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# Corporate Governance Determinants of Corporate Social Responsibility – An Analysis of Dutch Listed Firms

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Hereby I present my master thesis. It has been written to fulfill the graduation requirements of my MSc Business Administration with a specialization in Financial Management. This research took half a year to complete. Therefore, I am glad this preface gives me the opportunity to thank some people, who supported me during this period.

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## Abstract

This study builds on previous research on the determinants of corporate social responsibility (CSR). It extends existing academic literature because it examines corporate governance determinants for Dutch listed firms. Ownership concentration, female board members, outside directors, board size and, executive compensation are the corporate governance determinants of CSR disclosure that are included in this study. The determinant executive compensation is not previously been analyzed for Dutch listed firms. Data on CSR is obtained by a content analysis and from the Transparency Benchmark (TB) provided by the Ministry of Economic Affairs. There are 53 sampled firms listed on the Amsterdam Euronext stock exchange in the period 2014-2016. Ordinary least squares and logistic regression are conducted. The results indicate a positive association between female board members and board size. However, the results are not significant in all models. Ownership concentration, outside directors and, total executive compensation are not observed as determinants in the context of Dutch listed firms. Results of this study show that determinants of CSR for Dutch listed firms have not different signs and directions to CSR in comparison to other countries.

Keywords: corporate social responsibility (CSR), corporate governance, transparency benchmark (TB), content analysis, ownership concentration, board characteristics, executive compensation.

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# 1. Introduction

This section contains background information of corporate social responsibility and discusses the theoretical relevance. Furthermore, the research objective and research question of this study is presented. The structure of this study is presented at the end.

## 1.1 Background

Corporate social responsibility (CSR) activities have been increasingly important in recent years. This is confirmed by Ding, Ferreira, and Wongchoti (2016), who stress that many corporations devote significant attention to CSR by dedicating segments of their annual reports and websites, incorporating CSR into their strategy, and perhaps even considering CSR when setting strategic goals. In addition to annual reports, some firms also present a sustainability report. This means that the engagement in CSR of firms are drawing attention of current and future stakeholders such as investors, customers, suppliers, employees as well as governments across the world.

In the past years there were some major scandals at different global firms such as Volkswagen in 2016.[1] Volkswagen has cheated pollution emissions tests and it meant a big scandal in the car industry. Scandals like this could affect the reputation of a firm and eventually firm performance. However, a study of this relationship shows that only reputation and competitive advantage mediate the relationship between CSR and firm performance (Saeidi, Sofian, Saeidi, Saeidi, & Saaeidi, 2015). Ding et al. (2016) show a positive significant relationship between CSR and firm performance for firms in certain industries. There are also studies that show no relationship between CSR and firm performance. The results of studies like this are still contradictory. Gamerschlag, Moller and Verbeeten (2011) indicate that firms in the consumer industry and energy supplying industry are the firms which disclose more information on CSR aspects. They develop the claim that the service industry tends to disclose less information. CSR disclosure relates to the provision of information on companies' environmental and social performance (Gamerschlag et al., 2011).

Since engagement in CSR results not necessarily in a better firm performance, it is of interest to study what the drivers are to implement CSR activities. This research studies corporate governance determinants which can be relevant for firms to implement CSR activities in their processes and which factors are important to CSR in order to contribute to the good effects and minimize bad effects of irresponsible firms. Corporate governance deals with the behavior of firms and the treatment of shareholders and other stakeholders. Firms are directed and controlled with a set of corporate governance mechanisms.

Several differences are mentioned in empirical studies (e.g. Gamerschlag et al., 2011; Reverte, 2009) regarding CSR engagement. For instance, CSR engagement varies across companies and countries. There are a number of corporate governance factors that possibly determine CSR engagement. These factors and other firm characteristic determinants are explained in the literature review.

[1] https://www.ft.com/content/263c811c-d8e4-11e6-944b-e7eb37a6aa8e?mhq5j=e1

## 1.2 Theoretical relevance

In literature, there are a number of studies (e.g. Artiach, Lee, Nelson, & Walker, 2010; Gamerschlag et al., 2011; Reverte, 2009; Wuttichindanon, 2016) that hypothesize several CSR determinants. These studies focus on the determinants of CSR disclosure of one specific country. For instance, determinants of CSR disclosure of Spanish listed firms (Reverte, 2009), German firms (Gamerschlag et al., 2001), US firms (Artiach et al., 2010) and, firms from Thailand (Wuttichindanon, 2016).

Reverte (2009) focuses on Spanish listed firms and includes factors like firm size, industry sensitivity, profitability, ownership structure, international listing, media exposure, and leverage. His findings show that firms with higher CSR ratings present a statistically significant larger size and higher media exposure. Profitability and leverage did not explain differences in CSR ratings. Gamerschlag et al. (2001) distinguish the following determinants for CSR: company visibility, profitability, shareholder structure, and relationship with US stakeholder. The results of their study reveal that visibility, shareholder structure and relationship with US stakeholders affected disclosures of CSR. Artiach et al. (2010) examine size, leverage, free cash flow, innovation and product differentiation, and growth options on corporate sustainability performance (CSP). Their results indicate that leading CSP firms are larger, have higher levels of growth and a higher return on equity (ROE) but less free cash flows and lower leverage than other firms. The study of Wuttichindanon (2016) on firms listed on the stock exchange of Thailand hypothesizes government ownership, firm size, firm age, and economic performance (profitability and leverage). The outcome of this study shows that government owned firms and larger firms are more likely to have a sustainability report in addition to their annual report.

De Villiers, Naiker and Staden (2011) investigate the relationship between the effects of board characteristics on firm environmental performance. De Villiers et al. (2011) hypothesize the determinants board independence, concentration of directors, share ownership, board size, multiple directorships, board diversity, and tenure of directors. De Villiers et al. (2011) find evidence of higher environmental performance in firms with higher board independence and lower concentration of directors appointed after the CEO on the board of directors.

This study is in line with De Villiers et al. (2011) and analyzes a number of corporate governance determinants. In The Netherlands there is a corporate governance code and this code is about management and control, about responsibility, and about supervision and accountability. The principles and provisions are mainly focused on the implementation of responsibilities for long-term value creation, risk management, effective management and supervision, remuneration and, the relationship with shareholders and stakeholders (general meeting of shareholders).[2] Nekhili, Nagati, Chtioui and Nekhili (2017) claim that quality of information on how companies take into account the social and environmental consequences of their activity and the access to information are essential conditions for good corporate governance. Thus, it can be expected that corporate governance mechanisms influence the level of CSR disclosure.

[2] For more information on the corporate governance code please refer to:https://www.mccg.nl/.

## 1.3 Research objective and question

The objective of this study is to analyze whether a number of corporate governance characteristics are potential determinants of CSR disclosure for Dutch listed firms. The research question is:

> *"Do corporate governance mechanisms determine corporate social responsibility disclosure for Dutch public listed firms?"*

Since CSR is increasingly important the last years it is interesting to show why Dutch listed firms undertake CSR activities and which corporate governance factors mostly determine CSR disclosure. The years 2014 to 2016 relate to this study because these are the most recent years with all the information available.

I have chosen to analyze ownership concentration because there is not much research done of this determinant for CSR in The Netherlands. Key owners are likely to be involved in the firm's strategic decisions about social investments (Dam & Scholtens, 2013). The reason to include board characteristics in this study is because this determinants are less examined in prior studies. Especially gender diversity is relevant in The Netherlands concerning to equality between female and male board members. Until 2016, firms had to strive to have at least 30% female board members[3]. The last hypothesis is about executive compensation. To the best of my knowledge, this determinant in relation to CSR disclosure has not been researched for Dutch listed firms. Another argument why executive compensation is relevant, is for instance the 2013 joint report by the Investor Responsibility Research Center and the Sustainable Investments Institutes suggests that 43% of the Fortune 500 firms tie executive compensation to CSR (Jian & Lee, 2015).

This thesis is theoretically relevant because it examines different theories related to CSR and multiple determinants for CSR disclosure and it analyzes determinants that according to prior studies seem to have a relation with CSR engagement. This study builds on the results of other articles about determinants of CSR in The Netherlands, but it differs from these articles in three ways. First, there is special attention for executive compensation in order to fill the gap in literature. In addition, executive compensation will be divided in different components in order to get specific information about this determinant. The components of executive compensation are salary, bonus, stock options, and pension contributions for members of the management board. These are the most common forms of executive compensation based on the annual reports of the listed firms. Second, this study contains two forms of content analysis. The first method uses keywords of CSR in order to find the level of CSR engagement and the second method uses a Likert scale to measure the level of CSR disclosure of Dutch firms listed on the stock exchange. A Likert scale from 1 to 5 will be used to see if firms do more than just disclose keywords in their annual report. For instance, the presence of a sustainability report. Third, the majority of this type of studies have used only linear regression. In addition to this method a logistic regression will be used as well.

[3] https://www.rijksoverheid.nl/actueel/nieuws/2017/03/24/wettelijk-streefcijfer-mannen-en-vrouwen-in-bestuur-ondernemingen-van-kracht.

This study contributes to the literature in the following way; the corporate governance determinants that are hypothesized are less investigated than firm characteristics. This means that this study fills the gap by investigating corporate governance characteristics and CSR disclosure in The Netherlands. Especially executive compensation has not been investigated before as a determinant for CSR disclosure for Dutch listed firms. Therefore, this thesis contributes to more extensive knowledge about this topic. The results of this study indicate a positive association between female board members and board size on CSR disclosure.

## 1.4 Study structure

This research is organized as follows. In chapter 2 the literature review is presented. The literature review discusses CSR, the effects of CSR, the most explanatory theories for CSR, corporate governance and, the relevant determinants of CSR. Chapter 3 discusses the three (sub)hypotheses for this study. Chapter 4 of this research focuses on the research methodology. The methodology, research design and, the measurement of the variables are explained in that chapter. Chapter 5 explains the sample and how the data is collected. Chapter 6 presents the results of this study. The final chapter ends with the conclusion of the main findings and limitations.

## 2. Literature review

This chapter presents existing academic literature concerning CSR. The goal of this chapter is to learn what CSR is about and why firms undertake these social responsible activities. Prior studies about this topic are used to get a deeper understanding of CSR. The first section discusses a number of definitions of CSR. Then the effect on CSR and the theories explaining CSR activities are presented. Furthermore, corporate governance is discussed because this is relevant for this study where corporate governance determinants are examined. Finally, the determinants of CSR disclosure are presented and discussed.

### 2.1 What is corporate social responsibility?

There has been a lot of research on CSR. However, there is not one clear common definition of CSR. All contending definitions of CSR agree on one thing, which is that firms must meet the expectations of society when planning their environmental management strategies (Saeidi et al., 2015). The concept of CSR refers to voluntary managerial actions that appear to further some social good, beyond the interests of the firm and that which is required by law (Petrenko, Federico, Ridge, & Hill, 2016). A well-known defenition is from Carroll (1979); he defines CSR as the social responsibility of a firm which includes the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time. Gamerschlag et al. (2011) state that CSR refers to a company's voluntary contribution to sustainable development which goes beyond legal requirements. Reverte (2008) shows in his study that most definitions describe CSR as a concept whereby firms integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis. By acting in a responsible way to the variety of social, environmental, and economic pressures, companies respond to the expectations of the various stakeholders with whom they interact, such as employees, shareholders, investors, consumers, public authorities, and non-governmental organizations (NGOs).

There are a couple of similarities in the definitions mentioned. One of the similarities is that the contribution goes beyond legal requirements and their obligations. Another similarity is that most definitions of CSR emphasize not only the importance for society but for the stakeholders as well. The focus of CSR is mostly on social, environmental and economic effects. Carrol (1979) claims that the economic, legal, ethical effects of CSR are important. The contribution to sustainable development becomes the last years more and more important (Gamerschlag et al., 2011). There are firms that have not only an annual report but also a sustainability report to inform their stakeholders about their social activities.

The study of Dahlsrud (2008) shows how CSR is defined in literature. Among the most used definitions, five unique dimensions have emerged with regularity, namely the environmental, social, economic, stakeholder and, voluntariness dimension. These dimensions are summarized by Dahlsrud (2008). The environmental dimension refers to actions from a firm focusing on the protection of the natural environment and the consideration of environmental concerns in business operations. The social dimension includes concerns for and dedication to the communities and individuals within society. The economic dimension addresses the contribution of organizations to economic development and societal wealth. In most studies the importance of stakeholders is emphasized. The voluntariness dimension highlights organizational efforts related to CSR that go beyond minimum legal requirements.

Dahlsrud's (2008) results indicate that virtually all (97%) of the reviewed definitions include at least three of these dimensions, and each dimension was included in the majority of definitions.

To avoid misunderstandings about the different conceptualizations of CSR, this study adopts the definition of Reverte (2009) because it is a relatively broad definition and includes most of the dimensions mentioned by Dahlsrud (2008). Again, Reverte (2009) defines CSR as a concept whereby firms integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis.

## 2.2 Effect of CSR

The effects of CSR on firm reputation, risks, employees, firm value and, firm performance will be discussed in this section.

### 2.2.1 Firm reputation

Perceptions of a firm's stance on CSR are influenced by its corporate marketing efforts including branding, reputation building, and communications (Stanaland, Lwin & Murphy, 2011). The definition of firm reputation is according to Fombrun (1996, page 72) "a perceptual representation of a company's past actions and future prospect that describe the firm's overall appeal to all its key constituents when compared to other leading rivals." He distinguishes four key characteristics: credibility, reliability, responsibility and, trustworthiness. However, since firm reputation is and remains a subjective effect of CSR, not much attention will be paid to it.

Zhu, Sun and Leung (2013) indicate that there is a prevailing consensus that CSR activities can be translated directly into organizational reputation. Research provides support for the positive association between CSR activities and corporate reputation (Lai et al., 2010; Stanaland et al., 2011). Zhu et al. (2010) add that firms with a strong CSR are likely to gain trust from different stakeholders because this offers an indicator of good-quality management. From the customer perspective, researchers find that customer perception of a firm's CSR activities is positively related to their evaluation of its reputation (Lai et al., 2010; Stanaland et al., 2011). The results of Zhu et al. (2010) show consistency with previous research and they find a significant positive relation between CSR and firm reputation.

### 2.2.2 Risk

Jo and Na (2012) indicate risk of a firm as, the risk inherent in a firm's operation as a result of external or internal factors that can affect a firm's profitability. Risk management can reduce firm risk by reducing the probabilities of expected financial, social or environmental crisis that could influence adversely firm's cash flows (Sharfman & Fernando, 2008).

The relation between CSR and firm risk is examined in several studies. Godfrey (2005) states that risk can be reduced by generating more capital or goodwill (via CSR) which can provide "insurance-like" protection to preserve financial performance. Bansal and Clelland (2004) point out those studies have shown that investors react immediately to the release of new information about the environmental performance of a firm. New negative information about a firm's liabilities, whether it is disclosed by the media or by the firm, increases unsystematic risk (Bansal & Clelland, 2004). Wang and Bansal (2012) claim that CSR activities insure against corporate risk. Because if firms are in general more socially

responsible they operate at standards beyond legal requirements. Thus their CSR activities may prevent additional cost incurred to comply with stricter industry standards or legal requirements. McGuire, Dow and Argheyd (2003) find that measures of risk explain a significant portion of the variability in CSR. Firms with no social or environmental activities could have additional risk from lawsuits and fines which reduce a firms's strategic options.

Jo and Na (2012) examine the premise that firm risk is more of an issue for controversial firms (like firms that are active in alcohol, tobacco, gambling industries) and non-controversial firms. They find that the effect of risk reduction through CSR engagement is more economically and statistically significant in controversial industry firms than in non-controversial industry firms. But for both types of firms there is a significant relation, thus it can be suggested that CSR engagement lead to reduced risk. Bansal and Clelland (2004) argue that environmentally legitimate firms incur less unsystematic stock market risk than illegitimate firms. Firms earn environmental legitimacy when their performance is with respect to the natural environment conforms the expectations of the stakeholders.

The conclusion to be drawn this section is, according to the different authors, that CSR related activities can lead to less (unsystematic) risk by generating more capital and goodwill.

### 2.2.3 Employees

Employees are one of the internal stakeholders of a firm. The effects on employees will be divided in affective commitment of employees and employee attractiveness and recruitment.
Kim, Lee, Lee, and Kim (2010) find that CSR participation is significant positively related to employee-company identification. This means, employees who execute or decide upon CSR related activities find it easier to identify themselves with the company. Meyer and Allen (1991) define affective commitment (AC) of employees as the employee's emotional attachment to, identification with, and involvement in the organization. O'Reilly, Chatman and Caldwell (1991) have shown that commitment to the firm is strongly influenced by the degree to which organizational values are congruent with personal values. CSR can become even more important as a factor contributing to employees' attachment, loyalty and involvement in the organization (McWilliams & Siegel, 2001). Some empirical results show support for a positive relation between employees' perception of CSR and their AC. Peterson (2004) find that perceived CSR was a better predictor for AC than was organizational tenure, gender, age, and firm size. Kim et al., (2010) show that employees' perceptions of CSR had a positive effect on perceived employer prestige, which in turn led to higher identification and commitment. Mueller, Hattrup, Spiess and Lin-Hi (2012) find a positive relationship between CSR and affective organizational commitment after controlling for job satisfaction across a sample of employees from 17 countries. It can be suggested, according this evidence, that CSR engagement lead to more AC of employees.

CSR lead not only to more AC of employees, it also positively influence employee attractiveness and recruitment. Firms with higher corporate social performance (CSP) are perceived as more attractive to employees (Turban & Greening, 1997). Albinger and Freeman (2000) examined the hypothesis that the advantage of CSP yields in attracting human resources depends on the degree of job choice possessed by the job seeking population. The results of the study indicate that CSP is positively related to employee attractiveness for job seekers with high levels of job choice but not related for populations with low levels. This

suggests that firms with high levels of CSP have the ability to attract the most qualified employees.

These results suggest that firms can also invest in social and environmental actions for more affective commitment of employees and to be more attractive to employees.

### 2.2.4 Firm value

The impact of CSR on firm value have provided mixed evidence in literature. Market-based performance measures the creation of wealth for shareholders, this can be measured by Tobin's Q. Tobin's Q aims to incorporate the markets' adjustment to the firm's value with respect to CSR's effect on the present value of future cash flows and the value generated from the asset base (Ding et al., (2016). Ding et al. (2016) show that the impact of CSR activities relies heavily on the industry-specific relative position of the firm. They find that only firms that distinguish themselves over their peers are associated with increased firm value. Flammer (2015); Ghoul, Sadok, Kwok and Mishra (2011) and Jiao (2010) show strong support for a positive relation between CSR and firm value, while Serveas and Tamayo (2013) have downplayed this positive relationship. Harjoto and Laksama (2016) examined the mechanism trough which CSR has an impact on firm value and find that CSR has an positive impact on firm value trough the impact of CSR on risk taking. Thus, CSR is positively associated with firm value because CSR reduces excessive risk taking and risk avoidance (Harjoto & Laksama, 2016).

