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Fe-Males - How Adding Two Letters Impacts the Relationship between CSR and Financial Performance

A gender perspective on the relationship between CSR and financial performance

by
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Abstract

Title:	Fe-Males - How Adding Two Letters Impacts the Relationship between CSR and Financial Performance: A gender perspective on the relationship between CSR and financial performance
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Keywords:	Corporate Social Responsibility, Bloomberg ESG disclosure score, Tobin's Q, women on board of directors, CSR experience
Purpose:	The purpose of this thesis is to examine how CSR experienced female directors impact the relationship between CSR and financial performance.
Methodology:	This thesis applies a deductive research approach and analyses panel data with fixed effects regressions.
Theoretical Perspectives:	The theoretical perspective focuses on explaining the agency theory, the theory of the firm, the stakeholder theory, the instrumental stakeholder theory, the concept of stakeholder influence capacity, the good management theory, the resource dependency theory, the human capital theory, and the social role theory.
Empirical Foundation:	The empirical data consists of 2,065 firm-year observations for 449 unique firms listed on the S&P 500 index during the time period from 2012 to 2017. All data is accessed via Bloomberg.
Conclusion:	The main findings of our thesis show a negative linear relationship between CSR and financial performance. However, appointing CSR experienced female directors improves the financial outcome of CSR. In particular, our findings show that appointing enough CSR experienced female directors can even turn the relationship between CSR and financial performance positive.

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1 Introduction

1.1 Background and Problematisation

The latest Catalyst Census report about the distribution of females and males on board of directors reveals that in 2016, 21.2% of the directors at S&P 500 firms were women (Catalyst, 2017). This figure has more than doubled in the last two decades, considering that in 1996 females held merely 10.2% of the board seats of Fortune 500 firms (Catalyst, 1997). However, females are still highly underrepresented on the average S&P 500 board.

To increase the share of females on the board of directors, some European governments have introduced gender quotas. Norway was in 2007, the first country to introduce a statutory gender quota, saying that the boards of listed firms should consist of 40% females (Deloitte, 2017). A similar statutory quota was introduced by Iceland in 2010 and by France in 2017 (Deloitte, 2017). Other countries, such as Poland and the Netherlands, have introduced non-mandatory quota acts in the recent years (Deloitte, 2017). These legislative and non-mandatory quota acts are usually initiated based on the perception that females significantly affect the governance of firms and hence are expected to impact the overall performance of a firm (Adams & Ferreira, 2009). Many researchers have investigated the relationship between women on boards and financial performance empirically, however, the findings are inconclusive. While for instance Campbell and Mínguez-Vera (2008) as well as Carter, Simkins and Simpson (2003) found a positive relationship between females in boards and financial performance, Ahern and Dittmar (2012) and Adams and Ferreira (2009) argue for a negative relationship.

Irrespective of the sign of the impact, researchers base their findings that women impact the firm's performance on specific female characteristics. Women are expected to have a more altruistic attitude and extensive interpersonal skills, fostered by their domestic role (Eagly, Wood & Diekman, 2000). Especially due to these social characteristics, women are expected to not only impact a firm's corporate governance in general, but also specifically decisions that are linked to the firm's effects on environment and society, captured by corporate social responsibility (CSR). This is empirically proven by Boulouta (2012) and Harjoto, Laksmana and Lee (2015), who find that women on boards positively affect a firm's CSR. The positive characteristics, inherent to females, are further developed if she gains experience within the field of CSR. This is in line with

Westphal and Fredrickson (2001) who find that board directors' prior experiences and backgrounds influence the outcome of a firm.

Considering that females' characteristics and CSR experiences impact a firm's financial performance and also its CSR activities, the question arises, how all these factors are interconnected. In our thesis, we aim to investigate how experienced females impact the relationship between CSR and financial performance. The main findings of our thesis show a negative linear relationship between CSR and financial performance. However, appointing CSR experienced female directors improves the financial outcome of CSR. In particular, our findings show that appointing enough CSR experienced female directors can even turn the relationship between CSR and financial performance positive. These results provide new insights into the broad and inconsistent research field that concentrates on the impact of CSR on financial performance. For practice, this indicates how to structure the board, in terms of gender diversity, in order to improve the financial outcome of CSR.

1.2 Purpose

The purpose of this thesis is examine how experienced females impact the relationship between CSR and financial performance. This is the first attempt to empirically investigate the impact of CSR experienced female director appointments on the relationship between CSR and financial performance. Thus, the research question will be answered, *how women on the board of directors, who are experienced in CSR, affect the relationship between CSR and financial performance*. As a contribution to practice, this will lead to a conclusion if engaging in CSR is financially beneficial for companies and how appointing CSR experienced female directors impacts the relationship.

1.3 Defining and Delimiting the Scope

This thesis is delimited to investigate the relationship between CSR and financial performance and how this is affected when a female with CSR experience is appointed to the board of directors. Among other researchers, Waddock and Graves (1997) and Adams and Ferreira (2009), argue that there exists reverse causality within this field of study. Waddock and Graves (1997) indicate that CSR is not only related to financial performance, but also the other way around. In addition, Adams and Ferreira (2009), suggest that gender diversity might impact financial performance but there is

also a possibility that financial performance affects the selection of directors with different genders. However, this thesis focuses on the correlation between the factors without taking the causal links into account. This delimitation is due to the choice of method and the time frame of this paper, which is unsuitable for investigating causal effects.

Furthermore, the research concentrates on the U.S. market since it is one of the biggest economies across the world with an advanced economic system and strong international relations. For many businesses it is one of the most important markets across the globe. However, considering that other countries have different laws, cultural setting, geography and history that might have an impact on the outcome of the research question, the generalisability of this thesis findings can be questioned. Finally, the thesis focuses on large publicly traded companies and thus the results might not be fully transferable to small and mid-sized firms due to different characteristics. However, as large publicly traded firms cover a major part of the total American equity market capitalisation (S&P Dow Jones Indices, 2019), they are considered to represent the U.S. stock market appropriately.

1.4 Outline of the Paper

In order to answer the research questions, the remaining thesis is divided into seven parts. Chapter 2 summarises the main findings of previous research to emphasise the variety in the results. In chapter 3, the hypotheses are developed based on a theoretical framework. Chapter 4 explains the methodology and chapter 5 the data used to test the hypotheses of this thesis. In chapter 6 the empirical analyses are presented. These findings are discussed in relation to the previous literature and theoretical framework in chapter 7. Finally, chapter 8 concludes the whole thesis and gives indications for practical recommendations as well as further research. Even though this thesis aims to maintain reliability and validity, all findings need to be reflected in terms of limitations. These will be discussed throughout the thesis.

2 Literature Review

2.1 CSR and Financial Performance

The broad field of previous research on the relationship between CSR and financial performance is inconclusive and inconsistent (see Appendix 1 for a summary of the analysed literature). However, while some claim a negative or a neutral link, most researchers found a positive relationship (Griffin & Mahon, 1997; Margolis & Walsh, 2003). Waddock and Graves (1997), analysed a sample of S&P 500 firms and found a positive correlation between CSR and financial performance. They argue that this can be explained by the good management theory as CSR, which aims to improve stakeholder relations, is a sign of good management practice (Waddock & Graves, 1997). To make a firm's CSR quantifiable and comparable to others, various indices that proxy for CSR are used by researchers. Waddock and Graves (1997) proxy for CSR by the commonly used Kinder, Lydenberg and Domini Index (KLD). KLD evaluates companies based on their environment, community and society, employees and supply chain, customers and governance and ethics activities, which are key CSR factors (Network for Business Sustainability, 2013). In line with Waddock and Graves (1997), Al-Tuwaijri, Christensen and Hughes (2004) find proof for a positive correlation between CSR and financial performance. They examine the relationship between environmental disclosures and economic performance by analysing a cross-sectional sample of 198 U.S. companies on the S&P 500 index. Their result supports the hypothesis that environmental and economic performance are positively correlated.

The positive impact of CSR on financial performance is further supported by Dowell, Hart and Yeung (2000), who investigate if the firm value of multinational enterprises is influenced by their corporate environmental standards. Their study is based on firms listed on S&P 500 between 1994 and 1997 and they find that higher global environmental standards are linked to better financial performance, measured by Tobin's Q. Furthermore, they claim that the valuation of a multinational firm will increase by adopting uniform environmental standards globally also for countries with lower standards. According to Dowell, Hart and Yeung (2000), higher profitability may be explained by stakeholders' request for environmentally friendly products and processes.

In contrast to the positive relationship found by the above-mentioned researchers, others claim a negative impact of CSR on financial performance. The most referred to advocate of a negative

relationship is Milton Friedman. In his article from 1970, he claims that engagement in sustainability imposes costs on shareholders, customers and employees and might lead to competitive disadvantages. Those effects of CSR result in a reduced financial performance (Friedman, 1970). Furthermore, Friedman (1970) argues that managers act as agents of the shareholders which means that they are responsible merely to them and that the only responsibility of a business is to maximise profits in conformity with given rules and legislation.

Only a few empirical studies support Friedman's hypothesis of a negative relationship between CSR and financial performance. These include Brammer, Brooks and Pavelin (2006) who show that firms in the U.K., which engage in CSR, experience lower stock returns than comparable companies. They base their findings on Friedman's suggestions from 1970 that the money invested in CSR could be spent more profitable for other actions and thus CSR can have a negative impact on the financial performance. Furthermore, they argue that this can be explained by shareholders who invest in socially responsible companies might accept lower returns due to ethical and moral considerations (Brammer, Brooks & Pavelin, 2006). Hence, they claim a positive association of CSR by the shareholders that offset for lower returns. An alternative explanation for the negative impact of CSR on financial performance is provided by Polonsky and Rosenberger (2001) who argue that customers might perceive engagement in CSR as greenwashing[1] and thus refuse to buy the company's products which negatively impacts the firm's financial performance.

Unlike the merely negative relationship found by the above-mentioned researchers, López, Garcia and Rodriguez (2007) argue for a short term negative impact but assume that this will change into a positive relationship in the long run. They analyse 55 firms belonging to the Dow Jones Sustainability Index (DJSI) and 55 firms belonging to the Dow Jones Global Index from 1998 to 2004. As a proxy for CSR performance, DJSI evaluates companies based on their CSR activities, covering for instance corporate governance, energy consumption and climate change strategies (Bloomberg Terminal, 2019). To support the negative relationship between CSR and financial performance, López, Garcia and Rodriguez (2007) claim that in the short term, the firms neglect the expenses for CSR in their budget and thus need to increase their expenses or reallocate

[1] The Cambridge dictionary defines greenwashing as "behaviour or activities that make people believe that a company is doing more to protect the environment than it really is" (Cambridge University Press, 2019).

resources, which negatively impacts the financial performance. However, they argue that the negative impact on profit or loss before taxes will become neutral or positive, since they measure it with the variation which decreases in the long run (López, Garcia & Rodriguez, 2007).

In addition to the results that support a negative or positive impact of CSR on corporate financial performance, some researchers claim that the relationship is neutral. Nelling and Webb (2008), who used a sample of 600 U.S. firms over the period 1993 to 2000, argue that with a time series fixed effects approach, the relationship between CSR and financial performance is substantially weaker than when adopting OLS. Furthermore, the authors state that the correlation between the variables does not reflect that CSR activities affect financial performance, but merely that there is a correlation. The findings of a neutral relationship are supported by McWilliams and Siegel (2000). Their study is based on a sample of 524 firms from 1991 to 1996, tracked by the multidimensional corporate social performance (CSP) database KLD. In contrast to Nelling and Webb (2008) who used a fixed effect approach, McWilliams and Siegel (2000) maintain that previous studies are misspecified because they do not control for R&D intensity. When including R&D intensity in the model to control for endogeneity, McWilliams and Siegel (2000) find that CSR has a neutral impact on financial performance.

