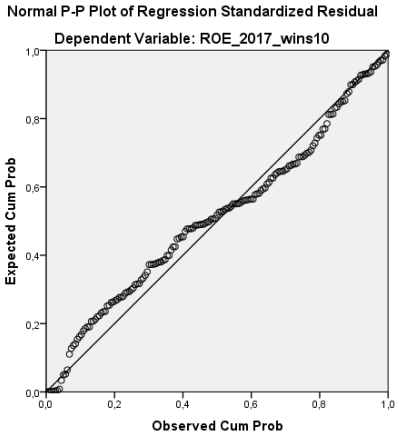






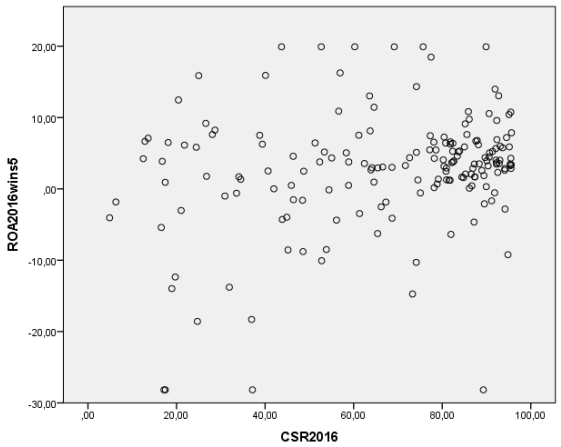


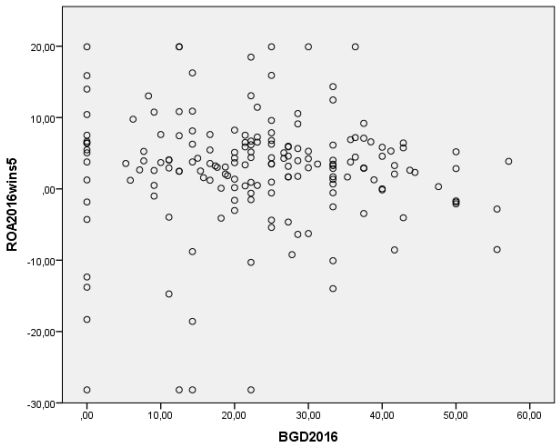

Histogram
Dependent Variable: ROE_2017_wins10
Mean = 7,24E-16
Std. Dev. = 0,979
N = 171
Frequency
Regression Standardized Residual

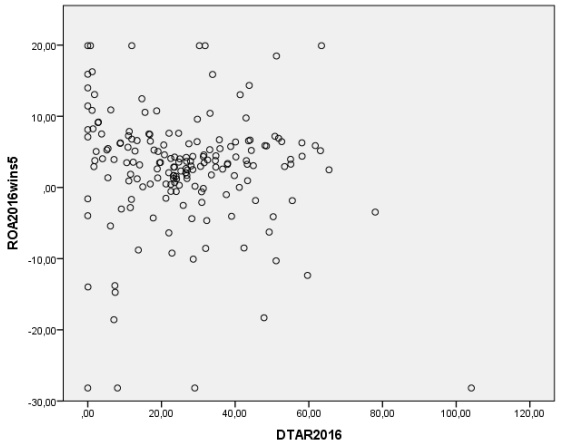

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: ROE_2017_wins10
Expected Cum Prob
Observed Cum Prob