### 2.2.5 Firm performance

Firm performance is mostly measured through accounting based measures return on assets (ROA) or return on equity (ROE). Because the finding on the relationship between CSR and firm performance are mixed the different results will be discussed. Therefore, the arguments for the differences in financial performance impact will be presented.

Wang and Bansal (2012) present arguments for positive or negative impacts on firms' financial performance trough CSR activities. To start with the CSR activities those increase the firms' financial performance. First, there is business value that resides in the interaction between CSR activities and business strategies. Second, CSR activities help build strategic resources, including stakeholder relationships and positive CSR reputations. The third reason is that CSR activities insure against corporate risk. The last two arguments are briefly discussed in previous sections. Along with these positive effects, sometimes the CSR activities led to less financial performance. First, the more resources a firm deploys for its CSR activities, the fewer resources it has available for its core business (McWilliams & Siegel, 2001; Waddock & Graves, 1997). Second, according to Wang and Bansal (2012) CSR activities may distract managers from their core duties. The third reason is the creating of an agency problem. Managers may pursue their own interest through CSR activities at the cost of the shareholders. The impact of CSR on firm performance will be briefly discussed in this section. To start with articles that find a positive impact, followed by a neutral impact, negative impact and also an indication of a U-shaped pattern.

Waddock and Graves (1997) find a positive association between CSR and financial performance, supporting the theory that slack resource availability and CSR are positively related. CSR is also found to be positively associated with future financial performance. Park,

Hong and Yang (2017) suggest that CEO with strong CSR orientation is more likely to influence their firms to achieve effective firm performance. Park et al. (2017) indicate that if CSR philosophy is strategically formulated, clearly communicated, and widely accepted, then such firm is more likely to attain desirable business performance outcomes for larger stakeholders. However, McWilliams and Siegel (2000) find a neutral impact on financial performance. They estimated CSR by regressing firm performance on corporate social performance, and several control variables. There are also studies that indicate a negative relation between CSR and the profitability of a firm. Tang, Hull and Rothenberg (2012) find a negative effect. Barnett and Salomon (2012) even indicate a U-shaped pattern in the CSR firm performance relation. Barnett and Salomon (2012) find a curvilinear relationship between the financial returns of mutual funds and their socially responsible investing. Their results concluded that high social performers and low social performers have higher financial performance compared to other firms. The firms with an average level of CSR showed the lowest financial performance.

## 2.3 Theories explaining CSR activities

In order to identify the determinants of CSR it is necessary to discuss the most relevant and important theories that drive a firm's engagement in CSR related activities. In the existing literature different perspectives are investigated to explain engagement in CSR. These are respectively agency theory, stakeholder theory, resource based view theory, resource dependence theory and, legitimacy theory. Every theory ends with some empirical evidence to show the relationship with CSR and these theories in prior studies.

### 2.3.1 Agency theory

The agency theory is another theory used to explain CSR. The agency theory explains the relationship between principals and agents in business. Hillier, Grinblatt and Titman (2012) describe the relationship between owners and management as a principal-agent relationship, with shareholders considered the principals and management as the agents hired by the principals to take actions on their behalf. Hillier et al. (2012) state that the agency problem arises when the goals of the principal and agent conflict with each other. Reverte (2009) claims that the agency theory views the firm as a nexus of contracts between various economic gents who act opportunistically within efficient markets. In this context, social and environmental disclosure may prove useful in determining debt contractual obligations, managerial compensation contracts, or implicit political costs. Managers and shareholders face a conflict of interest when managers undertake CSR activities that only serve their own interest instead of the interest of the shareholders. Friedman (1970) was one of the first to criticize CSR activities with regards to the agency theory as he believed that managers who pursuit environmental and social objectives would hurt the shareholders by generating a lower profit. An example of a potential conflict is that managers and shareholders can have different attitudes towards risk. Managers are usually more risk averse because of their own job security, whereas the shareholders may want to take more risk in order to increase value. Ness and Mirza (1991) state about the agency theory that managers will disclose social information only if it increases their welfare, that is, when the benefits from disclosure outweigh the associated costs. The authors find that the social information that shareholders consider to be

relevant is likely to differ among companies. According to agency theory, such actions of management indicate that social information is disclosed to increase the welfare of management (Ness & Mirza, 1991).

Evidence from agency theory–based studies suggests that board members are more vigilant in exercising their monitoring responsibilities when they are independent from the firm and when they are offered economic incentives to do so (Hillman & Dalziel, 2003). Consistent with the agency theory-driven predictions from De Villiers et al. (2011), they find evidence of higher environmental performance in firms with high board independence and lower concentration of directors appointed after the CEO on the board of directors.

Another agency theory-based study examined the relationship between executive compensation and CSR performance. McGuire, Dow and Argheyd (2003) find that high levels of salary and long-term incentives are associated with poor social performance. Thus, high executive compensation indicates a less responsible orientation and encourage managers to engage in more risky behavior. Mahoney and Thorne (2005) find no significant relationships between CSR and long-term executive compensation. They suggest that the use of long-term compensation may discourage executives from making decisions that are risky to the firm and their own compensation, which in turn may benefit society. This is consistent with agency problems mentioned earlier.

### 2.3.2 Stakeholder theory

Could stakeholders of a firm be the reason for firms to include CSR in its operation? To answer this question it is useful, to define stakeholders. Freeman (1984) defines a stakeholder as "any group or individual who can effect or is affected by the achievements of the firm's objectives." Stakeholders include shareholders, creditors, employees, customers, suppliers, regulators, and public interest groups. Freeman (1984) originally detailed the stakeholder theory of organizational management and business ethics that addresses morals and values in managing an organization. The stakeholder theory argues that management should not only consider the interests of its shareholders in the decision making process, but also the interests of other stakeholders (Freeman, 1984).

According to Thijssens, Bollen and Hassink (2015) the stakeholder theory broadly refers to the notion that companies have responsibilities not only toward their shareholders or other primary stakeholders, such as customers and employees, but also toward their secondary stakeholders, such as environmental NGOs. They distinguish two types of stakeholders, primary and secondary. Primary stakeholders are those who influence the survival of the firms and secondary stakeholders are those who indirectly affect firms' operation. Gray, Kouhy and Lavers (1995) and Reverte (2009) consider the stakeholder theory as the expectations impact on the different stakeholders groups within society upon corporate disclosure politics. Managers use information to manage or manipulate the most powerful stakeholders in order to gain their support which is required for survival. Wuttichindanon (2016) adds in his study that the expectations of each stakeholder can be different, so corporate management must best match corporate resources and policies with the stakeholders' interest.

There is some empirical evidence of the stakeholder theory related to CSR engagement. McWilliams and Siegel (2001) state that shareholders may have motives for CSR when it is directly related to greater short-term competiveness of the firm, such as by

protecting a firm's reputation. The research findings of Wuttichindanon (2016) support the proposition of the stakeholder theory. Firms carry out CSR activities because of their stakeholders' influence. His result was that the stakeholders' influence is a signigicant determinant of CSR disclosure. Thijssens et al. (2015) investigate the influence of secondary stakeholders, ussualy external stakeholders or environmental stakeholders, on the extensiveness of CSR disclosure. They find that not only the primary stakeholders, but the secondary stakeholders as well are influential with regards to management decision-making. Ding et al. (2016) claim that their study extends the applicability and predictive power of stakeholder theory. One intersest group with regard to environmental activites may not be congruent with other groups. Artiach et al. (2010) claim that high levels of profitability allow the firm to meet shareholder expectations and still retain the ability to meet stakeholders demands through ependiture on corporate social performance. By contrast, during times of low profitability, the pressure will be on management to reduce costs and maximize economic returns to financial stakeholders. They find that profitability is statistically significant with the return on equity. This result is consistent with the stakeholder theory as it suggests that it is the level of profit available to shareholders after considering higher ranking financial claimants rather than the level of profitability per se that drives CSP (Artiach et al., 2010).

### 2.3.3 Resource based theory

The next theory that might explain more CSR disclosure is the resource based theory. This theory addresses that the accumulation of valuable, rare, inimitable, and non-substitutable resources is the basis of enterprise competiveness and economic rent (Lin & Wu, 2014). Lin and Wu (2014) add, these unique resources are related to sustainable competitive advantage and that competitive advantage is related to firm performance. Firms that ultimately possess a sustainable competitive advantage should be able to outperform other firms and will in return earn superior returns (McWilliams & Siegel, 2011). According to Chang (2005); McWilliams and Siegel (2011), RBV considers the way in which political CSR is being used as a specialized skill or capability in order to gain competitive advantage. Frynas and Sthepens (2015) state that RBV has become the dominant instrumental economic theory within the general CSR literature. They claim that the RBV focuses on the heterogeneity of firms in terms of their strategic and resource endowments and their strategic ability to exploit internal resources.

Empirical evidence linking the RBV to CSR suggest that specialized skills or capabilities related to investments in CSR can lead to firm-specific competitive advantage (Frynas & Sthepens, 2015). Thus, Frynas and Sthepens (2015) find evidence that CSR can generate abnormal returns and lead to sustainable competitive advantage. According to Chang (2005), insights from the RBV can explain why firms formulate heterogeneous environmental management strategies and develop heterogeneous firm capabilities when faced with stricter environmental government legislation. McWilliams and Siegel (2011) find that undertaking CSR activities can help organizations to create resources in order to provide internal and external benefits.

### 2.3.4 Resource dependence theory

The resource dependence theory (RDT) is the last theory to be discussed. This theory is published for the first time by Pfeffer and Salancik (1978). They characterize the corporation as an open system, dependent on contingencies in the external environment. Pfeffer and Salancik (1978) state if you want to understand the behavior of an organization you must understand the context of that behavior. Hillman, Withers and Collins (2008) add that RDT recognizes the influence of external factors on organizational behavior and, although constrained by their context, managers act to reduce environmental uncertainty and dependence. Schnittfeld and Busch (2014) state RDT considers organizations as coalitions that depend on their context and so will adjust their structures and behavioral patterns in order to acquire and maintain external resources. Hillman et al. (2008) claim that RDT has been applied broadly across the research domain to explain how organizations reduce environmental interdependence and uncertainty.

RDT predict links between board governance and the areas of management and performance that are of interest to shareholders. De Villiers et al. (2011) relate strong environmental performance to board characteristics and RDT. Their results show, consistent with RDT, that environmental performance is higher in firms that have larger boards, larger representation of active CEOs on the board, and more legal experts on the board. According to RDT, the appointment of experienced and knowledgeable directors can provide environmental advice and access to environmental opportunities to firms (De Villiers et al., 2011). To give some illustrations: RDT explains why firms with high dependence on female staff pay considerable attention to work-life balance issues (Ingram & Simons, 1995). Another example is that RDT explains why natural-resource firms with high dependence on rural local communities in developing countries invest in extensive local development initiatives in health and education (Hess & Warren, 2008).

### 2.3.5 Legitimacy theory

The legitimacy theory is another theory used to explain CSR. The legitimacy theory explicitly recognizes that businesses are bound by the social contract in which the firms agree to perform various socially desired actions in return for approval of their objectives and other rewards. And this ultimately guarantees their continued existence (Brown & Deegan, 1998). Suchman (1995) claims that firms exist if they have legitimacy. He defines legitimacy as a generalized perception that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs and definition. This can be interpreted as firms operating on the basis of social contract with the society; therefore they try to win legitimacy from society to mitigate society's disapproval or gain benefits from society.

Empirical evidence shows that this theory is a relevant theory for explaining CSR activities. An explanation is that in order to respond to public pressures and to build or sustain corporate legitimacy firms disclose CSR practices (Reverte, 2009). Firm size is likely to be an important determinant of corporate social performance (Artiach et al., 2010). Larger firms and firms with a lot of media exposure are more visible to the public, and therefore have greater legitimacy needs. Thus, in general these firms are usually more active in CSR (Panwar et al.,

2014). Managers try to demonstrate to the wide society that their firms are socially responsible by their CSR activities (Suchman, 1995).

## 2.4 Corporate governance

Corporate governance is prominent in the literature on CSR disclosure. According to prior studies, there are corporate governance mechanisms that determine CSR disclosure. This section will briefly define corporate governance. This study addresses the issue of corporate governance determinants for CSR disclosure at Dutch listed firms. Therefore, corporate governance in The Netherlands will be described as well.

### 2.4.1 What is corporate governance?

A well-known definition used by the Cadbury Committee (1992) is, corporate governance is the system by which firms are directed and controlled. According to Claessens and Yurtoglu (2013) the definitions of corporate governance tend to fall in two categories. The first category concerns itself with a set of behavioral patterns. That is, the actual behavior of firms, in terms of such measures as performance, efficiency, growth, financial structure, and treatment of share- and stakeholders. The second category concerns itself with the normative framework. That is, the rules under which firms are operating. The rules coming from sources as the legal system, judicial system, financial markets and, factor markets (Claessens & Yurtoglu, 2013).

Lozano, Martinez and Pindado (2016) state that ownership concentration acts as an internal mechanism to alleviate owner-manager conflict. De Jong, DeJong, Mertens and Wasley (2005) argue that agency problems are associated with the separation of ownership from control in operations. To mitigate these problems, corporate governance mechanisms have evolved that enable firms to raise funds in debt and equity markets. According to Datta, Musteen and Herrmann (2009) empirical studies indicate that board composition affect firm strategic behavior including diversification. Another approach to mitigating agency problems according to Datta et al. (2009) involves the use of incentive mechanisms in the form of equity ownership and composition structures that more closely link such compensation to long-term performance. One method in which the Board of Directors potentially can steer executives' decision-making in a particular direction is through the structure of executive compensation (Mahoney & Thorne, 2005). In this study the corporate governance mechanisms ownership concentration, female board members, outside directors, board size and, executive compensation are analyzed for Dutch listed firms. These are all internal corporate governance mechanisms. External mechanisms include informal governance, regulation and, stakeholder pressure (Huson, Parrino, & Starks, 2001).

### 2.4.2 Dutch corporate governance

The Dutch corporate governance code focuses on the governance of listed companies and provides guidance on effective cooperation and governance. The Code contains principles and best practice provisions that regulate the relationship between the management board, the supervisory board and the general meeting of shareholders. The principles and provisions are focused on the implementation of responsibilities for long-term value creation, risk management, effective management and supervision, remuneration and the relationship with shareholders and stakeholders (general meeting of shareholders). Compliance with the Code

contributes to confidence in good and responsible management of companies and their embedding in society. The Code was first adopted in 2003 and amended in 2008. In 2016 the code was again revised on a number of points.[4] One of the changes is releasing the target number of 30% for female board directors.

Dutch companies operate under a two-tier management structure. This structure consists of a supervisory and a management board. The supervisory is "independent" of the firm and comprised entirely of outsiders. The management board is responsible for attaining the objectives of the firm, its strategy and policy and the ensuing results. The management board represent the inside directors. In the Netherlands, the remuneration policy for directors must be clear and understandable. The remuneration policy does not encourage directors to conduct in their own interest or to take risks that do not fit within the formulated strategy and established risk appetite. The Supervisory Board is responsible for the formulation of the remuneration policy and its implementation. The general meeting of shareholders may exert such influence on the policy of the management board and the supervisory board of the company. Good corporate governance requires a full participation of shareholders in the decision-making in the general meeting. The management board should outline all anti-takeover measures in the management report and should also indicate in what circumstances and by whom these measures likely be used.[5] The most commonly used measures to prevent a firm from a hostile takeover are preference shares, priority shares or restricting voting rights.

De Jong et al. (2005) discus corporate governance in The Netherlands. According to the authors, a full "structured regime" is legally required for Dutch firms with more than 100 employees, a legally installed work council and book value of shareholders' equity in excess of 11.4 million euro's. The regime requires the supervisory board take over the following powers from shareholders: establishing and approval of the annual accounts, the election of the management board, and the election of the supervisory board itself. The supervisory board also has authority over major decisions made by the management board.

Duffhues and Kabir (2008) claim that Dutch listed firms are famous for their ingenious use of several anti-takeover defenses that resulted in a bad international reputation with respect to corporate governance quality. Another remarkable feature is that ordinary shareholders have no authority in deciding the compensation of executive directors. This power rests with the supervisory board (Duffhues & Kabir, 2008). Another statement from Duffhues and Kabir (2008) is that ownership of Dutch listed firms is relatively concentrated. There are instances in which dominant shareholders of a firm are alleged to collude with the management and influence decisions for their own benefits.

La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998) developed a measure of investor protection. The measure is composed of four items. The first item is no automatic stay on assets. The second item is secured creditors are paid first. The third item is restrictions exist for going into reorganization. The last item is management does not stay on in reorganization. According to De Jong et al. (2005) The Netherlands scores 2 out 4 on this

[4] For more information on the corporate governance code please refer to:https://www.mccg.nl/.
[5] For more information on the corporate governance code please refer to:https://www.mccg.nl/.

measure of investor protection because secured creditors are paid first, and restrictions exist for going into reorganization.

## 2.5 Determinants of CSR

In this section the most common and relevant determinants for CSR disclosure, that are hypothesized in prior studies, will be discussed and the arguments why it may or may not influence CSR activity.

### 2.5.1 Corporate governance characteristics

The following corporate governance determinants are briefly described: ownership identity, ownership concentration, gender diversity, outside directors, board size and, executive compensation.

*Ownership identity*

There are different types of ownership identity. Managerial ownership and institutional ownership are the most common types of ownership. Oh, Chang and Martynov (2010) tested the effects of managerial ownership on CSR ratings. Agency theory implies that managerial ownership can align potentially divergent interest of shareholders and management. When CSR increases the value of the firm it will be more likely that managers are more active to engage CSR activities because of their own best interest. In contrast with this prediction, the findings of Oh et al. (2010) indicate that ownership by managers is negatively associated with CSR ratings.

Institutional ownership refer to the stock owned by mutual- or pension funds, investment firms, insurance companies or other large entities. Previous studies support a positive relationship between institutional holdings and CSR engagement. Sethi (2005) states that "public pension funds tend to consider the firm's long-term effects on the environment, sustainability and good corporate citizenship when they make an investment decision." Teoh and Shiu (1990) draw the same conclusion that institutional investors are more likely to actively engage in CSR. The results of Oh et al. (2010) show that ownership by large institutions is positively associated with CSR rating which is in line with the authors mentioned before.

*Ownership concentration*

Roberts (1992) states that ownership concentration has an influence on disclosure policy. He defines ownership concentration as the degree to wich ownership of company stock is concentrated in the hands of a few large investors or dispersed among many. Regarding the agency theory, conflicts of interst between agents and principals are more likely to occur in corporations with more dispersed ownership (Reverte, 2009). There is some empirical evidence that suggest that ownership dispersion across many inverstors contributes to increased pressure for voluntary CSR disclosure (Cullen & Christopher, 2002; Ullmann, 1985). In addition Gamerschlag et al. (2011) state that the potential conflicts (agency problems) between owners and managers are greater in companies where shares are widely distributed rather than in more closely held companies.