In the recent decade, some researchers distinguish from previous findings by testing a non-linear relationship between CSR and financial performance. Barnett and Salomon (2012) hypothesise a curvilinear relation and assess whether it is financially more beneficial for some companies to engage in CSR compared to others. Based on a sample of publicly traded firms tracked by KLD, their results suggest that it is only beneficial for certain firms to focus on CSR. It appears that the financial performance is negative for companies with limited investments in CSR, but for companies that invest heavily in CSR, the financial performance is positive. This u-shaped relationship is also supported by the non-linear model of Nollet, Filis and Mitrokostas (2016). They analyse the impact of corporate social performance, captured by the Bloomberg Environmental, Social, Governance (ESG) score, on the financial performance for S&P 500 firms in 2007 to 2011 and found a u-shaped relation for the governance component of the ESG score and the financial performance. The authors agree with Barnett and Salomon (2012) that up to a certain point of investments and accomplishments, expenses for CSR negatively affect financial

performance. After this point, CSR increases the profitability of the firm as it draws the attention of stakeholders (Nollet, Filis & Mitrokostas, 2016).

2.2 CSR, Financial Performance and Gender Diversity

Several studies provide arguments for a positive relationship between gender diversity and firm performance (see Appendix 2 for a summary of the analysed literature). Carter, Simkins and Simpson (2003) confirm evidence towards a positive relationship by investigating board diversity and firm value for Fortune 1000 firms. They argue that a more heterogeneous board enhances firm value by more carefully evaluating different alternatives since they have a broader perspective on the marketplace. In addition, Carter, Simkins and Simpson (2003) imply that a more gender diverse board imposes creativity and innovation. Erhardt, Werbel and Shrader (2003) examine the relationship by investigating 127 U.S. companies and indicate a positive association between gender board diversity and financial performance. These results can partly be explained by a more effective oversight function, which is driven by more diverse opinions that might minimise agency issues (Erhardt, Werbel & Shrader, 2003). Further, Campbell and Mínguez-Vera (2008) argue that the gender composition of the board can influence the monitoring role of the board and thus the financial performance, measured by Tobin's Q. By studying the link between gender diversity of the board and financial performance in Spain, Campbell and Mínguez-Vera (2008) show a positive effect on firm value.

In contrast to the aforementioned researchers who argue for a positive impact of gender diversity on firm performance, others find evidence of a negative relationship. By using a sample of U.S. firms, Adams and Ferreira (2009) maintain that the average effect of gender diversity on firm performance is negative. However, the authors find that gender diversity has a positive impact on financial performance in firms with weak governance. Adams and Ferreira (2009) explain the findings by implying that a more diverse board could lead to increased board monitoring, which companies with weak governance would benefit from but the average firm would not. Further, Ahern and Dittmar (2012) investigate how the law required gender quota (at least 40% women on boards) initiated in Norway affects the financial performance. The authors find a significant decline in financial performance, measured by Tobin's Q, in line with the argument that firms choose boards to maximise value. Mínguez-Vera and Martin (2011) show by investigating a

sample of Spanish small and medium enterprises, that women's presence in boards impacts firm performance negatively. A potential explanation for the findings is women's risk aversion, which might influence the implementation of less risky strategies compared to men (Mínguez-Vera & Martin, 2011). By examining the FTSE 100 firm between 2001 and 2005, Haslam et al. (2010) show a negative relationship between women's presence on boards and financial performance, as measured by Tobin's Q. These findings are consistent with the findings of Lee and James (2007) who report a negative relationship between the appointment of a woman to the CEO position and financial performance. Lee and James (2007) explain the result by investors' stereotypical beliefs about women's lack of competence and leadership ability as described by Eagly and Karau (2002). Lastly, Forbes and Milliken (1999) conclude that a reason for the negative relationship might be potential conflicts that may arise in a diverse composition of directors, which slows down the decision-making process and in turn the effectivity.

Some researchers show that the relationship between gender diversity and financial performance is neutral. Carter et al. (2010) did not find a significant relationship between the gender diversity of the board and financial performance for firms included in the S&P 500 index and thus they conclude a neutral effect. The result is explained by the argument that the beneficial characteristics of females, such as innovation and creativity (Carter, Simkins & Simpson, 2003), are offset by potential group conflicts that arise in a more diverse group of directors. Another explanation is that board diversity has a positive effect on firm performance under certain circumstances but a negative impact in a different situation, and over time these effects cancel each other out. Furthermore, Rose (2007) finds a neutral relationship between female board representation and financial performance, measured by Tobin's Q. He argues that the reason for the insignificant results might be that female board members, who are usually a minority in boards, are adopting the views of the majority and thus the firm cannot benefit from the females' resources.

The above mentioned previous research on the relationship between females and financial performance shows inconsistent results. Carter et al. (2010) imply that the general reasons for the various findings are the differences in the used variables and methodologies as well as the studied geographical area. An alternative explanation provided by Galbreath (2018) is that the relationship between gender diverse boards and financial performance is indirect rather than direct. By

analysing the largest publicly traded companies in Australia, he finds that females increase CSR performance and this results in a higher financial performance.

Further studies support the hypothesis of a positive impact of women on the board of directors on CSR. In a study on the U.S. market, Harjoto, Laksmana and Lee (2015) show that gender diversity positively influences CSR. The positive relationship is explained by the ability of recognising different stakeholder interests since the knowledge base, experiences and perspectives expand with a diverse group of directors (Harjoto, Laksmana & Lee, 2015). By examining a sample of firms from the S&P 500, Boulouta (2012) shows a positive relationship between board gender diversity and CSR. The positive impact can be explained by female directors bringing a stronger emphatic mindset into the board (Boulouta, 2012).

3 Theoretical Background and Hypothesis Development

3.1 CSR and Financial Performance

3.1.1 Agency Theory

To support the theory of a negative relationship between corporate social performance and financial performance, and to explain why managers contradict the profit maximisation goal which Friedman (1970) claims to be the only responsibility of a business, the agency theory can be applied. According to the agency theory, a firm consists of various rational, opportunistic agents, who are connected through contracts and aim to maximise wealth (Reverte, 2009). Barnea and Rubin (2010) maintain that managers might direct the firm towards CSR to improve their own reputation, neglecting that this might contradict shareholders' preferences and thus negatively impact the valuation of the firm. However, according to Reverte (2009), voluntary disclosures can also help to lower agency costs, when used to monitor and limit managers' behaviour and decisions. This can be interpreted as an argument for a positive relationship between voluntary CSR disclosures and the financial performance.

3.1.2 The Theory of the Firm

The theory of the firm can be applied to explain the neutral relationship between CSR and financial performance (McWilliams & Siegel, 2001). In contrast to the agency theory that presumes opportunistic behaviour, the theory of the firm is based on the assumption that managers take optimal decisions aiming for corporate profit maximisation (McWilliams & Siegel, 2001). Moreover, McWilliams and Siegel (2001) argue that CSR is an investment which is built on the demand of either consumers or other stakeholders, like employees, investors, and the society. Consumer related CSR is used to improve a firm's reputation so that it will be associated with high quality and reliability by customers which can lead to increased outputs and higher profits (McWilliams & Siegel, 2001). In this sense, CSR is a form of product differentiation which causes the need for increased R&D investments and capital costs (McWilliams & Siegel, 2001). Although McWilliams and Siegel (2001) argue that these costs are higher for firms engaging in CSR, they conclude that in the long-term, this will not make a difference as all firms aim for attributes that maximise their profit and CSR is just one of those attributes. Therefore, they hypothesise a neutral relationship between CSR and financial performance as also proven empirically in their previous paper.

3.1.3 Stakeholder Theory

Proponents of a positive relationship between CSR and financial performance mainly base their arguments on the stakeholder theory, which implies that the management of a firm should consider the interests of all stakeholders, not only shareholders (Freeman, 1984). According to Freeman, stakeholders can be defined as "any group or individual who can affect or is affected by the achievement of the organization's objectives" (Freeman, 1984, p. 46). In 1995, Donaldson and Preston broke down the stakeholder theory into descriptive, normative, and instrumental stakeholder theory. The first concentrates on how firms manage their stakeholder relations while normative stakeholder theory defines how it should be managed in relation to ethics and moral (Donaldson & Preston, 1995). Instrumental stakeholder theory focuses on the cause and effect relationship between stakeholder relations and financial performance (Donaldson & Preston, 1995). Thus, the instrumental stakeholder theory is the most important path of stakeholder theory for analysing and explaining the relationship between CSR and financial performance.

Jones (1995) follows up on the instrumental stakeholder theory by explaining how CSR improves the stakeholder relations of a firm. Like the agency theory, he presumes a firm to consist of a nexus of contracts between itself and all stakeholders. However, while the agency theory claims all individuals to behave opportunistically (Reverte, 2009), Jones (1995) argues that the instrumental stakeholder theory assumes the stakeholder relations to build trust and curb opportunism. This leads to a competitive advantage and thus positively influences the corporate financial performance (Jones, 1995). Barnett (2007) supports this by saying that establishing trust among stakeholders reduces transaction costs and risks and thus improves the financial performance. One of the primary instruments to achieve trustworthy stakeholder relationships presented by Greening and Turban (2000) is to engage in socially responsible actions. Therefore, the stakeholder theory is often used to support a positive relationship between CSR and financial performance.

3.1.4 The Concept of Stakeholder Influence Capacity

Barnett (2007) maintains that CSR can decrease a firm's operating costs, lower the effect of negative reputation and imply product differentiations and other future opportunities. However, he concludes from the different findings in previous research that CSR does not automatically and always have a positive effect on financial performance. He differentiates between CSR that is done

by managers to improve their personal reputation and CSR that is done to improve the relationship between the firm and the stakeholders. Only the latter can have a positive impact on the corporate financial performance (Barnett, 2007). To further explain why this impact of CSR on financial performance varies across firms, Barnett (2007) introduces the concept of stakeholder influence capacity building on Freeman's (1984) concept of the long-term benefits of good stakeholder relations. Barnett's new construct captures "the ability of a firm to identify, act on, and profit from opportunities to improve stakeholder relationships through CSR" (Barnett, 2007, p. 803). This ability is determined by previous CSR actions of the firm as the stakeholders will assess the current CSR actions in light of its former activities (Barnett, 2007). Thus, a firm's CSR actions not only directly strengthen the stakeholder relationship but also increase its stakeholder influence capacity which helps to build trustworthiness over time (Barnett, 2007).

3.1.5 The Good Management Theory

Based on the stakeholder theory, the good management theory is used to address how CSP and financial performance are linked. The theory claims that CSP, considering various stakeholders and thus improving financial performance, is a demonstration of good management (Waddock & Graves, 1997). Moreover, as customers' expectations of a firm's CSR increase and can influence purchase decisions, CSR can be seen as a part of good management (Waddock & Graves, 1997).

3.1.6 Development of Hypothesis 1

In line with stakeholder theory, good management theory and the concept of stakeholder influence capacity, which argue that CSR improves stakeholder relations and is a sign of good management, the first hypothesis is:

Hypothesis 1: Firms with a higher CSR score have a higher financial performance.