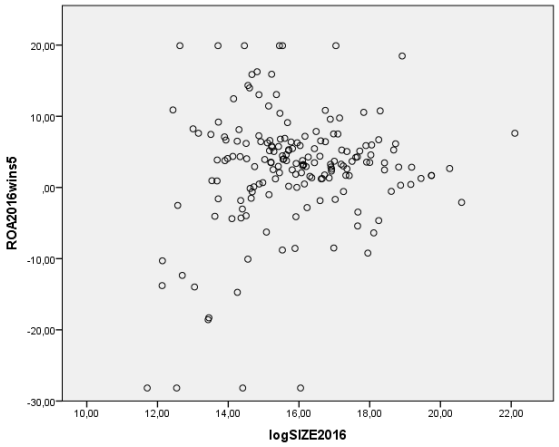
3.2 Linearity

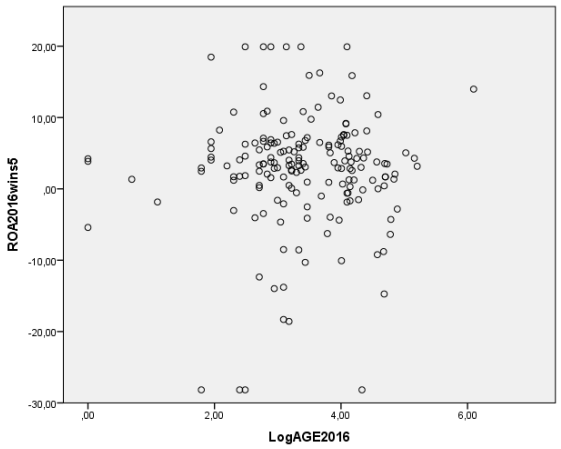
3.2.1 Return on assets 2016 as dependent variable



