CSR disclosure quality, CSR performance, regulatory regimes and the cost of equity capital.

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Abstract

This thesis investigates whether regulatory regimes moderate the relationship between the quality of CSR disclosure and the cost of equity capital and whether they moderate the relationship between CSR performance and the cost of equity capital. Based on prior research, a distinction between four regulatory regimes is made, based on their legal tradition which lies in either the English common law or French, German or Nordic civil law. By performing a moderated multiple regression analysis, using a panel data set covering the period $2011 - 2016$, that covers data from firms who operate under four different regulatory regimes, this study finds evidence that the quality of CSR disclosure only has a negative effect on cost of equity capital for firms operating under the German civil law regime. Regulatory regimes do not moderate this relationship. The results also indicate that the relationship between CSR performance and the cost of equity capital is not the same for all firms, but rather depends on under which regulatory regime a firm operates. More interestingly, regulatory regimes appear to moderate the relationship between CSR performance and the cost of equity capital.

Keywords: CSR disclosure quality, CSR performance, cost of equity capital, regulatory regimes,

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1. Introduction

This thesis investigates whether regulatory regimes moderate the relationship between the quality of CSR disclosure and the cost of equity capital, and whether they moderate the relationship between CSR performance and the cost of equity capital. Financial and non-financial disclosure is the main source of public information regarding public companies who are characterized by dispersed ownership (Pingyang, 2008). This information is gathered in, for instance, annual reports, corporate social responsibility reports (CSR), or additional management discussion and analysis (MDA) reports. Information conveyed and published in annual reports serves as an account of the management towards the owners the firm (Fuchs, Hoepen, & Vlimmeren, 2011), and at the same time to be accountable for corporate actions regarding corporate social responsibility and sustainability performance (Braam & Peters, 2017). The international financial reporting standards (IFRS) state that the purpose of financial reporting is to provide financial information regarding the firm that is useful to existing and potential investors, and other creditors in making decisions regarding the provision of resources to the firm. The purpose and goal of CSR reporting do not differ much from the purpose of financial reporting. The Global Reporting Initiative (GRI) states that disclosure of CSR information enables external stakeholders to understand the organization's true value and tangible and intangible assets, while simultaneous the organization demonstrates how the firm influences, and is influenced by, expectations about sustainable development. The higher the quality of disclosed financial and non-financial reports, the more able the owners and external stakeholders of the firm are to assess the firm's true value and make better-informed decisions.

A practical rationale for firms to disclose complementing CSR reports is a potential benefit of a reduced cost of equity capital which is associated with the disclosure of CSR reports. Evidence that CSR disclosure reduces the cost of (equity) capital is found by Dhaliwal, Li, Tsang, & Yang, (2011), Lambert, Leuz, & Verecchia, (2007), and de Alencar & Lopes, (2008). These papers have examined the direct link between CSR disclosure and the cost of equity capital for American and Brazilian firms, and have found evidence that CSR disclosure is negatively related to the cost of equity capital for firms in the studied countries. Dhaliwal, Li, Tsang, & Yang, (2011) suggest that a good avenue for future research would be to investigate whether this relation also holds for firms in other countries. It could be that this relationship differs across countries, and is dependent not only on disclosure itself but also on the quality of disclosure and is moderated by the prevailing regulatory regime in a country. Research has identified large differences between countries in ownership concentration and the efficient functioning of capital markets, differences which, according to La Porta, Lopez-de-Silanes, Schleifer, & Vishny, (2002), can be attributed to a country's prevailing regulatory regime.

Related to the line of research mentioned above, El Ghoul, Guedhami, Kwok, & Mishra, (2011) have investigated the relationship between CSR performance and the cost of equity capital, and found that the two are significantly negatively related. Based on the documented differences between countries in ownership concentration and the efficient working of capital markets, it may well be that the found negative relationship between CSR performance and the cost of equity capital does not hold for firms operating under different regulatory regimes.

This paper investigates whether a negative relationship between the quality of CSR disclosure and the cost of equity capital differs for firms operating under different regulatory regimes, and whether they moderate the relationship between CSR performance and the cost of equity capital. Studies that have examined the relationship between CSR disclosure, CSR performance and the cost of equity capital explain that CSR disclosure reduces the cost of equity capital, because it reduces information asymmetry between the firm's owners and its management, attract additional analyst coverage and expand the firm's investor base to further decrease the cost of equity capital (Dhaliwal, Li, Tsang, & Yang, 2011; El Ghoul, Guedhami, Kwok, & Mishra, 2011; Reverte, 2012).