3.2 CSR, Financial Performance and Gender Diversity

3.2.1 The Resource Dependence Theory and the Human Capital Theory

A common proposition within the research body of corporate governance is that the board composition affects the way boards perform their functions which partially influences firm performance (Kim, Burns & Prescott, 2009; Carter et al., 2010). The resource dependence theory

presented by Pfeffer and Salancik (1978), and later expanded by Hillman, Cannella and Paetzold (2000), is one of the theories that support the proposition. The theory implies that if the board manages the corporate relationship to the external environment in a sufficient manner, the corporation will benefit from resources such as information and expertise, communication channels, support from important external organisations, and legitimacy (Hillman, Cannella & Paetzold, 2000). Furthermore, the theory suggests that different types of directors provide different beneficial resources to the relationship with the external environment (Hillman, Cannella & Paetzold, 2000). Hence, a more heterogeneous board, which provides a broader range of valuable resources, will positively impact firm performance. The human capital theory, established by Becker (1964), complements the resource dependence theory by suggesting that board diversity, as a result of unique human capitals, will affect the financial performance of a firm. In addition, Hillman, Cannella and Harris (2002) imply that women have specific human capital that influences the board. Considering these theories, there is a possibility that the appointment of a woman to the board will influence the firm performance.

3.2.2 The Social Role Theory and the Stakeholder Theory

In the 1980s the social role theory was developed in order to explain differences in the behaviour of men and women (Eagly, Wood & Diekman, 2000). It is based on the assumption that social organisation and structure, including especially gender hierarchy and the differences in jobs performed by men and women, cause behavioural differences between genders (Eagly, Wood & Diekman, 2000). The domestic role imposed to women favours interpersonal skills and altruism which results in a more communal behaviour (Eagly, Wood & Diekman, 2000). This can be transferred to women's behaviour in a professional context and their decisions on the board. Due to their stronger social orientation, women are expected to contribute especially to a board's qualitative responsibilities and decisions, which includes CSR (Boulouta, 2012). Moreover, based on their communal behaviour, it can also be assumed that female directors consider a broader range of stakeholders (Galbreath, 2018). Following the stakeholder theory explained in section 3.1.3, taking into account different stakeholder needs usually impacts the relationship between CSR and financial performance positively. Thus, the combination of the social role theory and the stakeholder theory supports a positive impact of appointing females on the link between CSR and financial performance.

3.2.3 Development of Hypothesis 2

Building on hypothesis 1 as illustrated in Figure 1 and in line with the resource dependency theory, the human capital theory, the social role theory and the stakeholder theory, the second hypothesis is:

> Hypothesis 2: The appointment of a female with CSR experience to the board of directors impacts the relationship between CSR and financial performance positively.

4 Empirical Methodology

4.1 Research Design and Approach

The hypotheses explored in this paper are based on existing literature and theories. This research approach is commonly known as a deductive research approach (Bryman & Bell, 2015, p. 23). Furthermore, the study has a quantitative character, as numerical data is used to determine the relationships between CSR, financial performance and gender diversity. This allows us to investigate companies on the S&P 500 which is a sufficient representation of the U.S. population.

4.2 Empirical Model

To analyse the hypothesised impact of CSR on financial performance, a multivariate regression analysis is performed, using Tobin's Q as the dependent variable and CSR and different control variables as the independent variables. Given the panel structure of the data, a longitudinal study will be performed. In order to test if the dependent variable, Tobin's Q, fulfills the assumption of normality, the distribution of the variable is analysed in a histogram, displayed in Figure 2. The histogram shows that Tobin's Q is not normally distributed but rather right-skewed. Hence, the natural logarithm of Tobin's Q is used to make the variable behave more normally as visualised in Figure 3. This is in line with previous research such as Adams and Ferreira (2009). However, we do not take potential asymmetric relations into account in the analysis. Thus, possibly stronger reactions of shareholders to scandals that decrease the CSR measure, are not considered. The following general regression model is tested:

$$Log\big(Tobin's\ Q_{i,t}\big) = \beta_0 + \beta_1 ESG_{i,t} + controls + \mu$$

Where Log(Tobin's $Q_{i,t}$) is the natural logarithm of Tobin's Q of firm *i* at time *t* and $ESG_{i,t}$ is the total ESG score of firm *i* at time *t*, capturing its CSR. The coefficient $ß_1$ measures the average return to the ESG score, so a one point increase in the ESG score leads to a $(100x ß_1)$% increase in Tobin's Q. Controls refers to the control variables that will be elaborated in section 5.2.3.

Moreover, to examine the impact of environmental, social and governance disclosures, a second model regresses Tobin's Q on the score for each individual subcomponent of the ESG score. Thus, the second regression model is as follows:

$$Log(Tobin's\ Q_{i,t}) = \beta_0 + \beta_1 Environmental_{i,t} + \beta_2 Social_{i,t} + \beta_3 Governance_{i,t} + controls + \mu$$

Where $Environmental_{i,t}$, $Social_{i,t}$ and $Governance_{i,t}$ are the subcomponents of the overall ESG score of firm *i* at time *t*. Thus, $ß_1$, $ß_2$ and $ß_3$ capture the effect of the individual subcomponents on Tobin's Q. Therefore, a one point increase in the environmental score leads to a $(100x ß_1)$% increase in Tobin's Q, a one point increase in the social score leads to a $(100x ß_2)$% increase in Tobin's Q and a one point increase in the governance score leads to a $(100x ß_3)$% increase in Tobin's Q.

To examine the second hypothesis of the impact of appointed females with CSR experience on the relationship between CSR and financial performance, also a multivariate regression analysis is done. In this regression, a dummy variable for the appointment of CSR experienced females is included. Furthermore, the regression contains an interaction term of the experienced female dummy and the firm's ESG score. In order to test if the effect of appointing a CSR experienced woman is deferred, also a version of the dummy including a lag of one year is tested later in the analysis. The following regression model is used:

$$Log(Tobin's\ Q_{i,t}) = \beta_0 + \beta_1 ESG_{i,t} + \beta_2 Experienced\ Female_{i,t} + \beta_3 ESG_{i,t} \times Experienced\ Female_{i,t} + controls + \mu$$

where Experienced $Female_{i,t}$ equals 1 if a woman with CSR experience enters the board of firm *i* at time *t*, and 0 otherwise. The coefficient $ß_2$ captures the effect of the appointment of a CSR experienced female on Tobin's Q in percent for a firm with an ESG score of zero. $CSR_{i,t}$xExperienced $Female_{i,t}$ is the interaction term of experienced females and ESG. Its coefficient $ß_3$ shows the difference in the return to the ESG score for a firm that appoints a CSR experienced female director. Hence, an increase of one point in the ESG score leads to a $(100x ß_1)$% increase in Tobin's Q for a firm without an appointment and to a $(100x(ß_1+ß_3))$% increase for a firm that appoints a CSR experienced female director.

As merely the appointment of a CSR experienced female director might not be sufficient to capture board diversity, the board size needs to be considered. In addition, this enables to investigate not only if there is a positive impact of appointing CSR experienced female directors in general but

also to determine how the actual number of newly appointed females in relation to the total board size impacts the relationship between CSR and financial performance. In order to control for board size, we construct a ratio by dividing the number of newly appointed CSR experienced females by the total number of directors in the board. To simplify the interpretation of the regression model, the variables for the ESG score and the new ratio are centered by the mean, i.e. the mean is deducted of every observation. Thus, the following model is also used to investigate hypothesis 2:

$$Log(Tobin's\ Q_{i,t}) = \beta_0 + \beta_1 ESG_{i,t} + \beta_2 Ratio_{i,t} + \beta_3 ESG_{i,t} \times Ratio_{i,t} + controls + \mu$$

where $ESG_{i,t}$ captures the centered ESG score of firm *i* at time *t*. $Ratio_{i,t}$ is the centered ratio for the number of CSR experienced females who are appointed to the board divided by the total number of board directors. The coefficient $ß_1$ measures the effect of the difference between the firm's ESG score and the mean ESG score of the sample to Tobin's Q when the firm has an average Ratio. This means that an ESG score that is 1 point higher than the average leads to an increase in Tobin's Q of ($ß_1$x100)% if the firm's Ratio has an average value. The coefficient $ß_2$ refers to the effect of the difference between the firm's Ratio and the mean Ratio of the sample to Tobin's Q in percent when the firm has an average ESG score. Hence, a firm that has an average ESG score but a Ratio that is one percentage point above the average, increases its Tobin's Q by $ß_3$%. $ESG_{i,t}$x$Ratio_{i,t}$ is the interaction term of the ESG score and the ratio for appointed CSR experienced females to board size. Its coefficient $ß_3$ shows the return to an ESG score different to the average, affected by the Ratio of CSR experienced females. In total, this means that for a firm with an average ESG score and an average percentage of newly appointed CSR experienced females in the board, the variables for the centered ESG and Ratio as well as the interaction term turn zero. For a firm, that has an ESG score which is 1 point above average and a Ratio that is 1 percentage point above average, Tobin's Q in return to the ESG score increases by ($ß_1$x100+$ß_3$)%. Including the direct effect of CSR experienced females on the financial performance, in total, Tobin's Q increases then by ($ß_1$x100+$ß_2$+$ß_3$)%.

In order to estimate the regression model, the statistical software package Stata (release 15.1) is used. First, we conduct an ordinary least squares (OLS) multivariate regression analysis. However, given the panel structure of the data, a fixed or random effects model is more appropriate. A fixed

effect regression controls for unobservable characteristics in panel data that differ between the companies but are constant over time and helps to mitigate omitted variables (Hamilton & Nickerson, 2003; Carter et al., 2010). The mitigation of omitted variables is especially important considering that Adams and Ferreira (2009) argue that endogeneity problems arise due to omitted variables that have a mutual impact on both the selection of diverse board members and financial performance. The random effect model allows all unobservable effects to be assigned to the error term. Compared to the fixed effect, the random effect does not estimate the fixed effects individually for each cross-sectional unit, i.e. firm. In order to decide between fixed or random effects, a Hausman test will be performed. The test investigates whether there is a correlation between the unique errors (u_i) and the regressors. If there exists a correlation, indicated by a p-value lower than 0.05, a fixed effects model will be performed and if not, a random effects regression will be used. Furthermore, to check if the variables meet the assumption of non-collinearity and homoscedasticity, we will analyse the data through a correlation matrix and a Modified Wald test.

5 Data

5.1 Sample Construction

The original sample consists of 3,003 firm-year observations for 617 firm drawn from the U.S. S&P 500 index during a sample period ranging from 2012 to 2017. The S&P 500 index includes the largest public corporations traded on American stock exchanges and covers roughly 80% of the total equity market capitalisation (S&P Dow Jones Indices, 2019), making it an appropriate representation of the U.S. stock market. The majority of the sample firms appear for all years, but a small fraction of firms are removed from or added to the index over the time period because of for example spin-offs, mergers and bankruptcies. The chosen time frame enables us to analyse a large sample and to capture the latest market situation regarding the impacts of women and CSR. Since the ESG scores for 2018 were not accessible when we collected our data, the last year that is investigated is 2017. Panel A of Table 1 presents the final sample after excluding observations with unavailable data. The final sample consists of an unbalanced panel of 2,065 firm-year observations for 449 unique firms. We extract information on financial performance, sustainability performance, female appointments, female experience as well as firm data from Bloomberg.

5.2 Data Definition and Descriptive Statistics

5.2.1 Dependent Variable

Orlitzky, Schmidt and Rynes (2003) study the relationship between sustainability performance and financial performance, and find that accounting based measures of financial performance are superior to market based measures since the former has a stronger relationship to sustainability performance. Accounting measures such as return on assets (ROA) are used in a number of previous studies (Waddock & Graves, 1997; McWilliams & Siegel, 2000; Barnett & Salomon, 2012). However, Hillman and Keim (2001) stress that accounting based measures are more short term in nature and put more emphasis on firms' historical performance, and thus fail to capture long-term value creation. Additionally, the authors find that accounting based measures are unable to assess the long-term intangible aspects of value in sustainability activities since they largely capture transactional aspects, which are easily duplicated by competitors. Huselid (1995) further emphasises that accounting based measures might be affected by measurement errors, timing issues and adjustment for depreciation. To solve for the issues with accounting based

measurements, we will measure financial performance by using Tobin's Q as the dependent variable.