*Gender diversity*

Datta et al. (2009) claim that empirical studies indicate that board composition affect firm strategic behavior including diversification. Liao, Luo and Tang (2015) claim that gender composition on the board is an important dimension of corporate governance, because women and men are traditionally, culturally and socially different. For instance, the extant literature shows that women differ from men in terms of personality, communication style, educational background, and career experience and expertise. Boulouta (2013); Harjoto et al. (2015) and; Jain and Jamali (2016) find that boards whcih have female directors are more likely to influence the extent to which firms engage in CSR.

*Outside directors*

De Villiers et al. (2011) state that an independent board exhibits greater concern about the firm's attitude toward CSR as well as a focus on finance-driven measures in organizational performance. Independent directors tend to be more strongly aligned with external stakeholder interest than managers (Wang & Dewhirst, 1992).

*Board size*

A smaller board can have better communication, leading to more effective monitoring. Larger boards can include more prestigious directors, and this is according to Pfeffer and Salancik (1978) an important resource dependence-related factor. It makes sense that larger boards are more likely to have more experience and knowledge of different issues. Thus, in a large board, there is a greater likelihood that a director or some directors have been exposed to the effects of an environmental agenda on stakeholders (De Villiers et al., 2011).

*Executive compensation*

Duffhues and Kabir (2007) describe executive compensation as a governance mechanism that is designed for an appropriate incentive scheme that aligns the interest of managers with those of the shareholders. These incentives include provision of a performance-based pay like cash bonus, stock options grants and common stock grants. Duffhues and Kabir (2007) distinguish cash compensation and non-cash compensation. Examples of cash compensation are salary, cash bonuses, and cash pensions. Examples of non-cash compensation according to the authors are value of stock options and shares granted in the year, and the change in value on holdings of shares and stock options during the year.

The idea is that if executives receive adequate compensation, they are assumed to work harder and contribute more to the increase in corporate performance. Firms with large executive compensation are less likely to pursue sound environmental practices because environmental performance is typically not considered in executive compensation (Stanwick & Stanwick, 2001). Literature suggests mostly a negative association between executive compensation and CSR disclosure (Liu & Zhang 2017; Mahoney & Thorne 2005; McGuire et al., 2003).

### 2.5.2 Firm characteristics

The following firm characteristics will be discussed in this section: firm size, profitability and leverage.

*Firm size*

Firm size is likely to be an important determinant of corporate social performance (CSP) (Artiach et al., 2010). The authors state that larger firms are more visible politically and so draw greater attention from the general public, government and other stakeholders. Large firms are more likely to create correspondingly larger social problems because of the prominence of their activities. Darnall, Henriques and Sadorsky (2010) find that firm size is associated with an increased likelihood to adopt CSR activities. They claim that large firms are more visible, bringing greater pressures from stakeholders to adhere to an appropriate level of social and environmental performance.

*Profitability*

A firm with less economical resources, management will focus on activities that have a more direct effect on the corporation's earnings than social or environmental activities (Roberts, 1992). Reverte (2009) states that where the firm is profitable; social and environmental disclosures would give confirmation that profit has not been at the expense of the environment. Conversely, in periods of less profitability, the same disclosures might be either directed at convincing financial stakeholders that current environmental investments will result in long-term competitive advantage or at distracting attention from the financial results.

Reverte (2009) did not make any priori assumption about the sign of the association between CSR disclosure and profitability. In his study, profitability seems not to explain differences in CSR disclosures between Spanish listed firms. The results of Gamerschlag et al. (2011) show that firm profitability is associated with higher environmental disclosures, however not with social disclosures. Roberts (1992) find that corporate economic performance directly affects the financial capability to undertake CSR programs. The better the economic performance of firms, the greater is their CSR related activities and disclosures. The findings of Artiach et al. (2010) show that firms with a high corporate social performance are more profitable than conventional firms. However, this is sensitive to the proxy of profitability. Only firms with high levels of profit available to shareholders (ROE) rather than high profit levels (ROA) appear to achieve high corporate social performance.

*Leverage*

The next determinant explaining CSR is leverage. Artiach et al. (2010) state that the level of debt in the firm's capital structure provides a measure of the relative importance of the firm's financial stakeholders. The stakeholder view of the firm proposes that the firm has numerous claimants, both financial and nonfinancial. However, these stakeholder groups have varying degrees of power over the resources required by the organization (Ullmann, 1985). Debt holders are a powerful stakeholder group, as suppliers of capital. Management is more likely to address their concerns than stakeholders who are less powerful, such as employees or the community at large. Artiach et al. (2010) expected that as a firm's leverage will increase, it will emphasis on the claims of debt holders over those less powerful claimants. Companies with higher leverage may have closer relationships with their creditors and use other means to disclose social responsibility information.

According to Reverte (2009) leverage seem not to explain differences in CSR disclosures between Spanish listed firms. Artiach et al. (2010) find an insignificant

association between leverage and sustainability performance. The authors claim that leading CSR firms will have lower leverage. Wuttichindanon (2016) find that leverage was not associated with CSR disclosure.

# 3. Hypotheses development

The hypotheses of this research will be presented in this chapter. Hypothesis 1 is about the ownership concentration of a firm. The second hypothesis consists of three sub-hypotheses about gender diversity, outside directors and, board size. The last hypothesis is about executive compensation as a determinant of CSR disclosure.

## 3.1 Ownership concentration

Practices of corporate governance have been studied as a solution for agency conflicts that appear when a separation exists between the owner and management roles (Lozano et al. (2016). According to agency theory, ownership concentration acts as an internal corporate governance mechanism to alleviate owner-manager conflicts. Large investors are better able to control manager's actions than small owners and recover their money. However, Lozano et al. (2016) suggest that ownership concentration can lead to agency problems between dominant and minority shareholders, when large shareholders reach nearly full control of the company and pursue private benefits that are not shared by small investors. Roberts (1992) states that ownership concentration has an influence on disclosure policy. He defines ownership concentration as the degree to which ownership of company stock is concentrated in the hands of a few large investors or dispersed among many. Oh et al. (2011) claim that existing empirical research supports the argument that ownership concentration affects corporate decision making.

Firms with many owners are in general expected to disclose more information than firms with concentrated ownership. An argument is that firms attempt to reduce information asymmetries with its shareholders (Prencipe, 2004). According to Reverte (2009) firms whose shares are widely held are more likely to improve their financial reporting policy by using their CSR disclosure in order to reduce these asymmetries. On the contrary, firms with a concentrated ownership structure are less motivated on their CSR, insofar as the shareholders of these firms can obtain information directly from the firm. Thus, large shareholders normally obtain information in other ways than through company reports. They often have direct access to the management board, which results in lower information asymmetry between them and the managers.

The results of Gamerschlag et al. (2011) confirm show that CSR disclosure is positively related with a more dispersed shareholder ownership structure. The results of Reverte (2009) are in agreement with this statement. He states that firms with higher CSR ratings have a more dispersed shareholder ownership structure. There is more empirical evidence for a positive relation between a more dispersed shareholder structure and CSR disclosure or, in other words, a negative relationship between ownership concentration and CSR disclosure. Dam and Scholtens (2013) find a significant negative relationship between ownership concentration and CSR for European multinational firms. Other studies also find a negative association between concentrated ownership and CSR disclosure (Lau, Lu & Liang 2016; Li & Zhang, 2010; Liu & Zhang, 2017). Therefore the following hypothesis is formulated.

*H1: Ownership concentration has a negative effect on CSR disclosure.*

## 3.2 Board characteristics

The next hypotheses consists of three board characteristics. These are gender diversity, outside directors, and board size.

### 3.2.1 Gender diversity

During the last years gender diversity became more and more important dimension for CSR activity. This relation is examined recently in other countries such as China (McGuiness, Vieito & Wang, 2017) or in UK (Liao et al. 2015). According to Liao et al. (2015) gender is one considerably debated characteristic of board diversity. They claim that gender composition on the board is an important dimension of corporate governance because women and men are traditionally, culturally and socially different. Liao et al. (2015) suggest that since women play a different role from men in society, this could influence the preferences of female directors and motivate them to play a different role on a company board with regard to environmental issues. Galbreath (2016) investigated the link between board gender and CSR. He distinguishes four reasons why female board members led to more CSR engagement. The first reason is that females on the board possess a set of psychological characteristics that could lead them to take greater notice of stakeholder interest. Secondly, women tend to reach the board of directors with different background and experiences than man. Thirdly, leadership styles can influence how issues are dealt with and the types of decisions made in the boardroom. The last reason is the differences between the beliefs and values of men and women. With respect to moral orientation, women have been shown to have a higher level of moral reasoning than men (Galbreath, 2016).

According to Boulouta (2013); Harjoto et al. (2015); Jain and Jamali (2016); Liao et al. (2015) and McGuiness et al. (2017) boards that have female directors are more likely to influence the extent to which firms engage in CSR. Liao et al. (2015) find a significant positve association between gender diversity and the propensity to disclose social and environmental information. McGuiness et al. (2017) find that greater gender balance in top-management supports stronger CSR performance. Based on this reasoning, a positive association is expected between female board members and CSR engagement.

*H2a: Female board members have a positive effect on CSR disclosure.*

### 3.2.2 Outside directors

It is widely accepted that a board with a higher proportion of outside directors can monitor management more effectively. This is mainly because outside directors are not directly involved in the day-today operations and hold a non-official position in the organization (De Villiers et al., 2011). Dutch companies operate under a two-tier management structure. This structure consists of a supervisory and a management board. The supervisory board consist of the outside directors and the management board represent the inside directors. The management board is responsible for attaining the objectives of the firm, its strategy and policy and the ensuing results. The law requires that the management board serve at the pleasure of the supervisory board.

De Villiers et al. (2011) argue that a board with a higher concentration of independent directors is more likely to objectively direct knowledge and expertise toward monitoring

environmental performance and pursuing available environmental opportunities. Independent directors may face higher incentives to pursue environmental innovations since they are more likely be conscious about how corporate social performance improves a firm's standing with constituencies such as investors, government, and lenders (Johnson & Greening, 1999). Independent directors tend to be more strongly aligned with external stakeholder interest than managers (Wang & Dewhirst, 1992). Another argument is that independent directors are more likely to realize the potential of long-term investments and support CSR while managers may be reluctant and only think about short-term investments.

Firms are expected to undertake more CSR activities when they are being monitored by outside directors. Most empirical studies find that higher levels of outsider representation (board independence) are positively associated with CSR (Chang et al. 2012; De Villiers et al. 2011; Jizi, 2017; Johnson & Greening, 1999). A reason for this positive association according to Wang and Dewhirst (1992) is that independent outside directors are more likely to check managers' self-seeking activities that may lead to socially irresponsible decisions. To conclude, board independence or more outside directors seems to promote CSR related activities. The explanations are that outside directors' have independent positions, pursuit of the long-term success of the firm, and have stronger stakeholder orientation. The results of Jizi (2017) also support that board independence have a positive influence on CSR disclosure. This indicates that independent directors on the board are more inclined toward firm good citizenship and more successful in promoting firms' CSR agenda. Empirical evidence shows that outside directors have mostly a positive influence on CSR disclosure. Therefore the following hypothesis is formulated.

*H2b: Outside directors have a positive effect on CSR disclosure.*

### 3.2.3 Board size

Board size is the last board characteristic that will be hypothesized and is another internal corporate governance mechanism. Agency problems become more severe as a board becomes larger. Larger boards have the communication/coordination and agency problems. However, in a large board, there is a greater likelihood that a director or some directors are exposed to the effects of an environmental agenda on stakeholders (De Villiers et al., 2011). Larger boards are more likely to have more experience and knowledge of different issues. The CSR determinant board size is related to the RDT, larger boards may also facilitate access to financial resources, allowing firms to access more resources to pursue CSR initiatives (De Villiers et al., 2011).

Previous studies document a positive impact of board size on CSR disclosure (Brown, Helland & Smith, 2006; De Villiers et al., 2011; Jizi, 2017). Brown et al. (2006) describe the theory for a positive relation between board size and the number of social objectives (community, diversity, environment, etc.) that a firm pursues. While boards provide a monitoring function, they also set objectives for firms, and other things constant, larger boards are associated with multiple objectives that go beyond shareholder value maximization. The findings of De Villiers (2011) for board size suggest that firms with larger boards are more likely to possess the diversity and richness of expertise required to enhance environmental performance. Jizi (2017) also supports the hypothesis that larger boards have a

positive influence on CSR disclosure. This suggests that boards with larger numbers of directors, which have better workload allocation and wider collective experience and backgrounds, are more efficient in setting CSR agendas and encouraging CSR disclosure to respond to social needs (Jizi, 2017). On the basis of the above arguments the following hypothesis is derived.

*H2c: Larger boards have a positive effect on CSR disclosure.*

### 3.3 Executive compensation

The last determinant that will be analyzed is executive compensation. Duffhues and Kabir (2007) describe this as a governance mechanism that is designed for an appropriate incentive scheme that aligns the interest of managers with those of the shareholders. These incentives include provision of a performance-based pay like cash bonus, stock options grants and common stock grants. The idea is that if executives receive adequate compensation, they are assumed to work harder and contribute more to the increase in corporate performance.

Literature discusses arguments for a negative association between executive compensation and CSR disclosure. Executive compensation can be manipulated by the board of directors to reward managers for pursuing specific objectives. In developing executive compensation plans, and awarding executive incentives, the board of directors can encourage management to pursue social, as well as financial objectives (McGuire et al., 2003). Thus, executive compensation can be an important mechanism to promote the implementation of the firm's social objectives. Firms that pay high rewards are less likely to pursue sound environmental practices because environmental performance is typically not considered in executive compensation (Stanwick & Stanwick, 2001). Mahoney and Thorn (2006) argue that as salary levels get higher, managerial attention is less focused on stakeholders' interest, and therefore, less inclined to make decisions that consider the best interests of society. Mahoney and Thorne (2005) suggest that the use of long-term compensation (stock options are the most typical form of long-term incentive compensation and are contingent on the value of the stock in the future) may discourage executives from making decisions that are risky to the firm and their own compensation, which in turn may benefit society. This is consistent with agency problems mentioned earlier. Mahoney and Thorne (2005) gave another explanation for their findings and this is consistent with the stakeholder theory. The success of a firm could be dependent upon increasing good relations with primary stakeholders to build goodwill and a strong network of ties. Thus, making no bad or risky decisions maintains a good relationship with stakeholders.

Literature show mostly a negative relation between the two constructs (Jian & Lee, 2015; Liu & Zhang, 2017; Mahoney & Thorne, 2006; McGuire et al., 2003; Stanwick & Stanwick, 2001). Liu and Zhang (2017) find no significant relationship between social responsibility information disclosure and the remuneration of the managerial staff. Mahoney and Thorne (2005) find also no significant relationships between CSR and long-term compensation. McGuire et al. (2003) examine the relation between CEO incentives and CSP. Consistent with other papers, they find no significant relation with strong social performance. However, Berrone and Gomez-Mejia (2009) find that CEO pay of firms in polluting industries is positively related to environmental performance. They argue that firms within

polluting industries may achieve legitimacy by adopting environmental friendly programs, and reward their CEOs according to this. Despite this finding of Berrone and Gomez-Mejia (2009), literature suggests mostly a negative association between executive compensation and CSR disclosure. Therefore, the following hypothesis is derived.

*H3: Executive compensation has a negative effect on CSR disclosure.*

To investigate more thoroughly, the different components of executive compensation are also analyzed. A fixed (base) salary component; a variable component (annual bonus or short-term incentives); a long-term component (stock options) and, pension contributions.

In literature, these components are sometimes examined separately from each other. Mahoney and Thorn (2005) distinguish three key components of executives' compensation structure: salary, bonus, and stock options. This is similar to the research of McGuire et al. (2003). This thesis is in line with Mahoney and Thorn (2005) and McGuire et al. (2003) meaning that the annual cash payments of salary, bonus and the non-cash costs relating to stock options are examined. In addition to this, the annual pension contributions are also included in the study.

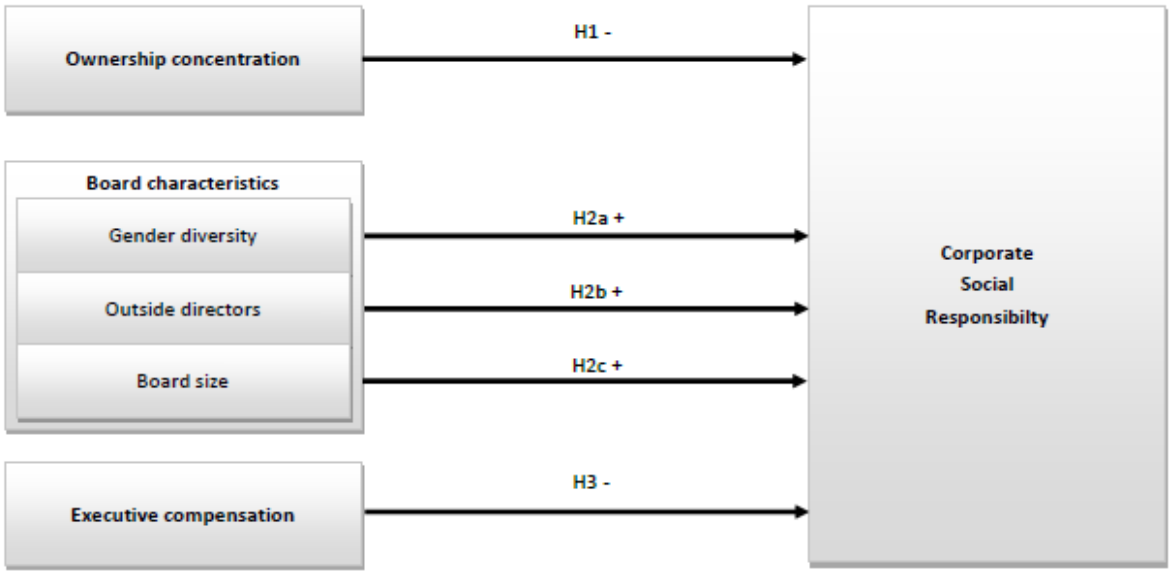
McGuire et al. (2003) find that salary is significantly related to CSR weaknesses. Mahoney and Thorn (2005) report that bonuses are significantly related to CSR Strengths. Stock options are a form of long-term compensation. Mahoney and Thorn (2005) argue that if the capital markets recognize the advantage of pursuing longer term goals, both stock price and executive's self-interest would benefit from firm's pursuing CSR. Kane (2002) suggests that socially responsible firms are willing to forgo short-term profits to invest in social and environmental objectives, which benefit the firm and society in the longer run but have no immediate payoff but will enjoy profitability in the long term. McGuire et al. (2003) find that stock options are significantly related to CSR weaknesses. In contrast to their findings, Mahoney and Thorn (2005) report that stock options are significantly related to CSR Strengths.