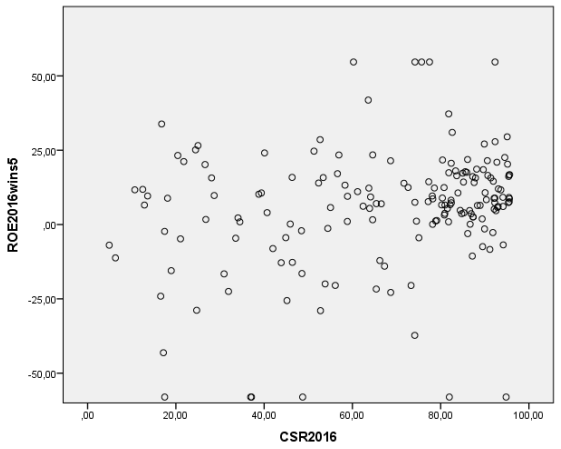


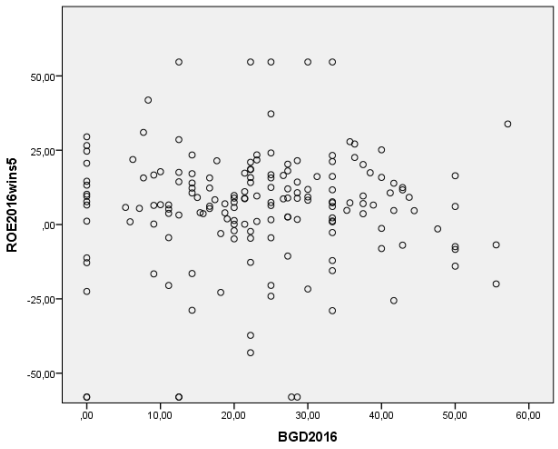


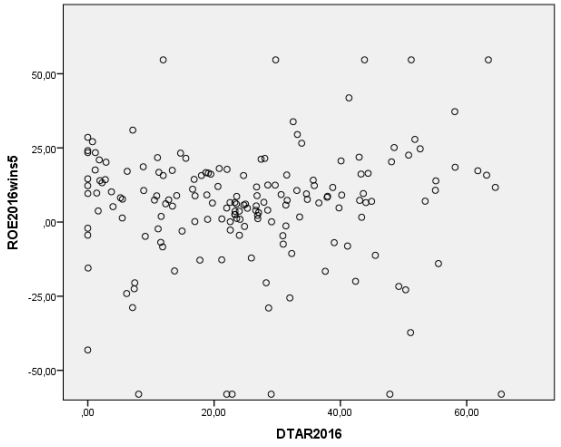


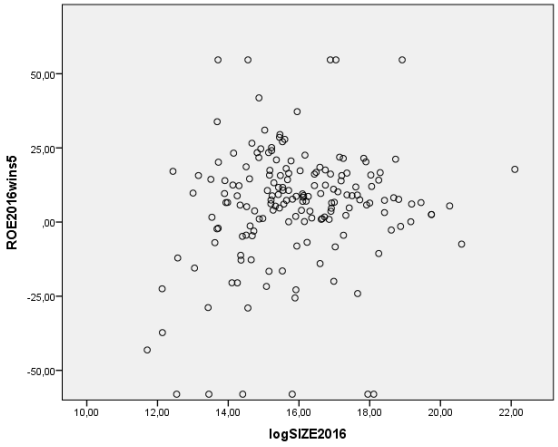


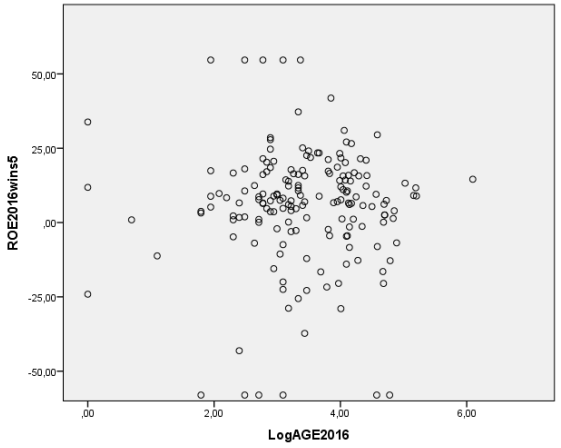
3.2.2 Return on equity 2016 as dependent variable