Tobin's Q is a widely used market based measurement for firm value that incorporates expectations of future profitability and intangible value (Dowell, Hart & Yeung, 2000; Carter et al., 2010). This thesis retrieves Tobin's Q from Bloomberg, which defines it as the ratio of market capitalisation, total liabilities, preferred equity and minority interest to total assets. A value above one for Tobin's Q implies that the market value of the firm is higher than the book value of the assets. According to the descriptive statistics in Panel B of Table 1, in our sample, Tobin's Q is on average 2.180, with a minimum of 0.621 for a total of 2,065 firm-year observations. This means that the sample firms on average are financially successful over the investigated time period, but the performance varies widely. The maximum of 11.285 is relatively high in comparison to the average, which indicates the existence of outliers. This will be further discussed in section 6.1.

As accounting based measurements provide an alternative perspective on the firm's performance, compared to market based measurements, later on in the analysis, we will use ROA as the dependent variable when testing the first hypothesis. ROA, which is extracted from Bloomberg, is defined as the ratio of net income to average total assets (Bloomberg Terminal, 2019). The descriptive statistics in Panel B of Table 1 shows an average ROA of 6.625%, with a minimum of -61.821% and a maximum of 42.279%. This indicates that at least one firm in the sample experiences a net loss. Considering that the sample consists of the largest companies on the U.S. stock exchange, and negative ROA is a common characteristic of companies in the start-up phase and not established companies which the largest U.S. companies are assumed to be, the minimum is somewhat surprising. Although, even established firms sometimes need to make substantial capital investments that might harm the possibility of generating earnings, which could explain the negative minimum.

5.2.2 Explanatory Variables

Two common methods to develop a proxy that captures CSR performance is to construct a new index with primary data or to use secondary data from existing sustainability indexes. Considering the level of subjectivity associated with collecting and constructing a new index, the time frame of

this paper, and the fact that the vast majority of the S&P 500 companies are included in existing CSR indexes, the latter method is used in this study. As shown in the literature review section, previous research bases its studies on various CSR indexes, of which the Bloomberg ESG score will be used as the main explanatory variable in this thesis due to availability of data. The ESG score, which is used in limited scope in previous research, is a Bloomberg proprietary score based on the extent of a public company's environmental, social and governance disclosures, press releases, third-party research, direct contact and news (Bloomberg Terminal, 2019). This means that the score does not measure the actual CSR performance of any data point and thus there is a risk of inconsistency between the data and the actual performance. This is the case for all indexes since there is no established method to measure actual performance. However, the fact that the ESG score is based on a combination of roughly 120 qualitative and quantitative indicators to cover the different aspects of ESG limits the risk of inconsistency since quantitative indicators are more difficult to manipulate in disclosures (Clarkson et al., 2008). In addition, the data can transparently be traced back to a company document and thus it is less likely that the data is subjectively estimated or derived.

The ESG score is split into environmental, social and governance subcomponents that are separately scored and then combined into a total score. The environmental score includes factors such as air quality and water consumption, the social score considers for example diversity, health and safety, and the governance score includes for instance overboarding, staggered boards, shareholders' rights and executive compensation (Bloomberg Terminal, 2019). This enables investigations on how the assignment of a woman with CSR experience affects the relationship between each of the subcomponents and financial performance and thus a more detailed analysis of the research question. The scores range from 0.1 (no disclosure) to 100 (complete disclosure of all aspects of ESG) and all data points are weighted in relation to their relative importance, taking into account industry specific factors (Bloomberg Terminal, 2019).

As presented in Panel B of Table 1, the overall ESG score of this thesis' sample is on average 36.741, with a minimum of 12.810 and a maximum of 77.273. These numbers are reasonable since the ESG score ranges between 0.1 and 100. On average, the firms in the sample achieved an environmental score of 28.543, with more widely dispersed scores shown by a minimum of 1.379

and a maximum of 82.171. The average of the social score is the closest to the one of the overall ESG score, and amounts to 32.625. However, like the environmental score, the social score is more widely distributed as the minimum and maximum social score range from 3.509 to 85.965. With a mean of 59.567 the governance score shows the highest average of all ESG subcomponents. Also, the minimum of 32.143 and the maximum of 85.714 are comparably high.

To test how the appointment of women with CSR experience affects the relationship between CSR and financial performance, a dummy for experienced females who are appointed to the board is included as an explanatory variable in the regression models for hypothesis 2. The dummy equals 1 if a woman with CSR experience enters the board of firm *i* in year *t* and 0 otherwise. The experienced female dummy is created in four steps as visualised in Figure 4. First, we screen the appointment dates for the women who enter the S&P 500 companies during the covered time period manually in Bloomberg. This answers the question, if a woman enters the board of a sample firm during the analysed time frame. In the second step, we distinguish between the appointment of a female in general and the appointment of a CSR experienced female in particular. We do this by manually collecting data from Bloomberg on the females' previous employers for hires and board memberships, five years prior to the woman's appointment at the S&P 500 firm. This conservative time frame is chosen to capture the females' experience in CSR, as, due to the complexity in the field of CSR, it might take some time for the females to gain experience. In a third step, we calculate the average ESG score of each of the previous employers, for the duration of the hire or board membership. However, considering that we focus on the woman's experience five years prior to her appointment at the S&P 500 firm, we do not take into account the ESG scores prior to this time span. In the fourth step, we compare the average ESG score of the previous employers to the average ESG score of the sample firms and previous employers for the same time span. If the female has worked at a firm with an above average score, she is considered to have CSR experience and thus, if a firm appoints this female, the dummy equals to 1 and 0 otherwise. We are aware that it can be argued that this method does not measure the experience of the individual woman as she might not be affected by, nor be responsible for the CSR performance of the firm. However, accessible information does not allow to objectively and directly assess each females' CSR experience. Therefore, the experienced female dummy is considered to be an appropriate proxy for the female's CSR experience.

As visualised in Table 2, the firms that do not appoint a CSR experienced female, i.e. the dummy equals zero, have a slightly better financial performance. They yield on average a Tobin's Q of 2.186 while firms with an appointment of a CSR experienced female have an average Tobin's Q of only 2.142. However, the opposite can be observed for the ESG score. Firms with an experienced female dummy of 0 have on average 36.451 points whereas those companies which appoint a CSR experienced female reach on average 2.464 points more which leads to a total score of 38.915. If the dummy equals one, on average 1.638 CSR experienced females are appointed per year to the board, which then has on average a size of 11.432 directors. This means that the firms who appointed CSR experienced females, appoints between one or two of them on average per year.

In addition to the dummy, a ratio is constructed in order to test the impact of appointed CSR experienced females on the relationship between CSR and financial performance. The ratio consists of the number of newly appointed CSR experienced females divided by the total number of directors in the board. According to the descriptive statistics in Panel B of Table 1, on average, companies in our sample appoint 1.7% CSR experienced females in relation to their total board size. Thus, out of hundred board members of S&P 500 firms, only less than two are newly appointed CSR experienced female directors.

5.2.3 Control Variables

In line with previous research and in order to avoid biased results, the regression model includes control variables known to influence Tobin's Q. Orlitzky, Schmidt and Rynes (2003) imply that leverage, firm size and industry are the most common control variables when studying the relationship between CSR and financial performance. In addition, McWilliams and Siegel (2000) argue that R&D intensity needs to be included in the model in order to control for endogeneity and to properly specify the relationship. Hence, firm size, leverage, R&D intensity and industry are included as control variables in the regression model.

According to the trade-off theory between the agency benefit and cost of debt, debt can incur both negative and positive effects on firm value (Ogden, Jen & O'Connor, 2003). Debt can on the one hand be used as a disciplinary device against management's tendency to engage in self-serving and

value destroying activities. On the other hand, the limited managerial latitude that comes with increased debt in the capital structure might also discourage the management from exploring profitable business opportunities and thus impacts the financial performance negatively (Ogden, Jen & O'Connor, 2003). Therefore, leverage, which serves as a proxy for firm risk, is expected to affect financial performance. Furthermore, leverage also impacts the CSR performance of a firm. Waddock and Graves (1997) maintain that the management's attitude towards risk is expected to affect its engagement in CSR while Dowell, Hart and Yeung (2000) argue that the leverage ratio will determine if a firm can afford CSR investments. Therefore, following previous research, such as Waddock and Graves (1997) as well as Barnett and Salomon (2012), leverage is defined as the ratio of long-term debt to total assets and is included as a control variable in the regression. The descriptive statistics in Panel B of Table 1 shows that the mean leverage for the 2,065 firm-year observations is 61.3%, while the minimum is 8.1% and the maximum is 133.8%. This means that all firms in the sample have debt in their capital structure, and some have even more debt than assets.

Orlitzky (2001) concludes a relationship between firm size and CSR as well as financial performance. Hillman and Keim (2001), Dowell, Hart and Yeung (2000) and Waddock and Graves (1997) argue that the relationship exists because large firms are likely to be more conscious about their sustainability image because of the larger external pressure as companies grow and mature. In addition, firm size might influence the availability of necessary resources for value creation and long-term profitability (Herbohn, Walker & Loo, 2014). In line with previous research, firm size is proxied by the logarithm of total assets (e.g. Waddock & Graves, 1997; Dowell, Hart & Yeung, 2000). For our sample, the average firm size is 35,178 million USD, as presented in the descriptive statistics in Panel B of Table 1. The smallest firm of the sample has total assets of 1,381 million USD while the largest owns total assets in a value of 684,999 million USD. Intuitively, this seems to be rather high, but taking into consideration that our sample consists of S&P 500 companies, i.e. the largest companies on the U.S. stock exchange market, the large firm size is reasonable.

McWilliams and Siegel (2000) argue that R&D needs to be included in the regression model in order to avoid endogeneity problems, since R&D is an investment which leads to innovations of processes and products. This increases the productivity and thus the financial performance of a

firm. Following this study, R&D intensity, defined as R&D expenditures in relation to sales, is included in the regression. As shown in the descriptive statistics presented in Panel B of Table 1, on average the sample firms' R&D expenditures in relation to sales are 3.9%, with a minimum of 0% and a maximum of 48.4%.

Industry-level factors, have been shown to impact firm performance, including competitive intensity and economies of scale (McWilliams & Siegel, 2000). In line with Waddock and Graves (1997) as well as McWilliams and Siegel (2000), the industry is determined by the Standard Industrial Classification (SIC). With regard to the sample size, we use the SIC division structure, which splits the industries into ten different groups[2].

[2] These include the following divisions: (A) Agriculture, Forestry, and Fishing, (B) Mining, (C) Construction, (D) Manufacturing, (E) Transportation, Communications, Electric, Gas, and Sanitary Services, (F) Wholesale Trade, (G) Retail Trade, (H) Finance, Insurance, and Real Estate, (I) Services, (J) Public Administration.

6 Empirical Analysis

6.1 Diagnostic Tests Pre-Estimation

6.1.1 Hausman Test

In order to test if fixed or random effects are more suitable for the following analysis, we conduct a Hausman test. The result, presented in Table 3, shows a p-value of 0.000 which indicates that a fixed effects regression should be used. Furthermore, various tests are used to check if the model fulfills the assumptions of multicollinearity and homoscedasticity.