The reason for splitting the variable executive compensation is to see if there are any differences in effect between the components and which component has the most impact on the effect of executive compensation on CSR disclosure. In this study, salary is measured as the amount of annual fixed salary. Bonus is measured as the amount of annual bonuses. Stock options is measured as the total value of stock options (per year) and pension contributions as the amount of annual pension contributions.

## 3.4. Hypothesis summary

Table 1 presents the hypotheses in this study and the expected effect on CSR.

**Table 1 Hypothesis summary**



# 4. Research methodology

The different research methods used in prior studies to analyze the determinants of CSR are presented. Secondly, the methodology of this study is presented. Finally, the measurement of the variables will be explained.

## 4.1 Prior studies

Different methods are used in order to determine the factors that influence CSR engagement or CSR disclosure. These are univariate analysis, bivariate analysis, and multivariate analysis. Multivariate analysis refers to all statistical techniques that simultaneously analyze multiple measurements on individuals or objects under investigation. Thus, any simultaneous analysis of more than two variables can be loosely considered multivariate analysis (Hair et al., 2014). In this study there are several independent variables. Multiple regression is an example of a multivariate analysis because there are more than two variables which will be tested. Multivariate regression analysis is the most common method used in prior studies. The goal of a multivariate regression analysis is whether the independent variables can predict the dependent variable.

There are different forms of regression analysis. Probit regression is a regression model that estimates the probability of the dependent variable to be 0 or 1, that is, the probability that some event happens (Hair et al., 2010). A logistic regression predicts the outcome of a categorical dependent variable. Categorical variable is a variable that has a usually fixed number of possible values or categories (Hair et al., 2010). Thus the difference between these two methods is that in probit regression the dependent variable can take two values whereas in logistic regression the dependent variable is categorical. In this study there are dependent variables that are metric and there is a dichotomous dependent variable (a categorical variable with two categories) created in order to perform a logistic regression.

Linear regression is another form of regression. There are different techniques of linear regression. The most common used estimator of linear regression is the ordinary least squares (OLS) estimation. When the dependent variable is metric and recorded on interval or ratio scale, then OLS is an appropriate method. Previous studies have examined several determinants for CSR activity with an OLS regression (e.g. Artiach et al., 2010; Jian & Lee, 2015; Kabir & Thai, 2017; McGuinnes et al., 2017). Advantages of OLS regression are that it is relatively easy to implement, not too hard to analyze and, it produces solutions that are easy to understand. A big disadvantage is the problem of endogeneity. Artiach et al. (2010) mention this problem: where the disturbance term of the econometric model is correlated with one or more of the explanatory variables can cause a bias in the results produced. A two-stage-least-squares (2SLS) with instrumental variables can be performed to address the potential endogeneity problem (Jian & Lee, 2015). To face the potential problem of endogeneity, a model with lagged variables is conducted. This regression includes the one year lag of the independent and some control variables. Other disadvantages of OLS regression could be outliers and too many variables; this can cause difficulties in analyzing the results. Problems can occur with regard to cross-sectional features (e.g. heteroscedasticity), time-series characteristics (e.g. autocorrelation) and, omitted variables. Kabir and Thai (2017) conclude that fixed effects model and random effects model are the most commonly employed estimation techniques to address these problems. Fixed effects

model is preferred in case of balanced and long panel data and when the cross-sectional observations are not random drawings from a larger sample (Kabir & Thai, 2017)

## 4.2 Research design

Following prior studies on the determinants of CSR disclosure (e.g. Jian & Lee, 2015; Kabir & Thai, 2017); I use an OLS and logistic regression analysis to test the effect between corporate governance determinants on CSR disclosure. Previous studies show that OLS regression is an appropriate method to analyze this relationship (e.g. Artiach et al., 2010; Harjoto et al., 2015; Jian & Lee, 2015; Kabir & Thai, 2017; McGuinnes et al., 2017). To test the hypotheses the following regression model is used.

$$CSR_{i,t} = \alpha_0 + \beta_1 CG_{i,t} + \beta_x Controls_{i,t} + \varepsilon_{i,t}$$

Where:

| | |
|---|---|
| $CSR_{i,t}$ | = CSR disclosure for firm i in year t; |
| $CG_{i,t}$ | = Corporate governance variables for firm i in year t (ownership concentration, gender diversity, outside board members, board size, executive compensation); |
| $CONTROL_{i,t}$ | = Firm size, firm age, profitability, leverage and industry for firm i in year t and, |
| $\varepsilon_{i,t}$ | = Firm-specific errors for firm i in year t. |

T-statistics of each of the predictive variables test the impact of the predictor variable on the outcome variable and a test of it is significant or not. In this study the dependent variable is metric and gives the scores of CSR disclosure. The logistic model is the second type of regression that is applied in this study. Artiach et al. (2010) made use of a logistic model. In this form of regression the dependent variable is a categorical variable. A dichotomous variable is created and the dummy variable is equal to 1 firms have a sustainability report in addition to their annual report and 0 otherwise.

In order to test the problem of multicollinearity, a correlation matrix is conducted and the variance inflation factor (VIF) is calculated. To check if the data is homoscedastic, scatter plots have been checked for the main analysis if the residuals were equal across the regression line. For robustness, different tests are performed including subsample analyses and alternative measures of the variables. The subsample analyses include an analysis of industry sensitive and industry non-sensitive firms and year analyses. Furthermore, to face the problem of endogeneity and as a robustness check, a model with lagged variables is used. Therefore, this regression includes the one year lag of the independent and some control variables. This is in line with Barnett and Salomon (2012); Kabir and Thai (2017) and, Liao et al. (2015). A lagged variable is a variable which has its value coming from an earlier point, in this study one year earlier.

## 4.3 Measurement of variables

This section describes the measurement of the dependent, independent and, control variables used in this study.

### 4.3.1 Dependent variable

As shown in the equation the dependent variable is the level of CSR disclosure. The level of CSR disclosure can be measured with different methods. Two methods seem to be appropriate to examine the level of CSR disclosure. The first method is a content analysis and the second method is the evaluation of firm's CSR policies using a reputation index.

*Content analysis*

The purpose of a content analysis, in this study, is to examine the level of CSR disclosure of the Dutch listed firms. Advantages of content analysis are that it is objective and easy to replicate (Gamerschlag et al., 2011). However, it also has some disadvantages. Content analysis is an indication of what firms say they do, and this may be very different from what they actually do (Kabir & Thai, 2017). There are several methods to conduct a content analysis, for example counting words, sentences or reading the whole text. In this study two methods of content analysis are applied. The first method uses keywords and the second method uses a Likert scale to measure the level of CSR disclosure.

The first method of content analysis used in this study is keywords used as unit of analysis. To capture all relevant CSR aspects a complete list of keywords is necessary. Gamerschlag et al. (2011) and Guthrie and Farneti (2008) derived the keywords for their content analysis from the framework of the Global Reporting Initiative (GRI). Gamerschlag et al. (2011) stresses that the GRI guidelines cover all aspects of CSR, as they consider an economic, environmental, and a social perspective. The economic keywords are not used in this study since a keyword like firm performance in my opinion not necessarily indicates more CSR activity. Using GRI guidelines and some additions a list with keywords is derived in order to do a content analysis for this study. The list of keywords is showed in Appendix A. The list distinguishes keywords for the environmental and social perspective. The number of hits divided by the total pages of the annual report gives the scores of CSR disclosure of the Dutch listed firms. As mentioned before content analysis can be an inappropriate method if the keywords can be interpreted differently. Thus in order to interpret the keywords correctly, I analyzed if the words actually presents CSR behavior. For example, the keyword "waste" is only counted as CSR score when it was mentioned in the context of "we reduced waste with 40%" and not when the context is "we had a lot of waste this year". Or, the keyword "recycle" is only counted in the context of "the objective to take back, separate and recycle packaging materials was also achieved in 2016" and not when the word has the following meaning "is recycled to the consolidated statement of profit or loss". These are two examples and this is done to improve the quality of the content analysis.

The second method of content analysis is an effort to provide a more sensitive and nuanced picture of CSR disclosure than the number of keywords. This is in line with the study of Holder-Webb, Cohen, Nath and Wood (2008). This coding scheme represents a conceptual analysis with phrases or words as the level of analysis. Level of CSR is coded using a 5-point Likert scale. A score of 1 means no or little mention of CSR activities and firms that score 5

points are dedicated to include CSR activities. Firms are rated on the following points: level of social and environmental disclosure measured by the percentage of keywords from the first content analysis. Firms are divided in quartiles. The lowest 50% firms are rated as scale 1(0-25%) or 2 (25-50%). Firms that score more than the median are rated as scale 4(50-75%) and 5 (75-100%). It is checked if firms provide information about CSR related activities on their website and if they have an additional sustainability report. In addition, it is checked whether firms have policies or programs designed to contribute to society with for instance community development plans, educational opportunities, or environmental programs. Thus, firms with additional programs or reports can raise a scale. Table 2 gives an overview and explanations of the five scales.

**Table 2 Likert scale explanation**

| Scale | Explanation |
|---|---|
| **1** | Firms in quartile 1 of CSR disclosure; no programs mentioned that will contribute to society; no additional sustainability report and no information on the website of the firm. |
| **2** | Firms in quartile 2 of CSR disclosure; no programs mentioned that will contribute to society, no additional sustainability report and, information provided on the website of the firm. |
| **3** | Firms in quartile 2 or 3 of CSR disclosure; depending on the presence of sustainability report or additional CSR related programs. |
| **4** | Firms in quartile 3 of CSR disclosure; presence of a sustainability report and no additional CSR related programs. |
| **5** | Firms in quartile 4 of CSR disclosure; presence of an additional sustainability report and active CSR activities and programs. |

*Reputation index*

The second method to measure CSR is the use of a reputation index. There are independent agencies that rate firms on one or more dimensions of CSR performance and allow them a score. The Dow Jones Sustainability Index (DJSI) is used by Artiach et al. (2010). The DJSI recognizes the leading CSP firms from each industry sector in the US. Reverte (2009) analyzed the data from the Observatory on Corporate Social Responsibility (OCSR). The OCSR issues each year an exhaustive report on CSR disclosures by Spanish listed firms included in the IBEX35 index, which comprises the largest 35 firms in terms of market capitalization (Reverte, 2009). Many authors (see, Attig et al., 2014; De Villiers et al., 2011; Ding et al., 2016; Harjoto et al., 2015; Saeidi et al., 2015) used the MSCI ESG stats, formerly known as Kinder, Lyndenberg, and Domini or KLD Stats. Attig et al. (2014) stress that the ESG research is widely used in studies of corporate social performance. Harjoto et al. (2015) state that MSCI ESG Stats provides assessment data on the strengths and concerns on various areas of corporate social performance for listed companies in the database. The MSCI ESX index indicate on their website that it is designed to support common approaches to environmental, social and governance (ESG) investing, and help institutional investors more

effectively benchmark to ESG investment performance as well as manage, measure and report on ESG mandates [6].

This study is focusing on the CSR disclosure of Dutch listed firms. In the Netherlands the Transparency Benchmark (TB) evaluates CSR using independent scores. The TB provides transparency in corporate social reporting among the largest companies in the Netherlands. Due to the Transparency Benchmark the Ministry of Economic Affairs provides insight into the manner in which the largest Dutch companies report about their CSR activities. The Transparency Benchmark is performed every year. On behalf of, and under the responsibility of the Ministry of Economic Affairs, the Transparency Benchmark is currently performed by EY (former Ernst & Young). A number of activities, in particular the communication, are outsourced to MVO Nederland[7].

The criteria of the TB are in line with the latest international guidelines, such as the GRI or the framework for integrated reporting of the International Integrated Reporting Council (IIRC). It is important to know how the Dutch listed firms are assessed on their CSR activity. According to the TB, the criteria have been divided into two categories: content-related and quality-related. The criteria of the TB consist of requirements on the (1) business model, (2) policy and results and, (3) the management approach. Firstly, the following points are considered at the business model: profile and value chain, process of value creation, analysis of the operating context and, strategic context. Secondly, with policy and results are the economic, environmental and, social aspects of the business practice important. Finally, at the management approach the following requirements are assessed: governance and remuneration, steering and control, future expectations and, some reporting criteria. The quality-related score are based on relevance, clearness, reliability, responsiveness, and coherence. The top three companies in The Netherlands in 2016 according to the TB were Alliander NV, Schiphol Group and, NS. A maximum of 200 points can be scored; 100 points for content and quality respectively. The total score can be calculated by adding the total score obtained for both content and quality[8]. The companies are ranked in different groups. These are leaders, followers, peloton, laggards and, companies with zero scores[9].

### 4.3.2 Independent variables

In this section the independent variables are presented and discussed.

*Ownership concentration*

Ownership concentration is measured as the percentage of shares owned by the largest shareholder. This is in line with previous studies that examined ownership concentration (e.g. Liu & Zhang, 2017). Information is retrieved from the database ORBIS and is checked in the annual reports.

[6] https://www.msci.com/esg-index-family

[7] https://www.transparantiebenchmark.nl/en/about-transparency-benchmark

[8] For more information on the content and quality criteria, these information is available on: https://www.transparantiebenchmark.nl/sites/transparantiebenchmark.nl/files/afbeeldingen/transparantiebenchmark_eng_0.pdf

[9] For more information on the content and quality criteria, these information is available on: https://www.transparantiebenchmark.nl/sites/transparantiebenchmark.nl/files/afbeeldingen/transparantiebenchmark_eng_0.pdf

*Gender diversity*

Gender diversity is measured by director gender. The variable female board members is calculated as the percentage of female board directors in the total board (management and supervisory board) and this is in line with Bear et al. (2010). Annual reports are used to get the proportion of female members in the management and supervisory board.

*Outside directors*

Dutch companies operate with a two-tier governance model. Thus there is a distinction between the management (management board) and their supervision (supervisory board). The management board runs the daily operations and the supervisory board should be independent from the management board and serve the interest of shareholders. According to the corporate governance code 2016 is the composition of the supervisory board such that the members are able to operate independently and critically vis-à-vis one another, the management board, and any particular interests involved. The number of outside directors is calculated by the number of supervisory board members divided by the total number of board members. The measurement of this variable is consistent with prior research (e.g. De Villiers et al., 2011). Annual reports are used to get information about the outside directors.

*Board size*

The total number of board members includes members of management board and supervisory board. The measurement of this variable is in line with the study of De Villiers et al. (2011). The number of directors is retrieved from the annual reports of the firms.

*Executive compensation*

Jian and Lee (2015) measured executive compensation as the natural logarithm of the sum of total executive compensation level comprising salary, bonus, stock options granted, restricted stocks granted, long term incentive payouts and other annual compensation in the fiscal year. The measurement of executive compensation is in line with Jian and Lee (2015) and De Villiers et al. (2011). Thus, executive compensation is measured as the natural logarithm of total executive compensation reported in annual reports. The value of executive compensation is divided by the number management board members of a firm. There are firms that have two members in the management board, but there are also firms with more.

To analyze executive compensation more thoroughly an additional analysis of the components of executive compensation is made. The components of executive compensation that are distinguished in this study are salary, bonus, stock options and, pension contributions. Salary, bonus, stock options and, pension contributions are measured as the natural logarithm of the component and as a percentage of total executive compensation. This is in line with the study of Mahoney and Thorn (2006). They measured, for instance, stock options grants as a percentage of stock options to total executive compensation. Data of executive compensation is retrieved from annual reports.

### 4.3.3 Control variables

This study includes five control variables. These are respectively profitability, firm size, firm age, leverage and, industry sensitivity.

*Profitability*

In order to measure corporate performance, either accounting- or market based measured can be used (Reverte, 2009). In this paper an accounting based measure; return on assets (ROA) is used. This is consistent with previous studies (e.g. Reverte, 2009; Artiach et al., 2010) and according to Ginglinger, Megginson and Waxin (2011), they calculated ROA as operating income divided by assets – which is the European standard definition of ROA. The formula of ROA is EBIT (earnings before interest and taxes) divided by the total assets of a firm.

*Firm size*

Artiach et al. (2010) state that larger firms are more visible and draw greater attention from the public. It can be assumed that larger firms engage more in CSR. Therefore firm size is a relevant control variable. There are different methods to measure size. In this study firm size is measured as the natural logarithm of total assets for a firm in a specific year (Artiach et al., 2010; Gamerschlag et al., 2011).

*Firm age*

To take into account the effect of firm age, it is included as a control variable. The firm age is measured as the number of years since the founding of the company. The measurement of this control variable is consistent with the study of Saeidi et al. (2015). A natural logarithmic transformation is applied to reduce the skewness.

*Leverage*

Leverage can be measured as long-term debt divided by book value of equity or total debt divided by total assets for a specific year. In this paper the leverage is based on total debt divided assets. This is similar to previous studies (e.g. Reverte, 2009; Artiach et al., 2010).

*Industry*

Some industries are "more sensitive" than others according to (Reverte, 2009). The author claims that in general, corporations from the mining, oil, and, chemical industries emphasize information regarding environmental, health and, safety issues because their manufacturing processes have a negative influence on the environment. While the finance and service industries in general report more regarding social issues. Therefore Reverte (2009) used industry sensitivity as a dummy variable to examine determinants for CSR disclosure. He claims based on prior literature, that the following sectors are more sensitive: mining, oil and gas, chemicals, forestry and paper, steel and other metals, electricity, gas distribution, and water. Reverte (2009) considered all other industries as "less sensitive." Firms in sensitive industries get a one and firms in a less sensitive industry a zero. The US SIC primary codes from the ORBIS database are used to distinguish the firms into a more or less sensitive industry. Industry sensitivity is in this study a dummy variable; this is in line with the study of Reverte (2009). This study distinguish the following sensitive industries: mining & construction, manufacturing and, transportation & public utilities. The less sensitive industries in this study are wholesale trade & retail trade and, services.

Table 3 gives an overview of the measurement of all variables included in this study. There are four measurements of the dependent variable CSR disclosure. Three of them are used for the regression analyses and CSR_D3 is used for the logistic regression. This study examines five independent variables and there are also five control variables included in this study.