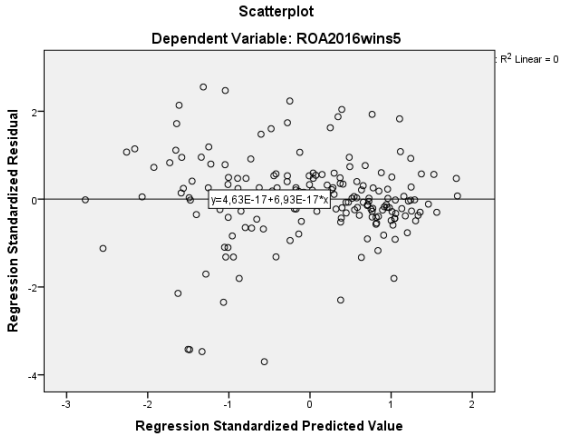


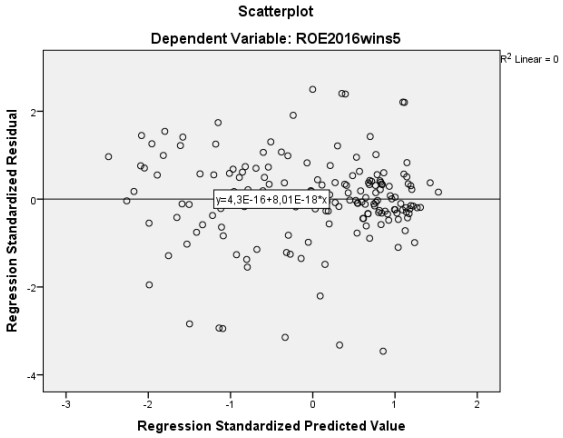


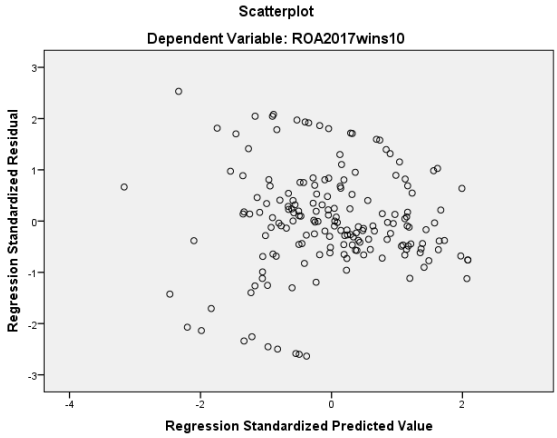


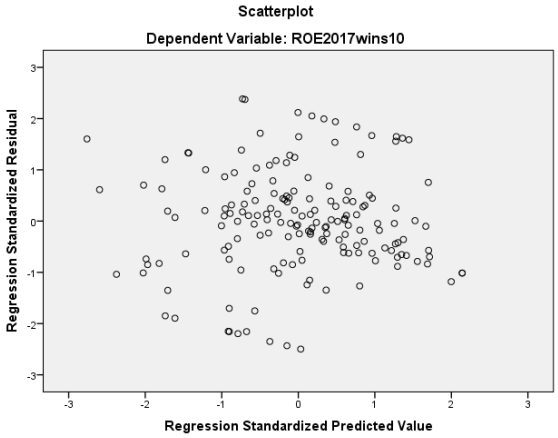


3.3 Homoscedasticity









Appendix 4: Correlations

	1	2	3	4	5	6
ROA	1					
CSR score	0.24**	1				
Board gender Diversity	-0.00	0.15	1			
Financial leverage	-0.12	0.08	0.11	1		
Firm size	0.16*	0.49***	0.24**	0.13	1	
Firm age	0.04	0.27***	-0.06	-0.08	0.9	1

Table 11: Correlation, ROA 2016 dependent variable. * Correlation is significant at the 0.05 level (2-tailed); ** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.001 level (2-tailed).**

	1	2	3	4	5	6
ROE	1					
CSR score	0.25**	1				
Board gender Diversity	0.04	0.11	1			
Financial leverage	0.04	0.05	0.15*	1		
Firm size	0.15	0.48***	0.21**	0.15	1	
Firm age	-0.01	0.24**	-0.05	-0.06	0.07	1

Table 12: Correlations, ROE 2016 dependent variable. * Correlation is significant at the 0.05 level (2-tailed); ** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.001 level (2-tailed).**

	1	2	3	4	5	6
ROE	1					
CSR score	0.16*	1				
Board gender Diversity	-0.09	0.14	1			
Financial leverage	0.00	0.05	0.13	1		
Firm size	0.24**	0.49***	0.28***	0.10	1	
Firm age	0.08	0.25**	-0.04	-0.04	0.10	1

Table 13: Correlations, ROA 2017 dependent variable. * Correlation is significant at the 0.05 level (2-tailed); ** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.001 level (2-tailed).**

	1	2	3	4	5	6
ROE	1					
CSR score	0.23**	1				
Board gender Diversity	-0.00	0.12	1			
Financial leverage	0.09	0.05	0.16*	1		
Firm size	0.32***	0.49***	0.25**	0.15*	1	
Firm age	0.10	0.25**	-0.04	-0.05	0.09	1

Table 14: Correlations, ROE 2017 dependent variable. * Correlation is significant at the 0.05 level (2-tailed); ** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.001 level (2-tailed).**