6.1.2 Non-Collinearity

Table 4 presents the correlation matrix used in order to analyse if there is multicollinearity among the independent variables. As the total ESG score is composed by the three subcomponents, the high correlation between these variables is expected and reasonable. However, as the correlations are lower than 1, it is relevant to investigate the individual subcomponents rather than merely the overall ESG score. All other correlations show a low pairwise correlation, indicating that there is no multicollinearity issue in the sample.

6.1.3 Homoskedasticity

Further analysis of the data set indicates the existence of outliers for the natural logarithm of Tobin's Q, ROA, leverage, the natural logarithm of size, and R&D intensity. To minimise the impact of the extreme observations and improve the statistical efficiency, we modify the variables through winsorization with a 1% level in each tail. Thus, the 1% most extreme values in each tail are replaced with the minimum and maximum values in the threshold.

To test if the residuals of the regression are equally distributed, i.e. the assumption of homoscedasticity holds, a Modified Wald test for groupwise heteroskedasticity in the fixed effect regression model is performed. The results displayed in Table 5 lead to a rejection of the null hypothesis of homoskedasticity since the p-value equals 0.000 which is less than 0.05. As this indicates the existence of heteroskedasticity, which contradicts the homoscedasticity assumption, we conduct the regressions with robust standard errors.

6.2 CSR and Financial Performance

In order to test the first hypothesis, three different models are conducted as presented in Table 6. The first two models use the overall ESG score as the independent variable while the latter regresses on the different ESG subcomponents. Model 1 analyses the hypothesis through an OLS multivariate regression with robust standard errors that is used as a benchmark for the following regressions. The model indicates a positive, statistically significant relationship between the total ESG score and the logarithm of Tobin's Q. The magnitude of the ESG score coefficient equals 0.002 which can be interpreted as an increase of the score by 10 leads to an increase of 2% in Tobin's Q. Therefore, the relationship is also economically significant. The statistically and economically significant findings support the first hypothesis, that CSR positively affects the financial performance.

When controlling for fixed effects with cluster robust in Model 2, the ESG score is still statistically significant while its sign turns negative. Hence, the first hypothesis is not supported by Model 2. The model shows that size and R&D intensity significantly impact Tobin's Q. Larger firms and those with higher R&D intensity have a lower Tobin's Q. Given that the fixed effects model is more suitable for the panel structure of the data used in this thesis, this approach will be used throughout the following models.

To analyse the individual influence of each ESG subcomponent, in Model 3, the overall ESG score is replaced by the separate environmental, social and governance scores. The regression shows that only the environmental score has a statistically significant impact on Tobin's Q. In addition, the environmental score also has a higher economical significance than the other two subcomponents. The sign indicates that the score influences Tobin's Q negatively. Thus, an increase of 10 points for the environmental score will lead to a 1.4% decrease in Tobin's Q. This contradicts the first hypothesis of a positive relationship. Moreover, the social score has a magnitude of -0.001 and the coefficient of the governance score is 0.001. Therefore, merely the governance score supports the hypothesised positive impact of ESG on Tobin's Q. However, neither the social nor the governance score show statistical significance.

It is possible that better performing firms invest more in CSR and thus have higher ESG scores. One way to deal with this potential cause of endogeneity is to control for the lag of the logarithm of Tobin's Q. The results in Model 4 show a coefficient for the lag of the logarithm of Tobin's Q that equals to 0.358 and is statistically significant. This can be interpreted as a 10% increase in the Tobin's Q of last year leads to a 3.58% increase in the current Tobin's Q. The high statistical and economic significance are in line with previous expectations as serial correlation often exists when analysing panel or time-series data. Moreover, the coefficients of the ESG subcomponents decrease slightly so none of them is statistically or economically significant anymore. This can be explained by the fact that the effect of the lag of Tobin's Q was partly captured by other variables, such as the ESG scores, before. When it is included as an individual variable, its effect is no longer included in the ESG score variables and hence, the latter decrease.

To test if the results hold when using an accounting based instead of a market based performance measurement, ROA is used as the dependent variable in Model 5. The regression shows that none of the ESG subcomponents are statistical significance when having ROA as the dependent variable. However, while the signs of the coefficients remain equal, the economic significance increases for all subcomponents. Therefore, using an accounting based measurement increases the magnitude of the effect, but does not change its direction.

In conclusion, the overall findings above do not support the hypothesis of a positive linear relationship between CSR and financial performance. When using a fixed effect approach, the environmental, social and total scores indicate a negative relationship while the governance score shows a positive impact on Tobin's Q. When capturing the performance with an accounting based measurement, the effect is even stronger. Furthermore, it can be concluded that there is a reverse effect that shows that not only the ESG score impacts the financial performance but also that the financial performance affects the ESG score.

6.3 CSR, Financial Performance and Gender Diversity

In order to test how the appointment of CSR experienced women affects the relationship between CSR and financial performance, stepwise regressions are performed as presented in Table 7. In Model 6, an experienced female dummy is included when regressing Tobin's Q on the ESG score

and the control variables. The coefficient of the dummy equals 0.0026, which indicates a positive effect of appointing CSR experienced females on Tobin's Q. In order to not only investigate the direct impact of females on financial performance but to also examine how gender diversity affects the relationship between CSR and financial performance, an interaction term between the experienced female dummy and the ESG score is included in Model 7. When adding the interaction term, the coefficient of the experienced female dummy changes sign and equals now -0.0156. Furthermore, the coefficient of the interaction term in Model 7 is positive with a magnitude of 0.0005. This means that the positive effect of CSR experienced females on Tobin's Q indicated by the positive coefficient of the experienced female dummy in Model 6 is mediated by the ESG score in Model 7. The coefficient of the ESG score in Model 7 equals -0.0024 which means that an increase of the ESG score by 10 points leads to a decrease in Tobin's Q of 2.4% for a firm that does not appoint a CSR experienced female. For a firm which appoints a CSR experienced female, the effect of the ESG score on Tobin's Q is captured by the sum of the coefficients for the ESG score and the interaction term. Therefore, Model 7 indicates that a firm which appoints a CSR experienced female and increases its ESG score by 10 points, experience a decrease in Tobin's Q of 1.9%[3].

In order to test if the impact of the experienced female is deferred, the experienced female dummy is lagged for one year in Model 8. This leads to a reduction of the number of companies from 449 to 410, as some firms only appear on the S&P 500 index in the first year of the investigated period, i.e. 2012, and thus are omitted when lagging. Furthermore, there is an increase in the magnitude of the dummy's coefficient to -0.044 and thus, its economic significance rises. Moreover, the ESG score is becoming less negative to a value of -0.002 and the interaction term equals 0.001. Therefore, an increase of 10 points in the ESG score leads to a 2% decrease in Tobin's Q for a firm without appointing a CSR experienced female and 1% decrease for a firm with an appointment. When comparing the immediate effect of ESG when appointing a female with experience in Model (1.9%) with the deferred effect in Model 8 (1%), the negative effect of ESG on Tobin's Q decreases over time. However, the experienced female dummies and the interaction terms presented in Model 6 to 8 do not show statistical significance, which means that the variables

[3] This is calculated by adding the coefficient of the interaction term (0.0005) to the coefficient of the ESG score (-0.0024).

are not statistically different from zero and thus there is no evidence that these significantly affect financial performance. As mentioned in the methodology, this model fails to control for board characteristics. To adjust for this shortcoming, board size is controlled for in Model 9. In addition, as the previous findings show that there is a deferred effect of the appointed females, the following models only account for the lagged effect.

In Model 9, the experienced female dummy is replaced with the lagged ratio of the number of experienced females to the board size. The regression in Model 9 shows a coefficient of -0.0019 for the centered ESG score which has a marginal statistical significance. The negative sign indicates that a higher ESG score leads to a lower Tobin's Q. In addition, the magnitude of the coefficient can be interpreted as a firm with an average percentage of appointed CSR experienced females on the board, that increases its ESG score from the average of 36.74 by 10 points, experiences a decrease in Tobin's Q of 1.9%, as presented in Table 8. Furthermore, the coefficient of the lagged ratio for CSR experienced females that are newly appointed to the board in relation to board size equals to 0.0526, which indicates a positive direct effect of CSR experienced females on Tobin's Q. Thus, for instance a firm with an average ESG score, which appointed more females than the average in the prior year and increased the ratio of those new appointments compared to its board size from an average of 1.75% to 11.75%, increases its current Tobin's Q by 0.53%, as shown in Table 8. This means that a firm, that had for example merely male board members with a board size of ten, and appointed one CSR experienced female last year, increases its Tobin's Q by 0.53%, given an ESG score of 36.74, i.e. the average score.

Moreover, the coefficient of the interaction term in Model 9 is 0.0064, which refers to the impact of CSR experienced females on the relationship between CSR and financial performance. Combined with the coefficient of the individual term for the ESG score, this means that a firm that had an average ESG score and average ratio of appointed females to board size, but increases those by 10 points, respectively 10 percentage points, decreases its Tobin's Q in return to the ESG score by 1.26%, as presented in Table 8. Comparing this to the decrease of 1.9% in Tobin's Q for a firm that maintains the average appointed female to board size ratio and merely increases its ESG score by 10 points, it appears that appointing new CSR experienced females lowers the negative impact of the ESG score on financial performance. Table 8 shows further that for a firm which has an

ESG score of 46.74, i.e. 10 points above average, the breaking point where the impact on Tobin's Q turns positive is 31.44% appointed CSR experienced females in relation to the total board size. Thus, in general, appointing CSR experienced females has a positive impact on the relationship between CSR and financial performance and can even turn the negative impact of CSR on financial performance into a positive, if enough CSR experienced females are appointed.

7 Discussion

7.1 CSR and Financial Performance

The correlation between CSR and financial performance is a well researched area. Some researchers find a positive relationship, while others argue that the relationship is negative or neutral. This study supports the range of research showing an overall linear and negative relationship between CSR and financial performance.

In contrast to the first hypothesis, the findings of the empirical analysis reveal a negative impact of the overall ESG score on Tobin's Q, which is in line with Friedman (1970). He argues that engagement in sustainability leads to increased costs and competitive disadvantages that result in a negative impact on financial performance. According to the agency theory, it can further be argued that engagement in CSR activities might be used by managers to opportunistically improve their own reputation without considering what the shareholders value, which explains our findings of a negative impact on financial performance. Furthermore, Brammer, Brooks and Pavelin (2006) as well as López, Garcia and Rodriguez (2007) proved the negative impact of CSR on financial performance in their studies. These studies investigate different periods of time, which are rather dated. López, Garcia and Rodriguez (2007) analyse a time frame of 1998 to 2004 and Brammer, Brooks and Pavelin (2006) investigate data from 2002. In contrast, our research contributes with more recent insights, investigating a sample from 2012 to 2017. However, all results consistently indicate a negative relationship between CSR and financial performance. Hence, the effect of CSR on financial performance is assumed to be independent of time. According to Friedman (1970) the negative impact of CSR on financial performance leads to the recommendation that companies should not engage in CSR. He argues that CSR implies additional costs and potential competitive disadvantages that reduce the financial performance and contradict the firms' main goal to maximise shareholder value. In contrast, Brammer, Brooks and Pavelin (2006) argue that shareholders appreciate CSR and therefore accept lower returns. This would mean that engagement in CSR, although affecting financial performance negatively, has an overall positive impact on the firm. This might also imply that the superior goal of maximising shareholder value is not that much applicable anymore for the contemporaneous society.