**Table 3 Variable measurement**

| Abbreviation | Variable | Measurement |
|---|---|---|
| Dependent variable | | |
| CSR_D1 | CSR disclosure | The natural logarithm of TB scores |
| CSR_D2 | CSR disclosure | Total relevant keywords divided by total pages of annual report |
| CSR_D3 | CSR disclosure | Likert scale 1-5 of CSR disclosure |
| CSR_D4 | CSR disclosure | A dummy variable that is equal to 1 if there is a sustainability report and 0 otherwise |
| Independent variables | | |
| OwnCon | Ownership concentration | The percentage of equity ownership by the largest shareholder |
| FemBoard | Female board members | The percentage of female directors on the management and supervisory board |
| OutDir | Outside directors | The percentage of supervisory board members on the total board size |
| BoardSize | Board size | The number of directors serving on the board (management and supervisory board) |
| TOT_COMP | Executive compensation | Total executive compensation (x 1000 €) divided by number of management board members. Measured by the natural logarithm of total executive compensation.<br>Components of executive compensation: the natural logarithm of salary, bonus, stock options and, pension contributions and the percentage of salary, bonus, stock options and, pension contributions on total executive compensation |
| Control variables | | |
| ROA | Profitability | Earnings before interest and taxes (EBIT) divided by total assets |
| TA | Firm size | The natural logarithm of total assets (x million €) |
| FirmAge | Firm age | The natural logarithm of firm age |
| LEV | Leverage | The ratio of long-term debt divided by total assets and total debt divided by total assets and, |
| IND | Industry sensitivity | A dummy variable that is equal to 1 if the firm is industry sensitive and 0 otherwise. |

# 5. Data

This chapter gives a description of the sample that is incorporated in this study and a description of the data sources.

## 5.1 Sample

The sample of this study is comprised of the firms that compose the Amsterdam Exchange Index (AEX), Amsterdam Mid Cap Index (AMX) and the Amsterdam Small Cap index (AScX). These firms have the obligation to publish annual reports and therefore there is much publicly available data to analyze. The AEX trades the 25 largest shares of companies in the Amsterdam stock market. The AMX and AScX consist of 25 firms as well. The AMX is composed of the 25 funds that trade on the exchange and that rank 26-50 in size (based on market capitalization). The AScX is composed of the funds that trade on the exchange and that rank 51–75 in size. This means a sample size of 75 firms per year. When all firms were included the firm-year observation would have been 225 for three years data. The years that are analyzed are 2014, 2015 and 2016. There is chosen for these three consecutive years because all the data is available for these years.

However, not all the 75 firms of the AEX are included in the sample. First, firms without Country ISO code "NL" in ORBIS are excluded for this study. For instance Galapagos is listed on the AEX but excluded for this study because their Country ISO code is "BE". As a result, ten firms are excluded from the sample.

Second, finance and insurance firms have different firm structures and reporting. These firms are excluded from the sample because of a lack of data for profitability (ROA using EBIT) and leverage (total debt and long-term debt), which are important control variables. This means firms like ING NV or ABN AMRO NV are not included in this study. There also are 10 firms excluded for this reason.

Philips Lightning is not included because Koninklijke Philips NV is already included in the sample. Furthermore, VolkerWessels and Basic-Fit are excluded due to a lack of data. After the exclusion of these firms, the total sample size consists of 53 Dutch publicly listed firms.

Some firms like Takeaway.com and SIF Holding NV went public in 2016, thus in 2015 and 2014 there are a couple of missing observations. After the excluding of these firms, there are 151 firm-year observations. Of them there are 150 observations included in the content analysis over the three years in question and 140 for the TB

Furthermore, the interquartile range (IQR) is used to detect outliers (Gross, 2007) at each independent and control variable. The IQR is multiplied by 3 to identify the outliers. This is a tolerant method, meaning that there are not many outliers because the number of observations is already limited. For example, Heineken NV had an amount of €7,676 million of executive compensation and is therefore this variable is excluded from the sample.

The sample consists of 53 firms divided in different industry types. The industries are based on US SIC primary codes which are from ORBIS. The CSR sensitive industries in this study are mining & construction, manufacturing, transportation & public utilities. The CSR insensitive industries in this study are wholesale trade & retail trade and, services. Most of the listed firms in this sample are industry sensitive. Table 4 displays the frequency table of

industry sensitivity dummy used in this study. Of the 53 firms in this sample 69.8% are industry sensitive, which are 37 firms of the sample.

**Table 4 Frequency table industry sensitivity**

| | Frequency | Percent |
|---|---|---|
| Industry non-sensitive observations | 16 | 31.2% |
| Industry sensitive observations | 37 | 69.8% |
| Total | 53 | 100% |

## 5.2 Data

As mentioned, the years that are analyzed are 2014, 2015 and 2016. CSR data of the variables is collected via the Transparency Benchmark (TB) of the Ministry of Economic Affairs and the annual reports of the sampled firms. The independent variables are ownership concentration, female board members, outside directors, board size and, executive compensation. Data about ownership concentration is extracted from ORBIS. Data was randomly cross-checked in annual reports to ensure that the information is correct. Information of the board composition is an important part of the Dutch corporate governance code. Therefore information about gender diversity in the board and outside members of the supervisory board was collected from annual reports. The remuneration policy for directors must be clear and understandable as well in the annual reports. Thus, data of executive compensation was collected as well from annual reports. The information of the control variables are all taken out ORBIS. These are the following variables: firm size (total assets), profitability (ROA using EBIT), leverage (total debt/total assets), firm age (date of incorporation) and, industry sensitivity (US-SIC primary codes). For the lagged variables the information came from ORBIS and annual reports of the years 2014 and 2015.

# 6. Results

This chapter presents the results of the study. Descriptive statistics, correlation matrix and the results of the different regressions will be discussed.

## 6.1 Descriptive statistics

The dependent variables include the CSR disclosure data. Appendix B presents the list of sampled firms and their CSR scores. There are 10 missing observations at the TB (CSR_D1); therefore the number of observations for the content analysis is a bit higher. A maximum of 200 points can be scored; 100 points for content and quality respectively. In this study, the minimum score for the TB is 0, the maximum score is 196 and the standard deviation is 54.50, which suggests high variations. A minimum score of 0 means that the firm does not disclose CSR information. The highest score of the TB is for Akzo Nobel in 2015 and this firm has the second highest score for the content analysis based on keyword (CSR_D2).

CSR_D2 includes the total relevant keywords divided by total pages of the annual reports. Of the 20 firms that have the highest score of these content analysis 18 firms have a score in the highest quartile (higher than 161) of the TB. This only does not apply for Arcadis NV and Corbion NV. The lowest scores of the content analysis based on keywords (CSR_D2) are for Altice NV with 0.030 and 0.159. This firm has a score of 0 according to the TB in 2015. The mean of CSR_D2 is 1.05 where the median is 0.90. The maximum score of CSR_D2 is 3.06 from Koninklijke DSM NV. It can be concluded that in general the scores of the different measures of CSR (CSR_D1 and CSR_D2) are comparable.

CSR_D3 presents the scores of the Likert scale (1-5). Observations are ranked as low CSR disclosure when they have a score of 1 or 2 at CSR_D3, average observations have a score of 3 and observations with a high CSR disclosure have a score of 4 or 5. The observations for low, average and high CSR disclosure do not differ much. The mean of CSR_D3 is 3.03. According to this study, there are 51 observations with low CSR disclosure, 44 observations with average CSR disclosure and 55 observations with high CSR disclosure.

CSR_D4 is a dummy variable that is equal to 1 if there is a sustainability report and 0 otherwise. The mean of this variable is 0.54. Which means that more than half of the firms in this sample have a sustainability or CSR report.

The independent variables include the corporate governance variables. The average ownership concentration by the largest shareholder in this study is 0.21. In this sample the largest shareholder holds 69% of the shares of the firm and the smallest substantial shareholder holds an amount of 5% of the shares in the firm.

The maximum percentage of female board members is 43%. Meaning, no firm has more female board members than male board members. The target of 30% of the Dutch corporate governance code for female members in the board is not often met. There are 23 observations with a percentage of 30% or more. The mean of female board members is 0.16 and this is higher than in the study of Nekhili et al. (2017) and Liao et al. (2015) whose research find both an average of 0,09 at French and British listed firms.

The most firms have more members in the supervisory board than in the management board. This study has an average percentage of 68% outside directors in the total board. Nekhili et al. (2017) find a board independence of 43% and Liao et al. (2015) a board independence of 54%. This suggests that for Dutch listed firms there are relatively more

outside board members. It should be mentioned that Dutch listed firms operating within a two-tier board structure.

The size of the board fluctuates between 5 and 14. The standard deviation of the determinant board size is 2.24. The average board size in this study is 8.44 and this score is comparable with prior studies like Liao et al. (2015) and De Villiers et al. (2011), they find respectively a mean of 8.76 and 9.05.

The mean of executive compensation is about €1.800 million and the standard deviation is about €1.600 million. This indicates that there are big differences between the amounts of total compensation among the sampled firms. The minimum executive compensation is €370.000 and the maximum is €7.139 million. Heineken NV and Unilever NV are the firms with the highest total compensation for management board members. ICT Group NV had the minimum compensation. The median at this study is €1.080 million. Table 5 displays the descriptive statistics of the variables included in this study.

**Table 5 Descriptive statistics**

| Variable | N | Mean | SD | Min | P25 | Median | P75 | Max |
|---|---|---|---|---|---|---|---|---|
| **CSR disclosure** | | | | | | | | |
| CSR_D1 | 140 | 113.69 | 54.50 | 0.00 | 70.75 | 115.00 | 161.00 | 196.00 |
| CSR_D2 | 150 | 1.05 | 0.68 | 0.03 | 0.50 | 0.90 | 1.50 | 3.06 |
| CSR_D3 | 150 | 3.03 | 1.31 | 1.00 | 2.00 | 3.00 | 4.00 | 5.00 |
| CSR_D4 | 151 | 0.54 | 0.50 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| **Independent variables** | | | | | | | | |
| OwnCON % | 147 | 0.21 | 0.17 | 0.05 | 0.10 | 0.15 | 0.26 | 0.69 |
| FemBoard % | 151 | 0.16 | 0.12 | 0.00 | 0.00 | 0.17 | 0.23 | 0.43 |
| OutDir % | 151 | 0.68 | 0.09 | 0.43 | 0.63 | 0.67 | 0.74 | 0.91 |
| BoardSize | 151 | 8.44 | 2.24 | 5.00 | 7.00 | 8.00 | 10.00 | 14.00 |
| TOT_COMP (x 1000€) | 149 | 1817.72 | 1586.73 | 370.00 | 704.50 | 1080.00 | 2365.00 | 7139.00 |
| **Control variables** | | | | | | | | |
| ROA | 151 | 0.06 | 0.06 | -0.15 | 0.03 | 0.07 | 0.09 | 0.27 |
| TA (x mln€) | 151 | 6843.96 | 12110.26 | 49.43 | 641.15 | 1964.00 | 6777.90 | 80412.30 |
| FirmAge | 151 | 62.46 | 55.85 | 1.00 | 20.00 | 41.00 | 96.00 | 251 |
| LEV_TD | 151 | 0.55 | 0.20 | 0.01 | 0.44 | 0.53 | 0.69 | 1.24 |
| LEV_LTD | 151 | 0.19 | 0.16 | 0.00 | 0.06 | 0.16 | 0.29 | 0.71 |
| IND | 151 | 0.69 | 0.47 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 |

*Notes: This table presents summary statistics of the variables used in this study. The sample consists of 151 firm-year observations from 2014 through 2016. P25 and P75 = 25th and 75th percentile of the variables. N is the number of observations. Variable definitions are described in table 3.*

Finally, the descriptive statistics of the control variables will be briefly discussed. The ROA is measured by earnings before interest and taxes divided by total assets. This is in line with Artiach et al. (2010). The mean of ROA is 0.06 and also is similar with the study of Artiach et al. (2010). There are big differences in total assets, the measure for firm size. For instance, the minimum observation of total assets is €49 million (ICT Group NV) and the maximum observation gives total assets of €80.412 million (Altice NV). The minimum and maximum

for firm age are respectively one year and 251 year. For instance, Wessanen NV is founded 251 years ago and there are also firms that have just been established. Leverage is measured by total debt and by long-term debt divided by total assets. The mean for total debt is 55% and the mean for long-term debt is 19%. Wuttichindanon (2016) find an average of 45% by total debt. Remarkable is the maximum score of 1.24 for leverage with total debt. This can be explained by the fact that PostNL had a negative equity in 2016, resulting in a leverage higher than 1. The industry dummy has a mean of 69% Thus, there are more industry sensitive observations compared to insensitive observations.

## 6.2 Correlation

The Pearson's correlations among the variables included in this study are presented in table 6. The correlation matrix includes all variables that are analyzed in the main regressions. The four dependent variables show positive significant correlation among each other. The scores of the TB (CSR_D1) are highly correlated with the content analysis based on keywords (CSR_D2) (r= 0.576**) and the content analysis based on a Likert scale (CSR_D3) (r= 0.738**). This is also the case for the correlation between CSR_D2 and CSR_D3 (r= 0.852**). The dummy variable for the presence of a sustainability report (CSR_D4) show significant correlation with CSR_D1 (r= 0.224**) and CSR_D3 (r= 0.213**).

As can be seen in table 6, the correlation coefficients between ownership concentration and CSR disclosure are all negatively correlated and statistical significant for the two forms of content analysis (= -0.264** and r= -0.205*). Thus according to this correlation model it can be assumed that ownership concentration lead to less CSR disclosure.

The board characteristic variables female board members, outside directors and, board size show all positive correlation coefficients with CSR disclosure. Especially board size and the presence of female board members show statistical significance at the 0.01 level with the first three dependent variables. The significant correlations of board size are r= 0.370**, r= 0.415** and r= 0.426**. The correlation coefficients for the percent of female board members are r= 0.440**, r= 0.409** and r= 0.392**. The correlation matrix suggests that a larger board size and the presence of more female board members have a positive effect on CSR disclosure. The correlation coefficients of outside directors give a positive sign to CSR disclosure as well (r= 0.057, r= 0.144, r= 0.168* and r= 0.003). Thus, there is only statistical significance with CSR_D3.

Total compensation of the management board shows a positive correlation coefficient and this is statistical significant at CSR_D1 and CSR_D3, that is not the expected sign. The correlation scores are r= 0.305**, r= 0.150, r=0.252** and r= -0.061. CSR_D4 has a negative correlation with executive compensation. However, this is not a statistical significant correlation.

The control variables show mostly positive correlation coefficients with the dependent variables. Total assets, leverage (based on total debt) and, firm age are all significant at 0.01 level. ROA (EBIT/Total assets) is positively correlated to CSR disclosure but not statistical significant. Leverage (based on long-term debt) is the only control variable with some negative correlations to the dependent variables, but these are insignificant.

**Table 6 Pearson's correlation matrix**

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **Ln CSR_D1** | 1 | | | | | | | | | | | | | |
| 2 | **CSR_D2** | 0.576** | 1 | | | | | | | | | | | | |
| 3 | **CSR_D3** | 0.738** | 0.852** | 1 | | | | | | | | | | | |
| 4 | **CSR_D4** | 0.224** | 0.131 | 0.213** | 1 | | | | | | | | | | |
| 5 | **OwnCon** | -0.124 | -0.264** | -0.205* | -0.117 | 1 | | | | | | | | | |
| 6 | **FemBoard** | 0.440** | 0.409** | 0.392** | 0.041 | -0.383** | 1 | | | | | | | | |
| 7 | **OutDir** | 0.058 | 0.144 | 0.168* | 0.003 | -0.257** | 0.376** | 1 | | | | | | | |
| 8 | **BoardSize** | 0.371** | 0.415** | 0.426** | 0.041 | -0.076 | 0.360** | 0.278** | 1 | | | | | | |
| 9 | **Ln TOT_COMP** | 0.305** | 0.202* | 0.278** | -0.061 | 0.150 | 0.235** | 0.382** | 0.619** | 1 | | | | | |
| 10 | **Ln TA** | 0.463** | 0.321** | 0.347** | 0.087 | 0.120 | 0.192* | 0.099 | 0.676** | 0.700** | 1 | | | | |
| 11 | **ROA** | 0.013 | 0.040 | 0.049 | 0.012 | 0.137 | 0.041 | 0.094 | -0.233** | -0.084 | -0.192* | 1 | | | |
| 12 | **Ln FirmAge** | 0.497** | 0.411** | 0.488** | 0.446** | -0.402** | 0.388** | 0.100 | 0.128 | -0.006 | -0.004 | 0.021 | 1 | | |
| 13 | **LEV_TD** | 0.182* | 0.231** | 0.183* | 0.165* | 0.078 | 0.145 | -0.003 | 0.257** | 0.153 | 0.365** | -0.035 | -0.190* | 1 | |
| 14 | **LEV_LTD** | -0.063 | -0.076 | -0.119 | 0.054 | 0.179* | -0.082 | -0.051 | 0.093 | 0.099 | 0.432** | -0.111 | -0.429** | 0.520** | 1 |

*Notes: This table presents Pearson's correlation between variables used in this study. The sample consists of 151 firm-year observations from 2014 through 2016.*. Correlation is significant at the 0.05 level (2-tailed) and **. Correlation is significant at the 0.01 level (2-tailed). Ln is log transformed variable. Variable definitions are described in Table 3.*

In order to test the problem of multicollinearity, the variance inflation factor (VIF) is calculated. Some independent variables correlate with other independent or control variables. For instance, ownership concentration correlates relatively high with female board members and firm age. Female board members correlate with, as mentioned, ownership concentration and outside directors at the 0.01 level. Executive compensation has a high correlation with board size and total assets. When the VIF is higher than 10, it can be assumed that there is multicollinearity between two or more variables. An overview of the VIF scores of the main analyses can be found in appendix H. This overview shows that there is no problem regarding to the multicollinearity in this study.

## 6.3 Regression results

This section presents the results of the regressions that are performed. Table 7, 8, and, 9 present the OLS regressions of the three hypotheses. Table 10 shows the impact of the different components of executive compensation. The control variables seem to have a positive association with CSR disclosure. Most of the time these control variables are statistical significant. Thus, firms with a higher value of total assets, a higher return on assets (ROA), more leveraged firms, older firms, and industry sensitive firms have a positive influence on CSR disclosure based on the different regressions. The control variables remain consistent when independent variables were added. In all regressions analyses year dummies are included.

Appendix C shows the results of the logistic regression, appendix D presents the year analyses, appendix E presents the industry sensitivity subsample analysis and appendix F shows the results of the OLS regression with lagged variables. The results of these additional analyses are briefly discussed the next sections.

### 6.3.1 Ownership concentration

The first hypothesis states that ownership concentration has a negative influence on CSR disclosure. Model 1 of table 7 tests the hypothesis with all the control variables. Model 2 excludes firm age in order to avoid collinearity. Because ownership concentration and firm age are significant correlated with each other, as can be seen in Table 6 Pearson's correlation matrix. In model 1, CSR_D2 shows statistical significance at the 0.05 level (b= -0.552*, t= -1.846). All the other scores do not show any statistical significant results. Moreover, the results show very little evidence for a positive association. Model 2 shows, in comparison to model 1, statistical significant results. Without firm age as a control variable the results are statistical significant at the 0.01 level (b= -0.496**, t= -1.987; b= -1.207***, t= -4.119; b= -1.907***, t= -3.378).