Appendix 5: Robustness regression tables

5.1One year lagged regression analysis dependent variable ROA 2017

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Constant	-10.98*	-10.27*	-11.76*	-10.90*	-10.94*	-10.97*	-10.93*	-10.16*	-10.93*	-10.87*
	(4.60)	(4.83)	(4.56)	(4.61)	(4.80)	(4.83)	(4.83)	(4.88)	(4.84)	(4.86)
Control variables										
logFirm size 2017	0.90**	0.83*	1.09***	0.92**	1.01**	1.00**	1.00**	0.85**	1.03	1.03**
	(0.28)	(0.32)	(0.29)	(0.28)	(0.33)	(0.33)	(0.33)	(0.33)	(0.33)	(0.33)
logFirm age 2017	0.34	0.28	0.27	0.33	0.20	0.20	0.20	0.31	0.24	0.24
	(0.49)	(0.50)	(0.48)	(0.49)	(0.50)	(0.50)	(0.50)	(0.51)	(0.50)	(0.50)
Independent variables										
CSR2016		0.01			0.01	0.01	0.01	0.00	0.00	0.00
		(0.02)			(0.02)	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)
Board gender			-0.08*		-0.08*	-0.08*	-0.08*		-0.08*	-0.08*
diversity 2016			(0.04)		(0.04)	(0.04)	(0.04)		(0.04)	(0.04)
Financial leverage				-0.01	-0.01		0.01	-0.01	-0.00	-0.00
2016				(0.03)	(0.03)		(0.03)	(0.03)	(0.03)	(0.03)
Moderating effects										
CSR X Board gender						0.00	0.00			0.00
Diversity 2016						(0.00)	(0.00)			(0.00)
CSR X Financial								0.00	0.00	0.00
leverage 2016								(0.00)	(0.00)	(0.00)
R^2	0.06	0.06	0.09	0.06	0.08	0.09	0.09	0.07	0.09	0.09
Adj. R^2	0.05	0.05	0.07	0.05	0.06	0.06	0.06	0.04	0.06	0.06
F	5.73**	3.88*	5.55**	3.85*	3.36**	3.36**	2.79*	2.45*	2.93*	2.50*
N	176	176	176	176	176	176	176	176	176	176

Table 15: Regression analyses with a one year time lag.Dependent variable ROA 2017. Std. Error between parentheses. * Significant at the 0.05 level (2-tailed); ** Significant at the 0.01 level (2-tailed); * Significant at the 0.001 level (2-tailed).**

5.2 One year lagged regression analysis dependent variable ROE 2017

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Constant	39.50***	-36.51**	-40.09***	-39.67***	-37.29**	-37.33**	-37.62**	-36.71**	-37.36**	-37.71**
	(11.12)	(11.67)	(11.12)	(11.14)	(11.68)	(11.84)	(11.86)	(11.70)	(11.70)	(11.88)
Control variables										
logFirm size 2017	2.89***	2.57*	3.09***	2.82***	2.69**	2.76**	2.69**	2.53**	2.73**	2.73**
	(0.67)	(0.77)	(0.70)	(0.68)	(0.80)	(0.79)	(0.80)	(0.78)	(0.80)	(0.80)
logFirm age 2017	1.11	0.87	1.03	1.15	0.83	0.79	0.84	1.01	0.94	0.95
	(1.10)	(1.19)	(1.16)	(1.16)	(1.20)	(1.20)	(1.20)	(1.21)	(1.21)	(1.22)
Independent variables										
CSR2016		0.04			0.05	0.05	0.05	0.03	0.03	0.04
		(0.05)			(0.05)	(0.05)	(0.06)	(0.06)	(0.06)	(0.07)
Board gender diversity 2016			-0.10		-0.11	-0.10	-0.11		-0.11	-0.11
			(0.09)		(0.09)	(0.09)	(0.09)		(0.09)	(0.10)
Financial leverage 2016				0.04	0.05		0.05	0.05	0.06	0.06
				(0.07)	(0.07)		(0.07)	(0.07)	(0.07)	(0.07)
Moderating effects										
CSR X Board gender Diversity 2016						0.00	-0.00			-0.00
						(0.00)	(0.00)			(0.00)
CSR X Financial leverage 2016								0.00	0.00	0.00
								(0.00)	(0.00)	(0.00)
R^2	0.11	0.11	0.11	0.11	0.12	0.12	0.12	0.12	0.12	0.14
Adj. R^2	0.10	0.10	0.10	0.10	0.10	0.09	0.09	0.09	0.09	0.09
F	10.09***	6.96***	7.14***	6.82***	4.54**	4.41**	3.77**	4.29**	3.77**	3.28**
N	170	170	170	170	170	170	170	170	170	170

Table 16: Regression with a one year time lag. Dependent variable ROE 2017. Std. Error between parentheses. * Significant at the 0.05 level (2-tailed); ** Significant at the 0.01 level (2-tailed); * Significant at the 0.001 level (2-tailed).**