The negative impact on financial performance can also be observed for the environmental and social subcomponents of the ESG score in our study. However, the governance score has a positive impact on the financial performance. Using the arguments of Waddock and Graves (1997) and Al-Tuwaijri, Christensen and Hughes (2004), who argue for an overall positive impact of CSR on financial performance, the good management theory can be applied to our findings. Hence, the engagement in CSR activities that lead to a high governance score are evidence for good management which improves the financial performance. This is not surprising as the governance score captures factors that are characteristics of an effective management, such as fair executive compensation and shareholders' rights. Furthermore, our findings of a positive impact of governance activities on the financial performance are in line with the instrumental stakeholder theory. Thus, governance activities strengthen the relationships between a company and its stakeholders and therefore build trust and curb opportunism. This leads to reduced transaction costs and risks which results in an improved financial performance (Barnett, 2007). Furthermore, engagement in governance activities improves the trustworthiness and stakeholder influence capacity of a firm that leads to a positive impact on the stakeholders' perception of future CSR activities, as hypothesised by Barnett (2007). However, the negative impact that is found for environmental and social activities implies in contrast that these activities do not increase stakeholders' trust and that these also do not perceive those activities as signs of good management.

In previous research, there exist inconsistencies in the results as well as in the measurements of CSR. Additionally, this thesis reveals that different ESG subcomponents show different impacts on Tobin's Q. Combining these facts, we assume that different weighting of the subcomponents within the different CSR measurements impacts the findings for the relationship between CSR and financial performance. Furthermore, the inconsistent findings in previous research might also be a result of the use of different performance measurements. This is supported by the findings when using ROA as the dependent variable, which leads to change in the magnitude of the effect of CSR on financial performance.

7.2 CSR, Financial Performance and Gender Diversity

In contrast to the first hypothesis, there are no studies that address the issue of the second hypothesis. In a first attempt to do this, this thesis does not find a statistically significant effect of the appointment of a CSR experienced female on the relationship between CSR and financial performance. However, the study shows economically significant implications for the relationship that will be discussed in the following.

Independent of the construction of the measurement for CSR experienced females who are appointed to the board, the results show that experienced females have a positive impact on Tobin's Q since they decrease the negative impact of ESG on Tobin's Q. This is in line with the resource dependence theory and human capital theory which claim that a diverse board combines various beneficial characteristics that improve external relationships of the firm. These beneficial characteristics include women's more social orientation, their ability to recognise different stakeholder interests, as well as their innovativeness, creativity, empathy and contribution to a more effective oversight function. It appears that stakeholders value these characteristics and thus also women's engagement in CSR which leads to a positive effect on the relationship between CSR and financial performance. However, it is also possible that the positive impact of females is not a result of their true characteristics but rather of what stakeholders perceive. While Lee and James (2007) argue that their finding of a negative impact of female CEOs on financial performance can be traced back to stakeholders' negative stereotypical beliefs of women, the our findings indicate that stakeholders' might believe in the positive characteristics of women. This increases the trust of stakeholders in the CSR actions of the firm and thus positively affects the relationship between CSR and financial performance.

Rose's (2007) argument that women, as a minority in the board, simply adopt the opinion of the majority, is not supported by our findings. Rather, it can be observed that when being appointed to the board, experienced women make a difference to the board's decision. Moreover, the positive effect of females on the relationship between CSR and financial performance increases when analysing the financial performance one year after the appointment of a CSR experienced female. Hence it can be assumed that it takes some time for females to realise their full potential and characteristics. Additionally, it also indicates that potential conflicts in the diverse board that

diminish the beneficial characteristics of females (Carter et al., 2010) reduce when the woman is established in the board, which is in our analysis one year after the appointment.

Mínguez-Vera and Martin (2011) and Ahern and Dittmar (2012) maintain that their findings of a negative impact of women on financial performance can be seen as evidence for women's risk aversion. Considering CSR as a risky investment, as the outcome is often unknown and deferred, our findings of a positive impact of females on the relationship between CSR and financial performance contradicts the assumption of females' aversion to risk. The findings of our thesis also contradict the results maintained by Adams and Ferreira (2009), who argue that gender diversity merely has a positive impact on financial performance in firms with weak governance. This is because only weak governance firms will benefit from the increased monitoring that a more diverse board leads to. However, as shown in the descriptive statistics, the firms in our sample have on average a high governance score compared to the maximum score. Taking this into consideration when interpreting our finding of a positive impact of gender diversity on the relationship between CSR and financial performance, we find that even firms with high governance scores can benefit from gender diversity.

These findings of a positive impact of CSR experienced females on the relationship between CSR and financial performance are especially evident when using the ratio of the number of appointed CSR experienced females to the board size. As shown in the descriptive statistics, on average, less than 2% of the board directors are newly appointed CSR experienced females in S&P 500 firms. Our findings suggest that a firm that follows the majority and has merely 1.75% of its board being newly appointed CSR experienced females, decreases its financial performance with activities in CSR. In contrast, if a firm stands out and dares to appoint a higher percentage of CSR experienced female than the average, it will decrease the negative impact of CSR on financial performance. Our findings indicate that if a firm that has an ESG score of 46.74, i.e. 10 points above average, and more than 31.44% new CSR experienced females in relation to the total number of board directors are appointed, the relationship between CSR and financial performance will turn positive and the firm can yield financial benefits from its CSR activities. This means that if enough CSR females are appointed, they can turn the financial outcome of CSR positive. These findings are based on the assumption that there is a linear relationship between board diversity, CSR and

financial performance. Therefore, the results indicate that the more females that are appointed in relation to the total board size, the better is the impact of CSR on financial performance. However, it can be argued that this is not a realistic assumption, considering that 100% of newly appointed females on the board will diminish the positive characteristics of a diverse board that has both, male and female directors. This is supported by Carter, Simkins and Simpson (2003) who maintain that the broader perspective of a more diverse board leads to a better evaluation of strategic alternatives. Furthermore, it can be argued that appointing 100% external CSR experienced female directors, who are new to the board, might not be beneficial as there are also advantages from having board members with experience within the company.

8 Conclusion

This thesis aims to assess the impact of CSR on financial performance by adopting a gender perspective. Overall, this thesis concludes a negative linear relationship between CSR and financial performance, which leads to a rejection of the first hypothesis. When dividing the CSR measurement into its subcomponents, the negative impact on financial performance is also observed for the environmental and social subcomponents. These results are inconsistent with the major part of previous research that argues for a positive impact of CSR on financial performance. The most likely explanation for the negative finding is that CSR imposes additional costs and possible competitive disadvantages which lead to a decreased financial performance. However, the governance score is positively correlated to financial performance. Thus, it seems that shareholders view it as a sign of good management that strengthens stakeholder relations, builds trust and curbs opportunism. This reduces transaction costs and risks and therefore, the financial performance is improved. The results vary with different CSR scores and performance measurements as found by the comparison with other studies and our regression of ROA on the independent variables. This can explain the differences in the findings of previous research. While all findings of this thesis are economically significant, merely the total ESG score and the environmental score are statistically significant. This means that the social score and the governance score are not statistically different from zero and thus there is no evidence that these significantly affect financial performance. Hence, the findings of the impact of governance score and social score on financial performance should be regarded as indicators of the relationship, rather than evidence.

In addition to the broadly discussed relationship between CSR and financial performance, we analyse for the first time how the appointment of CSR experienced females influences this relationship. The main finding is that in general, appointing a CSR experienced woman decreases the negative impact of CSR on financial performance. This can be traced back to women's beneficial characteristics, such as their social orientation, empathy and innovativeness. The positive effect of women with CSR experience increases even more one year after their appointment. Hence, it can be concluded that it takes time for females to realise their full potential and beneficial characteristics, and that possible conflicts that arise in a diverse board reduce over time. In addition to the generally positive impact of experienced females on the relationship

between CSR and financial performance, in particular the appointment of more than 31.44% CSR experienced females to a firm with 10 points higher ESG score than average, yields an improved financial performance. Hence, our findings show that appointing enough CSR experienced female directors can even turn the relationship between CSR and financial performance positive. However, taking into account that a firm benefits from a diverse board, it can be argued that appointing CSR experienced females is beneficial as long as the board still consists of board members with different genders including various characteristics and backgrounds. Although the conclusions for the second hypothesis are economically significant, they do not show statistical significance. Hence, the findings are only suitable as indicators and not as evidence.

8.1 Recommendations for Practice and Future Research

This thesis contributes with various implications for practice and recommendations for future research. Intuitively, the negative impact of CSR on financial performance leads to the recommendation for firms not to engage in CSR. However, it can also be argued that shareholders appreciate CSR activities and thus accept lower returns. This implies that it is positive for firms to engage in CSR and furthermore that the superior goal of shareholder value maximisation might not be that valid anymore for today's society. Therefore, companies that engage in CSR are recommended to consider their specific shareholders and their attitude towards CSR. In addition, we suggest future research to conduct qualitative studies, e.g. through interviews, to clarify shareholders' general preferences.

Following the findings of a positive relationship between the governance subcomponent of CSR and financial performance, we recommend that companies invest especially in governance activities such as shareholders' rights and fair executive compensation, in order to improve their financial performance. As this also indicates that the division of the CSR score into its subcomponents reveals new and important insights on the relationship between CSR and financial performance, the split of the CSR score suggests to be considered in future research.

As our findings prove that appointing CSR experienced females improves the relationship between CSR and financial performance, this should be considered by companies when appointing new board members. To improve the financial benefits of the CSR activities, female applicants should

be taken into account for open board positions. Furthermore, the firm should pay attention to the applicant's experience in CSR and appoint females who have already worked within other companies that have a high CSR rating. Moreover, when appointing a new female director, the company should also be aware that females' beneficial characteristics take time to realise. To further test this assumption, future research is suggested to include a lag of more than one year for the experienced female measurements when investigating the impact on the relationship between CSR and financial performance. This will reveal if the positive effect of females that is seen after one year improves even further in the long run. In addition, future research should test a non-linear impact of females on the relationship between CSR and financial performance, as our discussion shows that the linear effect investigated in this thesis neglects the fact that also male directors have beneficial characteristics.

Previous research maintains that there is reverse causality between CSR, respectively women, and financial performance. However, due to the choice of method, this thesis is not appropriate to investigate causality among the three variables. Therefore, future research is suggested to analyse the causal effects between females, CSR and financial performance. In addition, further research is recommended to investigate if there exists an asymmetric relation between CSR and financial performance. This can for instance be done by performing an event study that analyses the effect of news releases on financial performance. Finally, taking into account the new insights on the impact of the appointment of experienced females on the relationship between CSR and financial performance, we recommend further research to advance the research within this topic.

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Tables

Table 1: Sample Adjustments and Descriptive Statistics

Panel A

	Observations
Initial sample	3 003
Missing ESG score	358
Missing data	580
Final sample H1	**2 065**

Panel B

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Tobin's q	2,065	2,180	1,214	0,621	11,285
ROA	2,065	6,625	7,162	- 61,821	42,279
ESG	2,065	36,741	13,639	12,810	77,273
Environmental score	2,065	28,543	18,300	1,379	82,171
Social score	2,065	32,625	15,059	3,509	85,965
Governance score	2,065	59,567	6,952	32,143	85,714
Experienced female	2,065	0,118	0,322	0	1,000
Ratio	2,065	0,017	0,059	0	1,000
Leverage	2,065	0,613	0,181	0,081	1,338
Size	2,065	35 178	59 660	1 381	684 999
R&D intensity	2,065	0,039	0,068	0	0,484

Panel A of Table 1 shows why observations are omitted from the original sample. Initially, the sample contains 3,003 observations. Of those, 358 observations are removed due to a missing ESG score and 580 as other data was missing. Hence, the final sample includes 2,065 observations.