The logistic regression and year analyses (appendix C and D) find no statistical significant results. The subsample analysis regarding the industry sensitivity (appendix E) finds some noteworthy results. The industry sensitive firms show a negative significant association with CSR_D2 (b= -0.765**, t= -1.807). The industry non-sensitive firms show a significant relation as well with CSR_D1 ln, however in this case it is a positive association (b=1.316**, t= 2.247). Appendix F presents the OLS regression with lagged independent variables (t-1); the results are in line with the other OLS regressions where insignificant results are found. The direction of the coefficient is also similar with the main analysis

(positive for CSR_D1 ln and negative for CSR_D2 and CSR_D3). Analyzing all regression analyses, most models find negative insignificant results. Except, when firm age is excluded from the regression. Concluding, the models do not support the first hypothesis that ownership concentration has a negative influence on CSR disclosure. This is not in line with prior studies. These studies find mostly a negative and significant impact of concentrated ownership and CSR disclosure (Dam & Scholtens, 2013; Lau, Lu & Liang, 2016; Li & Zang, 2010 and, Liu & Zhang, 2017). However this study finds this impact as well, at model 2 of table 7, there is support for a negative significant association.

**Table 7 Hypothesis 1: ownership concentration**

| *OLS regression* | **Model 1** | | | **Model 2** | | |
|---|---|---|---|---|---|---|
| | *Ln CSR_D1* | *CSR_D2* | *CSR_D3* | *Ln CSR_D1* | *CSR_D2* | *CSR_D3* |
| **Intercept** | 1,724*** | -1,376** | -2,494** | 2.257*** | -1.034** | -1.353 |
| | (5,052) | (-2,942) | (-2,954) | (5.755) | (-2.184) | (-1.483) |
| **OwnCon** | 0,027 | -0,552* | -0,286 | -0.496** | -1.207*** | -1.907*** |
| | (0,125) | (-1,846) | (-0,530) | (-1.987) | (-4.119) | (-3.378) |
| **Ln Ta** | 0,121*** | 0,095** | 0,216*** | 0.155*** | 0.122*** | 0.283*** |
| | (5,346) | (2,986) | (3,770) | (5.710) | (3.579) | (4.314) |
| **ROA** | 1,123* | 1,125 | 2,503* | 1.444** | 1.667** | 3.844** |
| | (1,971) | (1,469) | (1,810) | (2.081) | (2.024) | (2.422) |
| **Lev_TD** | 0,294* | 0,735** | 1,057** | 0.070 | 0.473* | 0.409 |
| | (1,735) | (2,946) | (2,347) | (0.342) | (1.785) | (0.800) |
| **Ln Age** | 0,268*** | 0,221*** | 0,547*** | | | |
| | (7,888) | (5,077) | (3,770) | | | |
| **IND** | 0.346*** | 0.273** | 0.634*** | 0.254** | 0.211** | 0.483** |
| | (4.802) | (2.635) | (3.395) | (2.919) | (1.893) | (2.243) |
| **YEAR** | YES | YES | YES | YES | YES | YES |
| **Adjusted $R^2$** | 0,524 | 0,338 | 0,407 | 0.289 | 0.219 | 0.204 |
| **N** | 132 | 146 | 146 | 132 | 146 | 146 |

*Notes: This table presents results of the OLS regression of ownership concentration on CSR disclosure. Unstandardized coefficients are reported. Figures in parentheses represent the t-statistics, * Indicates significance at the 10% level; **Indicates significance at the 5% level; *** indicates significance at the 1% level. Ln is log transformed variable. Variable definitions are described in Table 3.*

### 6.3.2 Board characteristics

The second hypothesis consists of three sub-hypotheses. These hypotheses state that more female board members, more outside board members and a larger board size have a positive influence on CSR disclosure.

*Gender diversity*

The first board characteristic hypothesis is about female board members. A positive association is expected between female board members and CSR disclosure. As shown in table 8, model 1 and 4 test this hypothesis. The results show all positive signs to CSR disclosure. Four out of six tests show positive statistical significance. Model 1 shows statistical signifance for CSR_D1 ln and CSR_D2. In line with model 1, model 4 show this

positive statistical significant results with CSR_D1 ln and CSR_D2, the scores are respectively b= 0.792**, t= 2.348 and b= 0.989**, t= 2.088. The correlation matrix showed a statistical significant correlation between female board members and firm age. In non-published tests is firm age excluded to check if the results differ. Without the control variable firm age, the results for the three dependent variables are statistical significant at the 0.01 level.

Appendix C shows the results of the logistic regression analysis. The results are positive, but insignificant. At the subsample analyses (year analyses and industry sensitivity), the results are in line with the main analysis. All the scores are indicating a postive influence. There is one exception, in the year analysis of 2016 there is a negative outcome (b= -0.306, t= -0.407). In agreement with the main analysis, the results are statistical significant at half of the tests. Further, there are no remarkable results in the subsample analyses. When the variable FemBoard is lagged the results remain positive and significant for CSR_D1 ln and CSR_D2 (b= 1.152**, t= 2.790 and b=1.302**, t= 2.268).

The dependent variable CSR_D1 ln give positive significant results in all regression analyses (with exception of the year analysis 2016 and for industry insensitive firms). The results of CSR_D2 and CSR_D3 give positive coeficients, however these results are inconclusive. There is partial support for hypothesis H2a for CSR_D1 ln, thus when there is greater gender balance in top-management, firms are more likely to disclose CSR information. This is in line with previous studies (Boulouta, 2013; Harjoto et al. 2015; Jain and Jamali 2016; Liao et al. 2015 and; McGuiness et al. 2017).

*Outside directors*

The second sub-hypothesis states that more outside directors in the board have a positive influence on CSR disclosure. Model 2 and 4 of table 8 test this hypothesis. Model 2 shows only insignificant results. Contrary to the expected positive sign, model 4 only finds negative coefficients (b= -0.719*, t= -1.840, b= -0.362, t= -0.693 and b= -0.204, t= -0.213).

The logistic regression also gives results that contradict the hypothesis. Appendix C presents a negative insignificant score (b= -3.317, t= 2.315) and negative significant scores (b=-3.382*, t= 2.953 and - 4.781*, t= 3.517). The results of the year analysis are in line with the main analysis and find all insignificant effects. The only statistical significant score is for industry sensitive firms with CSR_D2 (t= 1.798**, b= 2.240). This can be found in appendix E, subsample analyses industry sensitivity. Appendix F shows, when the variable OutDir is lagged, the results for CSR_D1 ln is positive insignificant and for CSR_D2 and CSR_D3 negative insignificant. Concluding, the regression models do not support hypothesis H2b that more outside board members disclose more CSR information. Therefore, this hypothesis is rejected. This is not in line with most empirical studies who find that more outside directors have a positive association with CSR disclosure (Chang et al., 2012; De Villiers et al., 2011; Jizi, 2017 and, Jhonson & Greening, 1999).

*Board size*

The last sub-hypothesis regarding board characteristics is board size. Model 3 and 4 of table 8 tests this hypothesis. A positive association is expected with CSR disclosure. Table 8, the main analysis find all positive signs to CSR disclosure. As can be seen in table 8, the results

## Table 8 Hypotheses 2: board characteristics

| *OLS regression* | **Model 1** | | | **Model 2** | | | **Model 3** | | | **Model 4** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Ln CSR_D1* | *CSR_D2* | *CSR_D3* | *Ln CSR_D1* | *CSR_D2* | *CSR_D3* | *Ln CSR_D1* | *CSR_D2* | *CSR_D3* | *Ln CSR_D1* | *CSR_D2* | *CSR_D3* |
| **Intercept** | 2.539*** | -0.715 | -0.825 | 1.631*** | -2.009*** | -3.495*** | 1.553*** | -1.453** | -2.360** | 2,433*** | -0,770 | -1,446 |
| | (-6.753) | (-1.618) | (-0.942) | (4.418) | (-3.878) | (-3.746) | (4.238) | (-3.041) | (-2.730) | (5,630) | (-1,312) | (-1,344) |
| **FemBoard** | 0.644* | 1.230** | 1.298 | | | | | | | 0,792** | 0,989** | 0,697 |
| | (1.925) | (2.697) | (1.527) | | | | | | | (2,348) | (2,088) | (0,802) |
| **OutDir** | | | | -0.370 | 0.313 | 0.659 | | | | -0,719* | -0,362 | -0,204 |
| | | | | (-1.002) | (0.630) | (0.736) | | | | (-1,840) | (-0,693) | (-0,213) |
| **BoardSize** | | | | | | | 0.018 | 0.081** | 0.149** | 0,010 | 0,071** | 0,141** |
| | | | | | | | (0.822) | (2.829) | (2.876) | (0,468) | (2,366) | (2,575) |
| **Ln Ta** | 0.115*** | 0.062* | 0.180** | 0.129*** | 0.077** | 0.194*** | 0.105*** | 0.012 | 0.072 | 0,111*** | 0,010 | 0,071 |
| | (4.361) | (1.833) | (2.744) | (5.565) | (2.446) | (3.425) | (3.331) | (0.308) | (1.010) | (3,525) | (0,262) | (0,988) |
| **ROA** | 0.847 | 0.506 | 1.900 | 1.210** | 0.707 | 2.094 | 1.182** | 1.005 | 2.677** | 1,113** | 0,861 | 2,563* |
| | (1.304) | (0.636) | (1.225) | (2.181) | (0.938) | (1.544) | (2.128) | (1.377) | (2.026) | (2,012) | (1,186) | (1,895) |
| **Lev_TD** | -0.031 | 0.343 | 0.209 | 0.287* | 0.773** | 1.119** | 0.286* | 0.743** | 1.037** | 0,189 | 0,650** | 0,974** |
| | (-0.160) | (1.330) | (0.415) | (1.729) | (3.102) | (2.496) | (1.697) | (3.059) | (2.360) | (1,110) | (2,649) | (2,163) |
| **Ln Age** | 0.227*** | 0.211*** | 0.523*** | 0.261*** | 0.260*** | 0.575*** | 0.269*** | 0.244*** | 0.541*** | 0,228*** | 0,209*** | 0,516*** |
| | (6.244) | (4.846) | (6.545) | (8.184) | (6.661) | (8.183) | (8.448) | 6.237) | (7.694) | (6,491) | (4,960) | (6,692) |
| **IND** | 0.295*** | 0.320** | 0.703*** | 0.347*** | 0.332*** | 0.726*** | 0.334*** | 0.310** | 0.682*** | 0.348*** | 0.315*** | 0.685*** |
| | (3.715) | (3.065) | (3.541) | (5.070) | (3.353) | (4.070) | (4.845) | (3.208) | (3.904) | (5.109) | (3.284) | (3.895) |
| **YEAR** | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| **Adjusted $R^2$** | 0.454 | 0.321 | 0.367 | 0.530 | 0.338 | 0.425 | 0.527 | 0.382 | 0.455 | 0,544 | 0,392 | 0,450 |
| **N** | 135 | 150 | 150 | 135 | 150 | 150 | `134 | 149 | 149 | 134 | 149 | 149 |

*Notes: This table presents results of the OLS regression of female board members, outside directors and, board size on CSR disclosure. Unstandardized coefficients are reported. Figures in parentheses represent the t-statistics, * Indicates significance at the 10% level; **Indicates significance at the 5% level; *** indicates significance at the 1% level. Ln is log transformed variable. Variable definitions are described in Table 3*

for CSR_D2 and CSR_D3 present positive significant scores (b= 0.081**, t= 2.829; b= 0.149**, t=2.876; b= 0.071**, t= 2.366; b= 0.141**, t=2.575). The logistic regression analysis presents a remarkable result that is not in line with the regression analyses. Namely, board size has a negative relation with CSR_D4.

The dependent variable CSR_D2 is the only variable where the results remain positive significant at the year analysis of 2014 and for industry sensitive firms (b= 0.121*, t= 1.913 and b= 0.194***, t= 5.144). The OLS regression with lagged independent variables gives similar results with statistical significance for CSR_D2.

Analyzing all regression analyses, most models (especially CSR_D2) find positive significant results. Thus, there is partial support for hypothesis H2c. However, just like the outcome of hypothesis H2a, the results are inconclusive. Previous studies document a positive relation between board size and CSR disclosure (Brown, Helland & Smith, 2006; De Villiers et al., 2011; Jizi, 2017). The results indicating some support that a larger board size has a positive impact on CSR disclosure, however the hypothesis cannot be accepted.

### 6.3.3 Executive compensation

The last corporate governance determinant that is tested is executive compensation. A negative effect is expected between executive compensation and CSR disclosure. Model 1 and 2 of table 9 show different signs of the coefficients for total executive compensation. For the dependent variable CSR_D2 the results are negative and statistical significance at model 1 (b= -0.182**, t= -1.976). However, at model 2 Ln CSR_D1 and CSR_D3, the results are positive significant. The collinearity between executive compensation and firm size, measured by total assets (Ln TA) can be an explanation for this difference.

Appendix D and E present the result of additional results of OLS regression. At the robustness checks, CSR_D2 remains significant with the exception of the year analysis from 2015. The other dependent variables give negative insignificant scores. This is in line with the main analysis. The OLS regression analysis with lagged variables does not provide other insights (appendix F).

Analyzing all regression analyses, most models are negative significant. The content analysis based on keywords (CSR_D2) find mostly statistical significant results. However, the results differ without total assets as a control variable. Thus, there is partial support for hypothesis H3. However, the other measurements of CSR disclosure find no significance, thus the hypothesis can not be confirmed. Liu and Zhang (2017); Mahoney and Thorne (2005) and, McGuire et al. (2003) find similar results. These results suggest that there is no significant relationship between CSR information disclosure and the compensation of executives.

**Table 9 Hypothesis 3: executive compensation**

| *OLS regression* | Model 1 | | | Model 2 | | |
|---|---|---|---|---|---|---|
| | *Ln CSR_D1* | *CSR_D2* | *CSR_D3* | *Ln CSR_D1* | *CSR_D2* | *CSR_D3* |
| **Intercept** | 1,932*** | -1,083** | -2,097** | 2.132*** | -1.107** | -2.195** |
| | (5,280) | (-2,131) | (-2,272) | (5.835) | (-2.104) | (-2.530) |
| **Ln Tot_Comp** | -0,087 | -0,182** | -0,059 | 0.136** | 0.028 | 0.251** |
| | (-1,379) | (-1,976) | (-0,350) | (2.894) | (0.441) | (2.165) |
| **Ln Ta** | 0,154*** | 0,143** | 0,210** | | | |
| | (4,868) | (3,119) | (2,527) | | | |
| **ROA** | 1,329** | 1,286 | 2,556* | 0.288 | 0.445 | 1.319 |
| | (2,352) | (1,603) | (1,754) | (0.507) | (0.572) | (0.943) |
| **Lev_TD** | 0,247 | 0,712** | 1,099** | 0.511** | 0.984*** | 1.500*** |
| | (1,464) | (2,832) | (2,408) | (2.948) | (4.052) | (3.439) |
| **Ln Age** | 0,262*** | 0,261*** | 0,578*** | 0.284*** | 0.269*** | 0.590*** |
| | (8,302) | (6,763) | (8,241) | (8.379) | (6.787) | (8.287) |
| **IND** | 0.362*** | 0.397*** | 0.779*** | 0.339*** | 0.358*** | 0.722*** |
| | (5.193) | (3.906) | (4.223) | (4.483) | (3.443) | (3.867) |
| **YEAR** | YES | YES | YES | YES | YES | YES |
| **Adjusted $R^2$** | 0,534 | 0,350 | 0,422 | 0.450 | 0.309 | 0.400 |
| **N** | 135 | 148 | 148 | `135 | 148 | 148 |

*Notes: This table presents results of the OLS regression of executive compensation on CSR disclosure. Unstandardized coefficients are reported. Figures in parentheses represent the t-statistics, * Indicates significance at the 10% level; **Indicates significance at the 5% level; *** indicates significance at the 1% level. Ln is log transformed variable. Variable definitions are described in Table 3*

The components of executive compensation are assessed separately in order to test the impact of the different components of executive compensation. Table 10 displays the OLS regression analysis of the distinguished components of executive compensation. A logarithmic transformation is applied for the values of salary, bonus, stock options and, pension contributions. Appendix H presents the alternative measurement of these components, namely the percentages of salary, bonus, stock options and, pension contributions to total executive compensation.

The first component of the total remuneration of the management board members is fixed basic salary. Table 10 presents insignificant positive coefficients as can be seen in model 1. The results of the alternative measure (appendix H) are in line with these findings at Ln CSR_D1 but not with Salary% and CSR_D2. These results are statistical significant (b= 0.753**, t= 2.022 and b= 1.749*, t= 1.668).

The second component of the total remuneration of the management board members are bonuses. The variable remuneration is an important component of the remuneration package. Just like salary, a negative association is expected for bonuses. Model 1 of table 10 show a negative insignificant association with CSR disclosure. The overall models are in most cases statistically significant, however not robust. Ln CSR_D1 retains its statistical significance t= -1.296**, b= -2.011 (appendix H).

The remuneration in the long-term for performance of management board members that is analyzed is in the form stock options. The OLS regressions show all statistical

insignificance. Summarizing, there is no effect find between stock options and CSR disclosure.

The last component is the pension contributions paid to executives. The potential influence of the amount of pensions contributions is unknown. Table 10 and appendix H show positive coefficients for the variable pension contributions. Sometimes even statistical significant. However, it cannot be said that there is a positive significant association between pension contributions and CSR disclosure.

**Table 10 Regression components of executive compensation on CSR disclosure**

| *OLS regression* | **Model 1** | | **Model 2** | | **Model 3** | | **Model 4** | |
|---|---|---|---|---|---|---|---|---|
| | *Ln* | | *Ln* | | *Ln* | | *Ln* | |
| | *CSR_D1* | *CSR_D2* | *CSR_D1* | *CSR_D2* | *CSR_D1* | *CSR_D2* | *CSR_D1* | *CSR_D2* |
| **Intercept** | 0.727 | -1.958** | 1.280** | -2.074*** | 1.934*** | -1.241** | 1.814*** | -2.081*** |
| | (1.076) | (-2.045) | (3.053) | (-3.898) | (4.573) | (-2.146) | (4.834) | (-4.175) |
| **Ln Salary** | 0.196 | 0.027 | | | | | | |
| | (1.201) | (0.118) | | | | | | |
| **Ln Bonus** | | | -0.039 | -0.086 | | | | |
| | | | (-0.670) | (-1.085) | | | | |
| **Ln StockOptions** | | | | | -0.029 | -0.082 | | |
| | | | | | (-0.799) | (-1.564) | | |
| **Ln Pension** | | | | | | | 0.058 | 0.016 |
| | | | | | | | (1.137) | (0.230) |
| **Ln TA** | 0.117** | 0.084 | 0.172*** | 0.131** | 0.134*** | 0.090* | 0.108*** | 0.111** |
| | (2.888) | (1.503) | (4.851) | (2.793) | (3.799) | (1.824) | (3.971) | (2.823) |
| **ROA** | 1.511** | 1.078 | 1.991** | 1.240 | 1.336* | 1.413 | 0.930 | 0.742 |
| | (2.210) | (1.107) | (2.765) | (1.322) | (1.802) | (1.416) | (1.600) | (0.918) |
| **Lev_TD** | 0.372* | 0.828** | 0.254 | 0.856** | 0.273 | 0.745** | 0.370** | 1.062*** |
| | (1.837) | (2.718) | (1.218) | (2.976) | (1.348) | (2.497) | (2.123) | (4.142) |
| **Ln AGE** | 0.205*** | 0.281*** | 0.236*** | 0.294*** | 0.234*** | 0.295*** | 0.231*** | 0.239*** |
| | (5.154) | (6.067) | (6.126) | (6.795) | (6.148) | (6.127) | (6.087) | (4.973) |
| **YEAR** | YES | YES | YES | YES | YES | YES | YES | YES |
| **Adjusted $R^2$** | 0.430 | 0.282 | 0.414 | 0.315 | 0.485 | 0.336 | 0.474 | 0.383 |
| **N** | 123 | 136 | 117 | 129 | 101 | 110 | 122 | 131 |

*Notes: This table presents results of the OLS regression of ownership concentration on CSR disclosure. Unstandardized coefficients are reported. Figures in parentheses represent the t-statistics, * Indicates significance at the 10% level; **Indicates significance at the 5% level; *** indicates significance at the 1% level. Ln is log transformed variable. Variable definitions are described in Table 3*

## 6.4 Additional analyses

This section discusses the results of the logistic regression. Furthermore, the OLS regressions of the year analysis, industry sensitivity analysis and lagged variables are discussed.

### 6.4.1 Logistic regression

A dummy variable is created in order to perform a logistic regression. The dummy variable is equal to 1 if firms have a sustainability report in addition to their annual report and 0 otherwise.

The logistic regression regarding ownership concentration finds no noteworthy results. The scores are all negative and insignificant. More remarkable are the results with the board characteristics. In contrast to the main analysis, there are no significant scores at the variable female board members. The results at outside directors show negative scores and these are significantly at two models. At the main analysis, board size shows a positive association with CSR disclosure. However, at CSR_D4, the logistic regression presents negative coefficients. The last hypothesis, total compensation of the management board members, gives no significant coefficients.

To conclude, the logistic regression is not completely consistent with the main regression model and some significance is lost.

### 6.4.2 Subsample analysis

The year analyses and the industry sensitivity analysis will be briefly presented in this section.

*Year analysis*

A year analysis in conducted to check if there are different effects of the variables at the subsample from the full sample. The year analysis is added at appendix C.

The scores of ownership concentration are consistent for the three years. Similar to the main analysis, the year analysis find no statistical significant results. At the variable female board members, there is one exception. In the year analysis of 2016 there is a negative outcome (b= -0.306, t= -0.407). In agreement with the main analysis, the results are statistical significant at half of the tests. The results of the variable outside directors in the year analysis are in line with the main analysis and find all insignificant effects in every year. At board size, the dependent variable CSR_D2 in 2014 is the only variable where the score is positive significant. For the other years the scores are positive and insignificant. Executive compensation show significant results in 2014 and 2016 at CSR_D2 (b= -0.346**, t= -2.049 and b= -0.432, t= -2.007). At CSR_D1 the scores remain negative insignificant for all three years. Not all the scores from the main analysis remain significant in the subsample analysis. An explanation can be that the number of observations are much lower. Furthermore, there are no noteworthy differences between the years.

In non-published tests an average analysis was conducted. The scores of the variables of 2014, 2015 and, 2016 were summed up and divided by three years. The results are in line with the year analysis.

*Industry sensitivity analysis*

The second subsample analysis consists of the industry sensitivity analysis. The firms are divided in sensitive industries and non-sensitive industries based on their US SIC primary codes. The following industries are sensitive: mining & construction, manufacturing and, transportation & public utilities. The less sensitive industries in this study are wholesale trade & retail trade and, services. The industry sensitivity analysis is added at appendix D.

The subsample analysis regarding ownership concentration finds some noteworthy results. The industry sensitive firms show a negative significant association with CSR_D2 (b= -0.765**, t= -1.807). The industry non-sensitive firms show a significant relation as well with CSR_D1 ln, however in this case it is a positive association (b=1.316**, t= 2.247). These results suggest differences for the effect of ownership concentration on CSR disclosure. All

scores of female board members are indicating a postive influence on CSR disclosure. This is in line with the main analysis. The score at CSR_D1 ln for firms in sensitive industries is significant at the 0.05 level (b= 0.960**, t= 2.243). The only statistical significant score for outside directors is at industry sensitive firms with dependent variable CSR_D2 (t= 1.798**, b= 2.240). The score of board size for industry insensitive firms is significant (0.194***, t= 5.144). The scores of the industry sensitive firms show very little evidence for an effect between board size and CSR disclosure. The results of the effects of executive compensation are consistent in this subsample analysis. There are negative significant scores for CSR_D2 (b= -0.356**, t= -0.550 and b=-0.341**, t= -1.962). The scores of CSR_D1 are both negative and insignificant. Concluding, there are no big differences between the subsamples. However, ownership concentration shows inconsistent scores between the different industries.

### 6.4.3 Lagged variables

To test the potential endogeneity problem an OLS regression with lagged variables is performed. This regression includes the one year lag of the independent and some control variables. This is in line with Barnett and Salomon (2012); Kabir and Thai (2017) and, Liao et al. (2015). The results of the regression with lagged variables can be find in appendix E.

The results of ownership concentration are in line with the other regressions where insignificant results are found. The direction of the coefficient is also similar with the main analysis (positive for CSR_D1 ln and negative for CSR_D2 and CSR_D3). When the variable FemBoard is lagged the results are positive and significant for CSR_D1 ln and CSR_D2 (b= 1.152**, t= 2.790 and b=1.302**, t= 2.268) and this is consistent with the main analysis (table 7). When the variable OutDir is lagged, the results for CSR_D1 ln are positive insignificant and for CSR_D2 and CSR_D3 negative insignificant. Board size shows positive coeficients. There is statistical significance at CSR_D2 (b= 0.065*, t= 1.714). The OLS regression analysis with lagged variables for executive compensation show similar results with the main analysis. The OLS regression analysis with lagged variables does not provide other insights for the hypotheses. Because there is not much impact on the results of the regression, it can be concluded that endogeneity does not appear to be a problem in this study.

# 7. Conclusion

This chapter reviews the results in this study. First, the main findings are discussed in order to draw conclusions. Second, the limitations of this study and recommendations for future research are described.

## 7.1 Main findings

CSR activities have been increasingly important in recent years. Because of this growing awareness of the role of firms in society it is important to know which factors drive to engage in CSR. Based upon the most explanatory theories for CSR disclosure, this study analyzed corporate governance drivers of CSR at Dutch listed firms.

Based upon the agency theory it is expected that ownership concentration is negatively associated with CSR disclosure due to agency problems between large and small owners. These agency problems occur when large shareholders reach nearly full control of the company and pursue private benefits that are not shared by small investors (Lozano et al., 2016). The regression models find some significant support for the first hypothesis that ownership concentration has a negative influence on CSR disclosure. However, hypothesis 1 is not supported as a determinant of CSR disclosure at this study.

The second hypothesis consists of three sub-hypotheses. These hypotheses state that more female board members, more outside board members and a larger board size have a positive influence on CSR disclosure. According to Liao et al. (2015) gender diversity is a considerably debated characteristic of board diversity. They claim that gender diversity on the board is an important dimension of corporate governance because women and men are traditionally, culturally and socially different. Liao et al. (2015) suggest that women play a different role from men in society; this could influence the preferences of female directors and motivate them to play a different role on a company board with regard to environmental issues. Based upon these arguments it is expected that the presence of female board members positively influence CSR disclosure. The results of the regression analyses show partial support for hypothesis H2a. The dependent variable CSR_D1 is except for one exception statistical significant at all regressions analyses. Thus when there is greater gender balance in top-management, firms are more likely to disclose CSR information. This is in line with previous studies (Boulouta, 2013; Harjoto et al. 2015; Jain and Jamali 2016; Liao et al. 2015 and; McGuiness et al. 2017).

De Villiers et al. (2011) argue that a board with a higher concentration of independent directors is more likely to objectively direct knowledge and expertise toward monitoring environmental performance and pursuing available environmental opportunities. Firms are expected to undertake more CSR activities when they are being monitored by more outside directors. However, the regression models do not support hypothesis H2b that more outside board members disclose more CSR information. Therefore, this hypothesis is rejected.

Larger boards are more likely to have more experience and knowledge of different issues. The CSR determinant board size is related to the RDT. This theory argues that larger boards may facilitate access to financial resources, allowing firms to access more resources to pursue CSR initiatives (De Villiers et al., 2011). Analyzing all regression analyses, most models find positive statistical significant results (especially CSR_D2). Thus, there is partial support for hypothesis H2c. This is in line with previous studies that document a positive

relation between board size and CSR disclosure (Brown, Helland & Smith, 2006; De Villiers et al., 2011; Jizi, 2017).

The last corporate governance determinant that is tested is executive compensation. Literature (Jian & Lee, 2015; Liu & Zhang, 2017; Mahoney & Thorne, 2006; McGuire et al., 2003; Stanwick & Stanwick, 2001) suggest mostly a negative association between executive compensation and CSR disclosure. The components of executive compensation are assessed separately in order to determine the impact of the different components of executive compensation. There is some support for a negative effect of bonus on CSR disclosure. Thus, this component might explain the negative effect of executive compensation. However, the results of the components of executive compensation are not consistent over all models. Therefore, analyzing the regression analyses regarding executive compensation, the content analysis based on keywords (CSR_D2) find all statistical significant results. Thus, there is partial support for hypothesis H3 but the hypothesis can not be confirmed.

To conclude, the research question was if "the corporate governance mechanisms such as ownership concentration, female board members, outside directors, board size and, executive compensation determine corporate social responsibility disclosure for Dutch public listed firms?" This study provides some support for the determinants female board members and board size. However, the findings did not occur consistently over different models. Ownership concentration, outside directors and (the components of) executive compensation are not supported as determinants in the context of Dutch listed firms.

## 7.2 Limitations and recommendations

This section presents the limitations of this study and recommendations for future research. The first limitations refer to the sample of this study and are related to the generalizability. The final sample consists of 53 firms. This is a limited sample size; other studies investigating corporate governance determinants of CSR include 2.000 to 10.000 firm-year observations (De Villiers et al., 2011; Jian & Lee, 2015; McGuinnes et al., 2017). Another limitation of the study is that the sample only focuses on Dutch listed firms. The limitation is that the potential institutional effects on the influence between corporate governance determinants and CSR disclosure are not included in this study. The last limitation of the sample is that only listed firms are examined. These firms are selected because these public firms have the obligation to publish annual reports and therefore there was much publicly available data to analyze. However, it may be that the corporate governance determinants of CSR have different effects on non-listed firms in The Netherlands.

The following limitations are related to the measurement of CSR. The CSR score of relevant keywords of the content analysis is calculated by dividing the total keywords by the total number of pages. A more reliable method was to calculate by dividing the total relevant keywords by the total amount of words of the annual report. However, I was unable to use a word count for the annual reports. Furthermore, I analyzed if the keywords actually presents CSR behavior, thus that is a subjective part of the content analysis. The scores of the TB are formed over Dutch firms; therefore these results are difficult to compare with other studies. A disadvantage of content analysis is that it is based on the content and quality of CSR disclosures. Thus, the level of CSR disclosure can be different from the actual CSR

performance of the firms. Besides, it is unlikely that irresponsible behavior is disclosed in these reports, thus the annual reports are a bit biased.

Future research including more firm-year observations (larger sample size), a sample that consists of listed and non-listed firms and firms from different countries will increase the reliability and validity of the findings. These may find statistically significant levels for some board characteristics (gender diversity and board size) and executive compensation (bonus and pension contributions), where I only found partial support for these hypotheses. To my knowledge, the different components of executive compensation in relation to CSR disclosure in The Netherlands are not examined separately, thus this could be investigated more extensively in order to fill this gap in literature.

Another recommendation for future research is related to the research methods. This study performed an OLS and logistic regression. Other forms like 2SLS and fixed or random effects model can be used to assess the consistency of the results. Further, lagged variables for more than one year or a 2SLS regression can be performed to mitigate endogeneity problems.

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## Appendices

**Appendix A: List of keywords**

**Appendix B: List of sampled firms with CSR scores**

**Appendix C: Logistic regression CSR determinants on sustainability report**

**Appendix D: Year analyses**

**Appendix E: Subsample analysis industry sensitivity**

**Appendix F: OLS regression with lagged variables**

**Appendix G: Alternative measure executive compensation**

**Appendix H: Variance Inflation Factor**

## Appendix A: List of keywords

Keywords derived from the GRI framework[10]

| Environmental | Social |
|---|---|
| Bio | Charity |
| Biodiversity | Child labor |
| Climate | Collective agreements |
| CSR | Collective bargaining |
| Effluents | Community |
| Emissions | Corruption |
| Energy | Customer health |
| Environment(al) | Customer safety |
| Global warming | Discrimination |
| Green | Diversity |
| Pollution | Donation |
| Recycled | Employee turnover |
| Renewable | Employment |
| Spills | Equal opportunities |
| Sustainability | Equal remuneration |
| Waste | Forced labor |
| Water | Freedom of association |
| | Gender |
| | Human rights |
| | Impact on society |
| | Management relations |
| | (Occupational) health |
| | (Occupational) safety |
| | Product responsibility |
| | Public policy |
| | Security |
| | Training |
| | Transparency |

Additional key words:

**Environmental:** environment, sustainability, green, energy, water, climate, global warming, bio, renewable, CSR

**Social:** equal remuneration, security, impact on society, gender, charity, donation, social, transparency, management relations

[10] Retrieved from the consolidated set of GRI sustainability reporting standards 2016. More information can be found on www.globalreporting.org.

# Appendix B: List of sampled firms with CSR scores

| | | CSR_ | D1 | | | D2 | | | D3 | | | D4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nr. | **Company name** | | 2016 | 2015 | 2014 | 2016 | 2015 | 2014 | 2016 | 2015 | 2014 | 2016 |
| 1 | AALBERTS INDUSTRIES NV | | 80 | 81 | 65 | 1,038 | 0,907 | 0,947 | 3 | 3 | 3 | 0 |
| 2 | ACCELL GROUP NV | | 141 | 136 | 139 | 0,876 | 1,172 | 0,906 | 3 | 3 | 4 | 1 |
| 3 | AMG NV | | 76 | 33 | 59 | 1,236 | 0,832 | 1,127 | 3 | 3 | 3 | 0 |
| 4 | AKZO NOBEL NV | | 184 | 193 | 196 | 2,790 | 2,872 | 2,406 | 5 | 5 | 5 | 1 |
| 5 | ALTICE NV | | 0 | 0 | | 0,159 | 0,290 | 0,030 | 1 | 1 | 1 | 0 |
| 6 | AMSTERDAM COMM NV | | 55 | 33 | 78 | 0,847 | 0,776 | 0,700 | 3 | 2 | 2 | 0 |
| 7 | ARCADIS NV | | 111 | 131 | 83 | 1,737 | 1,428 | 2,310 | 5 | 5 | 4 | 1 |
| 8 | ASM INTERNATIONAL NV | | 126 | 37 | 58 | 0,525 | 0,588 | 0,466 | 3 | 2 | 2 | 1 |
| 9 | ASML HOLDING NV | | 161 | 153 | 147 | 0,373 | 0,500 | 0,474 | 2 | 3 | 3 | 1 |
| 10 | AVANTIUM NV | | | | | 0,488 | | | 1 | | | 0 |
| 11 | BE SEMICONDUCTOR IND NV | | 78 | 92 | 110 | 0,971 | 1,102 | 1,090 | 3 | 3 | 3 | 0 |
| 12 | BETER BED HOLDING NV | | 115 | 116 | 115 | 0,784 | 0,605 | 0,657 | 3 | 3 | 2 | 1 |
| 13 | BRUNEL INTERNATIONAL NV | | 43 | 54 | 104 | 0,625 | 0,389 | 0,529 | 2 | 2 | 3 | 0 |
| 14 | CORBION NV | | 146 | 119 | 110 | 1,399 | 1,549 | 1,912 | 4 | 4 | 4 | 1 |
| 15 | EUROCOMMERCIAL PROP NV | | 74 | 76 | 85 | 0,273 | 0,444 | 0,474 | 2 | 1 | 1 | 0 |
| 16 | FORFARMERS NV | | 58 | 80 | 95 | 0,986 | 0,816 | 0,726 | 3 | 2 | 3 | 0 |
| 17 | FUGRO NV | | 83 | 103 | 76 | 0,817 | 1,083 | 0,908 | 2 | 3 | 3 | 0 |
| 18 | GEMALTO NV | | 111 | 88 | 80 | 0,478 | 0,917 | 0,492 | 2 | 2 | 3 | 1 |
| 19 | GRANDVISION N.V | | 76 | | | 0,497 | 0,509 | 0,199 | 3 | 2 | 1 | 1 |
| 20 | HEIJMANS NV | | 156 | 173 | 185 | 1,611 | 1,351 | 0,939 | 4 | 4 | 3 | 0 |
| 21 | HEINEKEN NV | | 186 | 189 | 182 | 0,497 | 1,500 | 0,516 | 3 | 5 | 3 | 1 |
| 22 | ICT GROUP NV | | 59 | 50 | 24 | 0,441 | 1,233 | 0,636 | 1 | 3 | 2 | 0 |
| 23 | IMCD NV | | 0 | 0 | 0 | 0,551 | 0,481 | 0,521 | 1 | 1 | 2 | 0 |
| 24 | INTERTRUST NV | | | | | 0,395 | 0,318 | | 1 | 1 | | 0 |
| 25 | KENDRION NV | | 164 | 167 | 158 | 1,570 | 1,093 | 1,225 | 5 | 4 | 4 | 1 |
| 26 | KONINKLIJKE AHOLD DEL NV | | 182 | 168 | | 1,000 | 0,608 | 0,550 | 4 | 3 | 2 | 1 |
| 27 | KONINKLIJKE BAM GROEP NV | | 192 | 191 | 193 | 2,422 | 1,824 | 2,034 | 5 | 5 | 5 | 1 |
| 28 | KONINKLIJKE BOSKALIS NV | | 173 | 143 | 157 | 0,574 | 0,608 | 0,791 | 3 | 3 | 3 | 1 |
| 29 | KONINKLIJKE DSM NV | | 179 | 175 | 189 | 2,804 | 3,064 | 2,081 | 5 | 5 | 5 | 1 |
| 30 | KONINKLIJKE KPN NV | | 189 | 192 | 193 | 1,870 | 1,901 | 2,461 | 5 | 5 | 5 | 1 |
| 31 | KONINKLIJKE PHILIPS NV | | 195 | 186 | | 2,773 | 2,133 | | 5 | 5 | | 1 |
| 32 | KONINKLIJKE VOPAK NV | | 130 | 131 | 110 | 1,286 | 1,600 | 1,710 | 5 | 4 | 4 | 1 |
| 33 | LUCAS BOLS NV | | | 44 | | 0,269 | 0,277 | 0,321 | 1 | 1 | 1 | 0 |
| 34 | NEDAP NV | | 61 | 67 | 87 | 0,307 | 0,663 | 0,764 | 1 | 2 | 2 | 0 |
| 35 | NSI NV | | 51 | 51 | 29 | 0,327 | 0,307 | 0,385 | 1 | 1 | 1 | 0 |
| 36 | OCI NV | | 38 | 36 | 60 | 0,908 | 0,821 | 0,696 | 2 | 3 | 3 | 0 |
| 37 | ORDINA NV | | 147 | 150 | 152 | 1,142 | 1,057 | 1,006 | 4 | 4 | 4 | 1 |
| 38 | POSTNL NV | | 168 | 177 | 176 | 1,604 | 1,854 | 1,053 | 5 | 4 | 4 | 1 |
| 39 | RANDSTAD HOLDING NV | | 157 | 146 | 140 | 1,654 | 1,515 | 1,571 | 4 | 3 | 4 | 0 |
| 40 | REFRESCO GROUP NV | | 44 | 42 | 45 | 0,515 | 0,689 | 0,897 | 2 | 2 | 3 | 0 |
| 41 | RELX NV | | 145 | 140 | 139 | 1,030 | 0,805 | 1,233 | 4 | 3 | 4 | 1 |
| 42 | SBM OFFSHORE NV | | 97 | 171 | 167 | 1,308 | 1,282 | 1,706 | 3 | 4 | 4 | 0 |
| 43 | SIF HOLDING NV | | | | | 0,510 | | | 2 | | | 0 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 44 | SLIGRO FOOD GROUP NV | 120 | 112 | 131 | 1,500 | 1,292 | 0,884 | 4 | 4 | 3 | 1 |
| 45 | STERN GROEP NV | 81 | 112 | 70 | | 1,158 | 1,128 | | 3 | 3 | 1 |
| 46 | TAKEAWAY.COM NV | | | | 0,190 | | | 1 | | | 0 |
| 47 | TKH GROUP NV | 164 | 128 | 125 | 1,819 | 1,624 | 1,841 | 5 | 4 | 4 | 1 |
| 48 | TOMTOM NV | 67 | 26 | 53 | 0,326 | 0,459 | 0,295 | 1 | 1 | 1 | 1 |
| 49 | UNILEVER NV | 194 | 191 | 193 | 2,325 | 2,805 | 1,800 | 5 | 5 | 5 | 0 |
| 50 | VASTNED RETAIL NV | 55 | 85 | 73 | 0,429 | 0,708 | 0,416 | 1 | 2 | 1 | 1 |
| 51 | WERELDHAVE NV | 115 | 105 | 111 | 0,945 | 0,474 | 0,454 | 4 | 3 | 2 | 0 |
| 52 | WESSANEN NV | 161 | 161 | 180 | 2,111 | 2,313 | 1,744 | 4 | 4 | 5 | 1 |
| 53 | WOLTERS KLUWER NV | 117 | 121 | 134 | 0,673 | 0,394 | 0,539 | 3 | 2 | 3 | 1 |