Panel B of Table 1 presents the descriptive statistics for 2,065 firm-year observations from 2012 to 2017. Observations show the sample size, mean refers to the average, and standard deviation measures the dispersion of the frequency distribution, while minimum and maximum display the lowest and highest values of the variable in the sample. Tobin's Q is a market based performance measurement, whereas ROA forms an accounting based performance measurement. ESG refers to the Bloomberg ESG score that is used to measure the CSR of a company. This score is further divided into its subcomponents, namely the environmental, social and governance scores. Experienced female is a dummy that equals 1 if a CSR experienced female is appointed to the board of directors of the analysed firm and 0 otherwise. Ratio refers to the number of CSR experienced females who are appointed to the board in relation to the board size. Leverage, Size, and R&D intensity are used as control variables.

Table 2: Descriptive Statistics in Relation to the Experienced Female Dummy

Exp. Female Dummy	Tobin's Q	Total ESG Score	Nr. of Appointed CSR Exp. Females	Boardsize
0	2,186	36,451	0	10,973
1	2,142	38,915	1,638	11,432
Total	2,180	36,741	0,193	11,027

Table 2 summarises the descriptive statistics for the different values of the dummy variable that captures if a CSR experienced female is appointed to the board of a firm. It shows that the firms without appointing a CSR experienced female, i.e. the dummy equals zero, have a slightly better financial performance. They yield on average a Tobin's Q of 2.186 while firms with an appointment of a CSR experienced female have an average Tobin's Q of only 2.142. Moreover, firms with an experienced female dummy of 0 have on average 36.451 points whereas those companies which appoint a CSR experienced female reach on average 2.464 points more which leads to a total score of 38.915. If the dummy equals one, on average slightly over 1.5 CSR experienced females are appointed to the board. This means that the firms who appointed CSR experienced females, appoint between one or two of them on average.

Table 3: Hausman Test

	Coefficients			
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
ESG	- 0,002	- 0,000	- 0,002	0,000
Leverage	0,035	0,058	- 0,023	0,028
Log(Size)	- 0,295	- 0,207	- 0,088	0,013
R&D intensity	- 1,238	0,498	- 1,735	0,281
2013	- 0,235	- 0,203	- 0,032	0,004
2014	- 0,116	- 0,091	- 0,026	0,003
2015	- 0,059	- 0,038	- 0,021	0,002
2016	- 0,088	- 0,074	- 0,015	-
2017	- 0,058	- 0,050	- 0,008	-

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(9) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 113.29
Prob>chi2 = 0.0000
(V_b-V_B is not positive definite)

Table 3 displays the results of the Hausman test that is conducted in order to decide between fixed or random effects in the regression model. The test investigates whether there is a correlation between the unique errors (u_i) and the regressors. As there exists correlation, indicated by a p-value of 0.000 (Prob>chi2 is less than 0.05), a fixed effects model is performed.

Table 4: Correlation Matrix

Variable	Log(Tobin's q)	ROA	ESG	Environmental score	Social score	Governance score	Experienced female	Ratio	Leverage	Log(Size)	R&D intensity
Log(Tobin's q)	1.000										
ROA	0.579***	1.000									
ESG	-0.048**	-0.010	1.000								
Environmental score	-0.028	0.007	0.973***	1.000							
Social score	-0.097***	-0.050**	0.839***	0.707***	1.000						
Governance score	-0.083***	-0.055**	0.759***	0.672***	0.635***	1.000					
Experienced female	-0.013	-0.019	0.058***	0.051**	0.050**	0.069***	1.000				
Ratio	0.014	-0.005	0.044**	0.036	0.043*	0.058***	0.804***	1.000			
Leverage	-0.076***	-0.165***	0.118***	0.091***	0.149***	0.150***	0.049**	0.029	1.000		
Log(Size)	-0.379***	-0.173***	0.340***	0.337***	0.244***	0.358***	0.070***	0.045**	0.182***	1.000	
R&D intensity	0.328***	0.136***	0.075***	0.116***	-0.012	-0.020	-0.039*	-0.048**	-0.267***	-0.068***	1.000

*** Significant at 0.01 level
** Significant at 0.05 level
* Significant at 0.10 level

Table 4 shows the pairwise correlation among the variables used in the regression models. The stars next to the numbers indicate the statistical significance of the correlations. The ESG score is negatively correlated to the natural logarithm of Tobin's Q, which is statistically significant. This means that an increase of the ESG score by one, would decrease the Tobin's Q by 4.8% when solely investigating the pairwise correlation of the two variables. Furthermore, as expected, the ESG score is highly correlated to its subcomponents and the interaction terms are highly correlated among each others and with the individual terms. However, as the correlations are below 1, it is relevant to investigate the individual variables. All other correlations are comparably low, indicating that there is no multicollinearity problem in the sample.

Table 5: Modified Wald Test

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model
H0: sigma(i)^2 = sigma^2 for all i
chi2 (449) = 8.5e+06
Prob>chi2 = 0.0000

Table 5 displays the result of the Modified Wald test, used to decide if there is homo- or heteroskedasticity among the panel-data. The p-value of 0.000 indicates the existence of heteroskedasticity, which contradicts the homoskedasticity assumption.

Table 6: Regressions for Tobin's Q on CSR

	Hypothesis 1				
	1	2	3	4	5
Variables	**Log(Tobin's q)**	**Log(Tobin's q)**	**Log(Tobin's q)**	**Log(Tobin's q)**	**ROA**
ESG_t	0.002***	-0.002**			
	(0.001)	(0.001)			
Environmental score			-0.001**	-0.000	-0.010
			(0.001)	(0.001)	(0.019)
Social score			-0.001	-0.000	-0.013
			(0.001)	(0.001)	(0.017)
Governance score			0.001	-0.001	0.031
			(0.001)	(0.001)	(0.035)
Leverage	0.093	0.035	0.038	-0.033	-16.630***
	(0.063)	(0.088)	(0.088)	(0.075)	(2.693)
Log(Size)	-0.142***	-0.295***	-0.295***	-0.285***	0.301
	(0.008)	(0.028)	(0.028)	(0.025)	(0.924)
R&D intensity	1.647***	-1.238*	-1.254*	-1.170	-51.120***
	(0.165)	(0.714)	(0.716)	(0.771)	(14.910)
Log(Tobin's q_{t-1})				0.358***	
				(0.039)	
Constant	1.376***	3.512***	3.445***	3.368***	14.610
	(0.086)	(0.288)	(0.296)	(0.260)	(9.447)
Fixed effects	No	Yes	Yes	Yes	Yes
Observations	2,065	2,065	2,065	1,596	2,065
R-squared	0.359	0.249	0.250	0.330	0.101
Number of company		449	449	418	449

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6 shows the estimation results of the different regression models from the statistical program Stata for hypothesis 1. Model 1 shows an OLS approach with robust standard errors that regresses the natural logarithm of Tobin's Q on the ESG score, leverage, logarithm of size and R&D intensity. The regression is based on a sample of 2,065 firm-year observations. In Model 2, the first regression is modified by changing from an OLS to a fixed effects with cluster robust approach as this is more suitable for the panel structure of our dataset. The next model, Model 3, divides the total ESG score, used in Model 2, into its three subcomponents: environmental, social and governance scores. In Model 4, the previous model is varied by adding the lag of Log(Tobin's Q) as an independent variable. Thus, we aim to control for an endogeneity problem, arising from serial correlation in the panel data. Including the lagged variable leads to a reduction of the observations to 1,596. Model 5 uses ROA as the dependent variable, in order to assess how the independent variables, used in Model 3, impact an accounting based measurement.

Table 7: Regressions for Tobin's Q on CSR and Gender Diversity

	Hypothesis 2			
	6	7	8	9
Variables	**Log(Tobin's q)**	**Log(Tobin's q)**	**Log(Tobin's q)**	**Log(Tobin's q)**
ESG_t	-0.0023**	-0.0024**	-0.0020**	-0.0019*
	(0.0009)	(0.0009)	(0.0010)	(0.0010)
Experienced $female_t$	0.0026	-0.0156		
	(0.0094)	(0.0343)		
Experienced $female_{t-1}$			-0.0436	
			(0.0325)	
Dummy $interaction_t$		0.0005		
		(0.0008)		
Dummy $interaction_{t-1}$			0.0010	
			(0.0007)	
$Ratio_{t-1}$				0.0526
				(0.0663)
Ratio $interaction_{t-1}$				0.0064
				(0.0051)
Leverage	0.0288	0.0297	0.0180	0.0190
	(0.0884)	(0.0886)	(0.0899)	(0.0899)
Log(Size)	-0.2930***	-0.2930***	-0.3160***	-0.3160***
	(0.0283)	(0.0283)	(0.0290)	(0.0292)
R&D intensity	-1.2070*	-1.203*	-1.5810*	-1.5940*
	(0.7130)	(0.7130)	(0.8630)	(0.8650)
Constant	3.5060***	3.5080***	3.8680***	3.7910***
	(0.2890)	(0.2890)	(0.2990)	(0.2990)
Fixed effects	Yes	Yes	Yes	Yes
Observations	2,065	2,065	1,584	1,596
R-squared	0.248	0,249	0,219	0,220
Number of company	499	499	410	418

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7 displays the estimation results of the different regression models from the statistical program Stata for hypothesis 2. All models shown apply a fixed effects approach with cluster robust. In Model 6, the logarithm of Tobin's Q is regressed on the total ESG score, the dummy for the appointment of a CSR experienced female and the control variables leverage, logarithm of size and R&D intensity. This model is expanded by adding an interaction term between the total ESG score and the experienced female dummy in Model 7. Thus it is analysed how the appointment of a CSR experienced female impacts the relationship between CSR and financial performance. To examine if this impact is deferred, the experienced female dummy is lagged for one year in Model 8. In Model 9, a ratio of the number of appointed CSR experienced female directors to board size is used as a measurement for gender diversity, alternative to the dummy in the previous models. As the analysis of Model 8 proved a deferred effect of the appointed females, in Model 9 also a lagged version of the ratio for appointed CSR experienced females is used.

Table 8: Impact of CSR on Financial Performance Based on Regression Model 9

Impact of CSR on financial performance holding all controls fixed: Log(Tobin's Q)=-0.0019xESG+0.0064xESGxRatio Inserting values for ESG and Ratio leads to:				
ESG Score		**Ratio**		**Change in**
Above Avg.	**Total Score**	**Above Avg.**	**Total Ratio**	**Tobin's Q**
10	46,74	0,00% points	1,75%	-1,90%
10	46,74	10,00% points	11,75%	-1,26%
10	46,74	20,00% points	21,75%	-0,62%
10	46,74	29,69% points	31,44%	0,00%
10	46,74	30,00% points	31,75%	0,02%

Table 8 presents how an ESG scores of 10 points above average impacts Tobin's Q for different percentages of appointed CSR experienced female directors in relation to the board size. The second last row shows the breaking point of the calculation, i.e. the ratio of appointed CSR experienced females for that the impact of a 10 points above average ESG score on Tobin's Q is zero. If more than the calculated 31.44% CSR experienced females in relation to the board size are appointed, the impact of an ESG score of 46.74 on Tobin's Q is positive. The calculations are based on the regression in Model 9.

Figures

Figure 1: Overview of Hypotheses

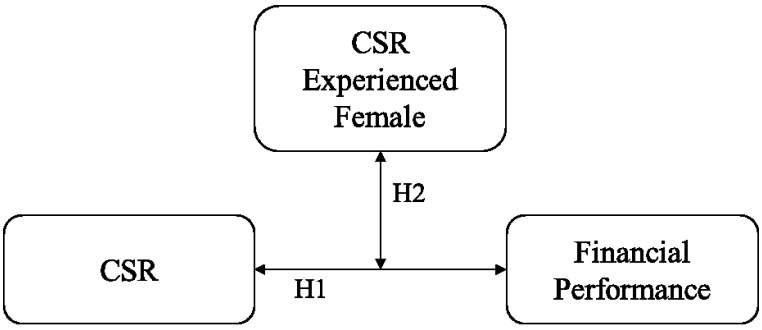

Figure 1 illustrates the two hypotheses explored in this thesis. Hypothesis 1 assumes that there is a positive impact of CSR on financial performance. Hypothesis 2 argues that the appointment of CSR experienced females impacts the relationship between CSR and financial performance.