# Appendix C: Logistic regression CSR determinants on sustainability report

| *Logistic* | *CSR_D4* | *CSR_D4* | *CSR_D4* | *CSR_D4* | *CSR_D4* | *CSR_D4* | *CSR_D4* | *CSR_D4* | *CSR_D4* |
|---|---|---|---|---|---|---|---|---|---|
| **Intercept** | -5.582** | -5.969** | -4.704** | -7.589*** | -3.767** | -6.198** | -5.534** | -5.889** | -4.523* |
| | (8.853) | (9.384) | (4.625) | (12.605) | (4.463) | (10.019) | (4.889) | (8.321) | (3.069) |
| **OwnCon** | -1.407 | | | | | -0.410 | | | -0.844 |
| | (1.035) | | | | | (0.127) | | | (0.385) |
| **FemBoard** | | 0.798 | | | | | 1.888 | | 1.749 |
| | | (0.270) | | | | | (0.963) | | (0.740) |
| **OutDir** | | | -3.382* | | | | -3.317 | | -4.781* |
| | | | (2.953) | | | | (2.315) | | (3.517) |
| **BoardSize** | | | | -0.206* | | | -0.196 | | -0.183 |
| | | | | (3.289) | | | (2.443) | | (2.012) |
| **Ln Tot_Comp** | | | | | 0.330 | | | -0.169 | 0.277 |
| | | | | | (2.435) | | | (0.325) | (0.577) |
| **Ln TA** | 0.394** | 0.373** | 0.404** | 0.554*** | | 0.368** | 0.562*** | 0.418** | 0.439** |
| | (9.666) | (8.842) | (9.793) | (10.840) | | (8.244) | (10.219) | (5.665) | (4.453) |
| **ROA** | 6.421** | 6.011** | 6.779** | 5.393* | 5.135* | 5.939** | 5.817* | 6.847** | 6.367* |
| | (4.521) | (4.129) | (5.144) | (3.204) | (2.993) | (3.836) | (3.585) | (4.769) | (3.625) |
| **Lev_TD** | -0.426 | -0.472 | -0.236 | -0.083 | 0.689 | -0.162 | -0.372 | -0.158 | -0.191 |
| | (0.212) | (0.264) | (0.063) | (0.008) | (0.603) | (0.029) | (0.144) | (0.027) | (0.035) |
| **Ln AGE** | | | 0.231 | 0.260* | 0.223 | 0.211 | 0.195 | 0.214 | 0.18 |
| | | | (2.329) | (2.795) | (2.284) | (1.588) | (1.309) | (2.101) | (0.962) |
| **YEAR** | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| **Nagelkerke R square** | 0.124 | 0.119 | 0.157 | 0.156 | 0.080 | 0.138 | 0.177 | 0.13 | 0.182 |
| **Chi-square** | 14.376** | 14.067** | 18.925** | 18.606** | 9.181 | 15.992* | 21.292** | 15.269* | 21.126 |
| **N** | 147 | 151 | 151 | 150 | 149 | 147 | 151 | 149 | 144 |

*Notes: This table provides results of the logistic regression analysis of the presence of a sustainability report and corporate governance determinants of CSR. The dependent variable is a dummy variable that is equal to 1 if there is a sustainability report and 0 otherwise. Unstandardized coefficients are reported. Figures in parentheses represent the Wald statistic. * Indicates significance at the 10% level; **Indicates significance at the 5% level; *** Indicates significance at the 1% level. Ln is log transformed variable. Variable definitions are described in Table 3.*

## Appendix D: Year analyses

| | 2016 | | 2015 | | 2014 | |
|---|---|---|---|---|---|---|
| *OLS regression* | *Ln CSR_D1* | *CSR_D2* | *Ln CSR_D1* | *CSR_D2* | *Ln CSR_D1* | *CSR_D2* |
| **Intercept** | 2.252** | -1.602* | 3.207*** | -0.098 | 2.686** | 0.287 |
| | (3.124) | (-1.811) | (5.140) | (-0.085) | (2.466) | (0.200) |
| **OwnCon** | 0.471 | 0.082 | -0.091 | -0.104 | 0.056 | -0.319 |
| | (1.255) | (0.174) | (-0.282) | (-0.172) | (0.104) | (-0.426) |
| **FemBoard** | 0.059 | -0.306 | 1.418** | 1.506 | 1.524* | 1.134 |
| | (0.100) | (-0.407) | (2.722) | (1.611) | (1.805) | (1.002) |
| **OutDir** | -0.649 | 1.481 | -0.857 | 0.138 | -0.657 | 0.029 |
| | (-0.675) | (1.479) | (-1.175) | (0.112) | (-0.627) | (0.024) |
| **BoardSize** | 0.012 | 0.053 | 0.038 | 0.071 | 0.010 | 0.121* |
| | (0.299) | (1.209) | (1.118) | (1.180) | (0.206) | (1.913) |
| **Ln TOT_COMP** | -0.160 | -0.346** | -0.057 | -0.173 | -0.027 | -0.432* |
| | (-1.068) | (-2.049) | (-0.481) | (-0.796) | (-0.159) | (-2.007) |
| **Ln TA** | 0.180** | 0.168** | 0.077 | 0.028 | 0.098 | 0.143 |
| | (2.786) | (2.240) | (1.411) | (0.264) | (1.140) | (1.256) |
| **ROA** | 2.285** | 1.302 | 1.303 | 2.127 | -0.070 | 1.518 |
| | (2.186) | (1.148) | (1.412) | (1.153) | (-0.056) | (0.881) |
| **Lev_TD** | 0.042 | 0.621 | 0.159 | 0.869* | 0.228 | 0.283 |
| | (0.133) | (1.599) | (0.679) | (1.910) | (0.576) | (0.534) |
| **Ln AGE** | 0.310*** | 0.259*** | 0.199*** | 0.169** | 0.209** | 0.165 |
| | (5.135) | (3.784) | (4.000) | (2.215) | (2.389) | (1.647) |
| **INDUSTRY** | YES | YES | YES | YES | YES | YES |
| **Adjusted $R^2$** | 0.524 | 0.532 | 0.676 | 0.334 | 0.391 | 0.287 |
| **N** | 45 | 49 | 44 | 49 | 42 | 45 |

*Notes: This table presents the OLS regression results of the year analyses of the corporate governance determinants on CSR disclosure. Unstandardized coefficients are reported. Figures in parentheses represent the t-statistics, * Indicates significance at the 10% level; **Indicates significance at the 5% level; *** indicates significance at the 1% level. Ln is log transformed variable. Variable definitions are described in Table 3.*

## Appendix E: Subsample analysis industry sensitivity

| | **Industry sensitive** | | **Industry insensitive** | |
|---|---|---|---|---|
| | *Ln CSR_D1* | *CSR_D2* | *Ln CSR_D1* | *CSR_D2* |
| **Intercept** | 2.778*** | -1.917** | -0.055 | 1.152 |
| | (5.191) | (-2.511) | (-0.059) | (1.371) |
| **OwnCon** | 0.073 | (-0.765)** | 1.316** | 0.736 |
| | (0.258) | (-1.807) | (2.247) | (1.297) |
| **FemBoard** | 0.960** | 0.832 | 0.370 | 0.629 |
| | (2.243) | (1.367) | (0.553) | (0.920) |
| **OutDir** | -0.825 | 1.798** | 2.032 | 0.056 |
| | (-1.297) | (2.240) | (1.598) | (0.048) |
| **BoardSize** | 0.008 | -0.011 | 0.053 | 0.194*** |
| | (0.273) | (-0.267) | (1.406) | (5.144) |
| **Ln TOT_COMP** | -0.055 | -0.356** | -0.210 | -0.341* |
| | (-0.550) | (-2.668) | (-1.188) | (-1.962) |
| **Ln TA** | 0.099** | 0.231*** | 0.203** | -0.081 |
| | (2.154) | (3.489) | (2.664) | (-1.038) |
| **ROA** | 1.282* | 1.229 | -0.515 | 1.713 |
| | (1.848) | (1.279) | (-0.404) | (1.332) |
| **Lev_TD** | 0.299 | 0.642** | -0.137 | 0.962** |
| | (1.501) | (2.233) | (-0.286) | (2.055) |
| **Ln AGE** | 0.273*** | 0.187*** | 0.278** | 0.179** |
| | (6.471) | (3.489) | (2.967) | (2.781) |
| **Year** | YES | YES | YES | YES |
| **Adjusted $R^2$** | 0.529 | 0.422 | 0.548 | 0.572 |
| **N** | 91 | 101 | 40 | 42 |

*Notes: This table presents results of the OLS regression of the subsample analysis for industry sensitivity of the corporate governance determinants on CSR disclosure. Unstandardized coefficients are reported. Figures in parentheses represent the t-statistics, * Indicates significance at the 10% level; **Indicates significance at the 5% level; *** indicates significance at the 1% level. Ln is log transformed variable. Variable definitions are described in Table 3.*

## Appendix F: OLS regression with lagged variables

| *t-1* | *Ln CSR_D1* | *CSR_D2* | *CSR_D3* |
|---|---|---|---|
| **Intercept** | 2.503*** | -0.027 | -0.848 |
| | (4.983) | (-0.037) | (-0.572) |
| **OwnCon** | 0.024 | -0.364 | -0.292 |
| | (0.113) | (-1.264) | (-0.483) |
| **FemBoard** | 1.152** | 1.302** | 1.414 |
| | (2.790) | (2.268) | (1.176) |
| **OutDir** | -0.513 | -0.185 | -0.320 |
| | (-0.939) | (-0.278) | (-0.228) |
| **BoardSize** | 0.014 | 0.065* | 0.128 |
| | (0.514) | (1.714) | (1.599) |
| **Ln TOT_COMP** | -0.099 | -0.251* | -0.228 |
| | (-1.028) | (-1.937) | (-0.840) |
| **Ln TA** | 0.157** | 0.127* | 0.208 |
| | (3.078) | (1.744) | (1.357) |
| **ROA** | 0.013 | 0.021* | 0.040 |
| | (1.601) | (1.731) | (1.605) |
| **Lev_LTD** | -0.389 | 0.320 | 0.375 |
| | (-1.185) | (0.677) | (0.376) |
| **Ln AGE** | 0.173*** | 0.118** | 0.386*** |
| | (3.957) | (2.187) | (3.398) |
| **YEAR** | YES | YES | YES |
| **INDUSTRY** | YES | YES | YES |
| **Adjusted $R^2$** | 0.496 | 0.326 | 0.309 |
| **N** | 91 | 97 | 98 |

*Notes: This table presents the results of the OLS regression with lagged variables of the corporate governance determinants on CSR disclosure. OwnCon, FemBoard, OutDir, BoardSize, TOT_COMP ln, TA ln, ROA, Lev_LTD are lagged variables (t-1). Unstandardized coefficients are reported. Figures in parentheses represent the t-statistics, * Indicates significance at the 10% level; **Indicates significance at the 5% level; *** indicates significance at the 1% level. Ln is log transformed variable. Variable definitions are described in Table 3.*

# Appendix G Alternative measure executive compensation

| *OLS regression* | **Model 1** | | **Model 2** | | **Model 3** | | **Model 4** | |
|---|---|---|---|---|---|---|---|---|
| | *Ln CSR_D1* | *CSR_D2* | *Ln CSR_D1* | *CSR_D2* | *Ln CSR_D1* | *CSR_D2* | *Ln CSR_D1* | *CSR_D2* |
| **Intercept** | 1.781*** | -2.301** | 1.756*** | -1.463** | 1.558*** | -1.422** | 2.781** | -2.723* |
| | (3.290) | (-2.999) | (4.886) | (-2.879) | (4.694) | (-2.219) | (2.707) | (-1.813) |
| **Salary%** | 0.080 | 0.753** | | | | | -0.712 | 1.794* |
| | (0.308) | (2.022) | | | | | -0.989) | (1.668) |
| **Bonus%** | -0.951*** | -1.056** | | | | | -1.296** | 0.324 |
| | (-3.272) | (-2.352) | | | | | (-2.011) | (0.360) |
| **StockOptions%** | | | -0.013 | 0.016 | | | -0.388 | 1.647* |
| | | | (-0.064) | (0.058) | | | (-0.597) | (1.733) |
| **Pension%** | | | | | 2.382*** | 1.237 | 1.714* | 2.022 |
| | | | | | (3.494) | (1.224) | (1.719) | (1.361) |
| **Ln TOT_COMP** | | | | | | | -0.068 | -0.209 |
| | | | | | | | (-0.656) | (-1.278) |
| **Ln TA** | 0.136*** | 0.127** | 0.124*** | 0.076** | 0.132*** | 0.079** | 0.139*** | 0.168** |
| | (4.666) | (2.961) | (4.912) | (2.045) | (6.207) | (2.483) | (3.897) | (3.021) |
| **ROA** | 1.376** | 1.246 | 1.148** | 0.924*** | 1.283** | 0.912 | 1.269** | 1.546* |
| | (2.177) | (1.380) | (4.912) | (1.137) | (2.388) | (1.138) | (2.025) | (1.679) |
| **Lev_TD** | 0.298* | 0.797** | 0.307* | 0.792** | 0.240 | 0.758** | 0.268 | 0.869** |
| | (1.680) | (2.912) | (1.731) | (3.009) | (1.469) | (2.956) | (1.450) | (3.001) |
| **Ln AGE** | 0.252*** | 0.297*** | 0.266*** | 0.263*** | 0.239*** | 0.247*** | 0.219*** | 0.283*** |
| | (7.847) | (7.299) | 8.418 | (6.675) | (6.207) | (5.967) | (6.548) | (6.498) |
| **YEAR** | YES | YES | YES | YES | YES | YES | YES | YES |
| **INDUSTRY** | YES | YES | YES | YES | YES | YES | YES | YES |
| **Adjusted $R^2$** | 0.572 | 0.378 | 0.533 | 0.329 | 0.569 | 0.331 | 0.601 | 0.379 |
| **N** | 126 | 139 | 134 | 147 | 132 | 145 | 123 | 136 |

*Notes: This table presents the OLS regression results of executive compensation components on CSR. The sample consists of 151 firm-year observations from 2014 through 2016. Unstandardized coefficients are reported. Figures in parentheses represent the t-statistics, * Indicates significance at the 10% level; **Indicates significance at the 5% level; *** indicates significance at the 1% level. Ln is log transformed variable. Variable definitions are described in Table 3.*

# Appendix H: Variation Inflation Factor

| Variables | VIF |
|---|---|
| *Original model* | |
| **OwnCon** | 1.630 |
| **BoardSize** | 2.351 |
| **OutDir** | 1.763 |
| **FemBoard** | 1.663 |
| **Ln Tot_Comp** | 3.404 |
| **Ln TA** | 3.777 |
| **ROA** | 1.234 |
| **Lev_TD** | 1.287 |
| **Ln AGE** | 1.440 |

*Notes: Ln is log transformed variable. Variable definitions are described in Table 3.*

| Variables | VIF |
|---|---|
| *OLS regression Executive compensation (table 10)* | |
| **Ln Salary** | 4.290 |
| **Ln Bonus** | 2.138 |
| **Ln StockOptions** | 2.042 |
| **Ln PensionCont** | 1.880 |
| **Ln TA** | 4.049 |
| **ROA** | 1.274 |
| **Lev_TD** | 1.493 |
| **Ln AGE** | 1.206 |

*Notes: Ln is log transformed variable. Variable definitions are described in Table 3.*