Figure 2: Histogram of Tobin's Q in Levels

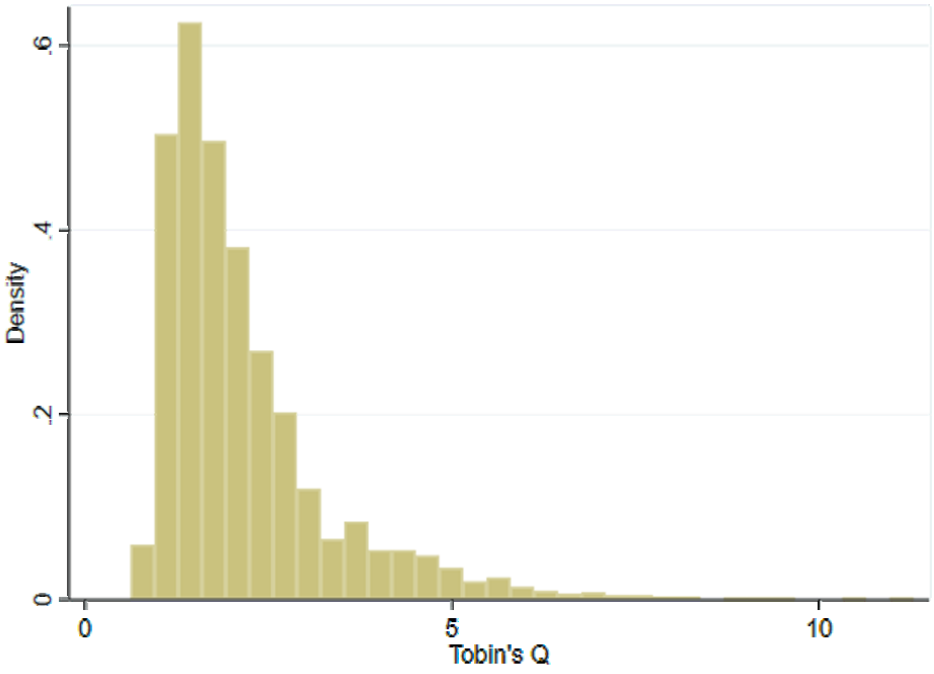

Figure 2 is a histogram displaying the frequency of the different Tobin's Q values in levels. The length of the horizontal axis indicates that there are outliers with a Tobin's Q above 10. The graph leads to the conclusion that Tobin's Q is not normally distributed and thus its natural logarithm should be used.

Figure 3: Histogram of Tobin's Q in Natural Logarithm

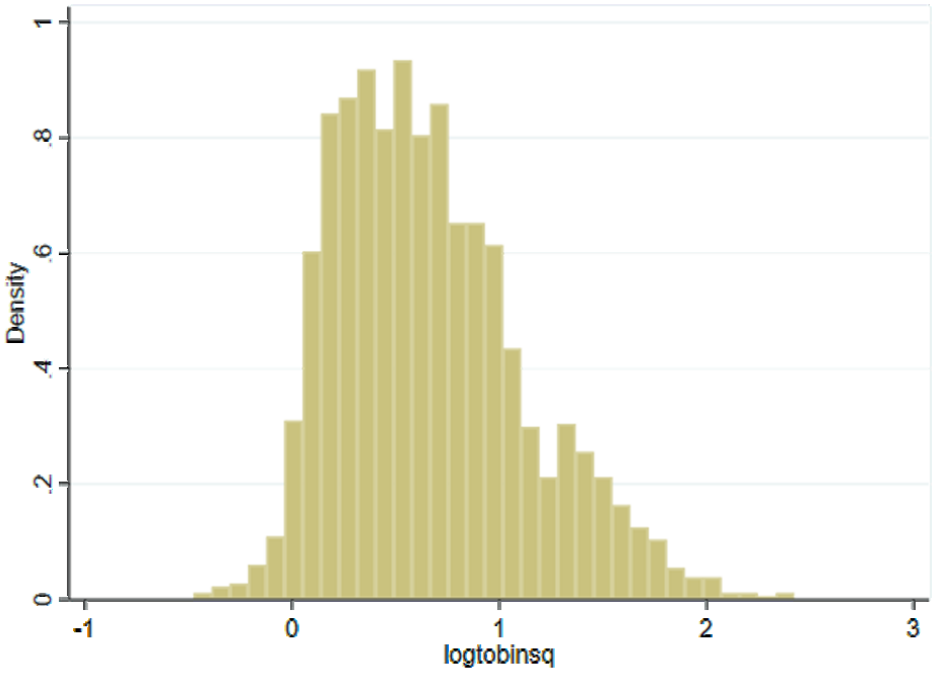

Figure 3 is a histogram visualising the frequency of the natural logarithm of Tobin's Q. As it more normally distributed than Tobin's Q in levels, the logarithm of Tobin's Q will be used in further analysis to fulfil the assumption of normality.

Figure 4: Construction of the Experienced Female Dummy

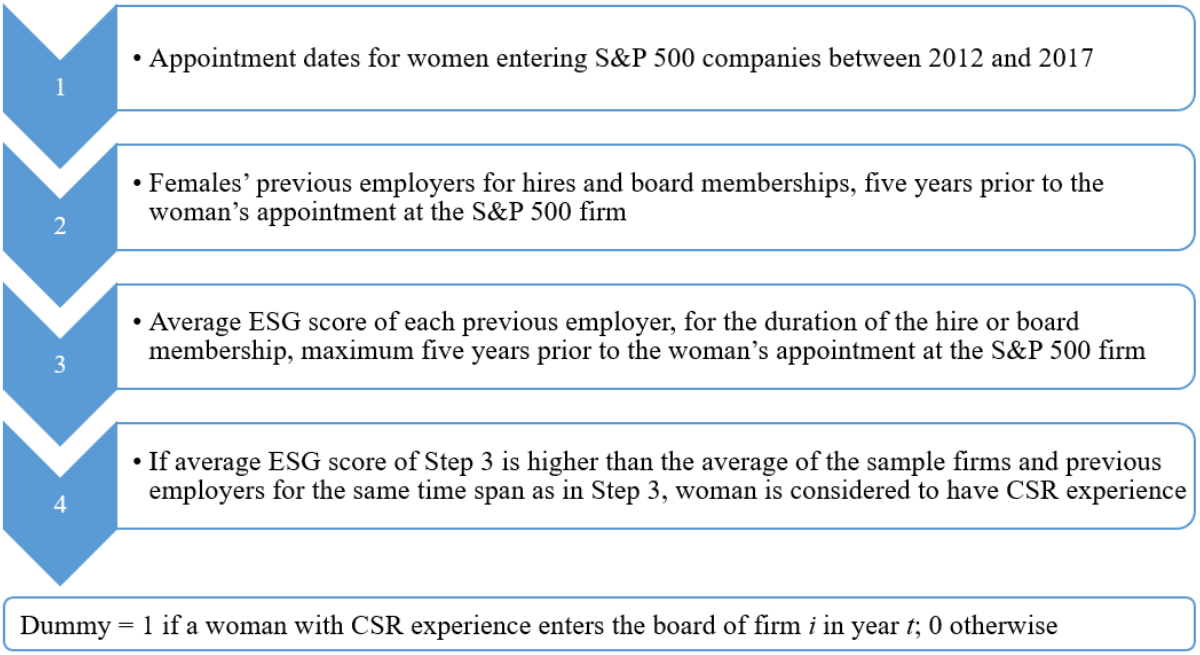

Figure 4 visualises the construction of the dummy variable that captures if a CSR experienced female is appointed to the board of directors of a company.

Appendix

Appendix 1: Overview of Literature on CSR and Financial Performance

Hpothesis 1						
Author	**Year**	**Studied time period**	**Sample**	**Dependent variable**	**CSR index**	**Link between CSR and financial performance**
Waddock & Graves	1997	1991	S&P 500	ROA, ROE, ROS	KLD	positive
Al-Tuwaijri, Christensen & Hughes	2004	1994	198 companies on S&P 500	Industry-adjusted annual return	ratio of toxic waste recycled to total toxic waste generated	positive
Dowell, Hart & Yeung	2000	1994-1997	S&P 500	Tobin's q	IRRC	positive
Brammer, Brooks & Pavelin	2006	2002	FTSE All Share Index	Stock return	Disaggregated social performance indicator	negative
López, Garcia & Rodriguez	2007	1998-2004	55 firms at DJSI and DJGI	Profit before tax (PBT)	DJSI	negative
Nelling & Webb	2008	1993-2000	600 U.S. firms	ROA	KLD	neutral
McWilliams & Siegel	2000	1991-1996	524 firms	Long-run economic performance	KLD	neutral
Barnett & Salomon	2012	1998-2006	1,214 firms	ROA	KLD	curvelined
Nollet, Filis & Mitrokostas	2015	2007-2011	S&P 500	ROA, ROC, Excess Stock Retruns	Bloomberg ESG score	curvelined

This table shows a summary of the analysed previous research for hypothesis 1, including the author, the year of publication, the studied time period and sample, the applied dependent variable and CSR index and finally if the paper finds a positive, negative, neutral or curvilinear relationship between CSR and financial performance.

Appendix 2: Overview of Literature on CSR, Financial Performance and Gender Diversity

Hypothesis 2							
Author	**Year**	**Studied time period**	**Sample**	**Dependent variable**	**CSR index**	**Link between women and financial performance**	**Link between women and CSR**
Carter, Simkins & Simpson	2003	1999	Fortune 1000	Tobin's q	percentage of women on the board	positive	
Erhardt, Werbel & Shrader	2003	1993 & 1998	127 U.S. firms	ROA ROI	percentage of women on the board	positive	
Campbell & Mínguez-Vera	2008	1995-2000	68 companies on the Blosa the Madrid	Tobin's q	percentage of women on the board	positive	
Adams & Ferreira	2009	1996-2203	S&P 500, S&P MidCaps and S&P SmallCap	ROA, Tobin's q	percentage of women on the board	negative	
Ahern & Dittmar	2012	2001-2009	Oslo Stock Exchange (OSE)	Tobin's q	percentage of women on the board	negative	
Minguez-Vera & Martin	2011	1998-2003	Spanish small and medium sized firms	ROE	percentage of women on the board	negative	
Haslam et al.	2010	2001-2005	FTSE 100	ROA, ROE, Tobin's q	percentage of women on the board	negative	
Lee & James	2007	1990-2000	1,624 announcements	Cumulative abnormal return	announcements of top executive appointments	negative	
Carter et al.	2010	1998-2002	S&P 500	ROA, Tobin's q	appointment of a female director	neutral	
Rose	2007	1998-2001	CSE	Tobin's q	percentage of women on the board	neutral	
Galbreath	2008	2004-2005	ASA 300 index	ROE	percentage of women on the board	Indirect	
Harjoto Laksmana & Lee	2015	1999-2011	1,489 U.S. firms	KLD	percentage of women on the board		positive
Boulouta	2012	1999-2003	126 firms on S&P 500	KLD	percentage of women on the board		positive

This table displays the literature investigated for hypothesis 2. The overview includes the author, year, studied time period and sample as well as the dependent variable and the used CSR index. Furthermore, it shows what link is found between women and financial performance or between women and CSR.