However, research also suggests that when a firm's shares are primarily owned by a few large investors, i.e. characterized by a concentrated ownership structure, information asymmetry may be less severe than when the firm's shares are owned by many smaller investors, i.e. characterized by a dispersed ownership structure. It is argued that larger shareholders typically have more resources at their disposal to gather information, as well as more easy access to engage with the firm's management to obtain superior information, as opposed to smaller investors. Concentrated, and dispersed ownership structures are the direct result of a country's prevailing regulatory regime. Under regulatory regimes offering investors with a low degree of protection, firms are often characterized by concentrated ownership structures, whereas under regulatory regimes offering investors with a high degree of protection, firms are often characterized by dispersed ownership structures (Hail & Leuz, 2006; La Porta, Lopez-de-Silanes, Schleifer, & Vishny, 2002; Schnatterly, Shaw, & Jennings, 2008). The advantages that larger investors have over smaller investors in terms of acquiring information may lead to information differences amongst large and small investors. More easy access to a firm's management and more resources at their disposal, may enable larger investors to acquire information directly from the firm's management, making them less dependent on the disclosure of CSR information, and on the quality of disclosed information. The information investors obtain to evaluate past and forecast future sustainable performance is a key determinant of investor's expected return on a firm's stock price, and therefore on its cost of capital (Lambert, Leuz, & Verrecchia, 2011).

By analyzing whether and how the relationship between CSR disclosure quality and the cost of equity capital, and CSR performance and the cost of equity capital is influenced by a country's prevailing regulatory regime, and how this relationship may differ for firms operating under different regimes, this paper extends our understanding of the effects of CSR disclosure and CSR performance on the cost of equity capital and mechanisms through which capital markets function. The insights that this paper produces may also offer firms a deeper understanding of how corporate social responsibility may affect their business.

A panel data set covering the period 2011 – 2016, that covers data from firms who operate under four different regulatory regimes, will be used to find answers to these questions. A distinction between regulatory regimes is made, based on their legal origins and traditions who either come from the English common law system or the German, Nordic or French civil law system.

The results obtained are inconclusive. Evidence is found for a significant negative relationship between the quality of CSR disclosure and the cost of equity capital, but only for firms operating under the German civil law regime. No significant relationships were found for firms operating under the French civil law, English common law, or Nordic civil law regimes. In the main analysis, no evidence was found that regulatory regimes moderate the relationship between CSR disclosure quality and the cost of equity capital. Additionally, the relationship between CSR performance and the cost of equity capital is not the same for all firms, but rather depends on under which regulatory regime a firm operates. More interestingly, regulatory regimes appear to moderate the relationship between CSR performance and the cost of equity capital. More research is needed to derive a definitive conclusion regarding whether CSR disclosure quality is negatively related to the cost of equity capital, and whether this relationship is being moderated by a country's prevailing regulatory regime.

The remainder of this paper is structured as follows. In the second section the relevant literature is reviewed and the main hypotheses of this paper are developed. The third section describes the sample and methodology. The fourth section presents the main results derived from the analyses. Lastly, section five and six contain a discussion and conclusion.

2. Literature review and hypotheses development

The notion of corporate social responsibility (CSR) dates back before World War II, and has been a widely discussed topic for decades (Carroll & Shabana, 2010). Our notion of CSR and what we mean by that has evolved throughout the years. In the 1970's Milton Friedman wrote:

"There is one and only one social responsibility of business – to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud."
(Friedman, 2007, p. 178)

More recently it has been argued that activities surrounding CSR are the nature and extent of corporate obligations that extend beyond the economic and legal responsibilities of firms, and in essence refers to ethical and philanthropic obligations and responsibilities of firms towards society at large (Carroll & Shabana, 2010). CSR activities and disclosure extend beyond legal responsibilities, simply because there are no laws or rules regarding the disclosure of CSR, which means that disclosing CSR information mostly remains a voluntary activity. Despite its voluntary nature, firms over the past two decades increasingly disclose and publish CSR reports to hold themselves accountable to various stakeholders and society (Garcia-Sanchez, Cuadrado-Ballesteros, & Frias-Aceituno, 2016). It thus appears that firms have moved past Friedman's notion of corporate social responsibility and have adopted the notion that their responsibilities reach beyond profit making.

2.1 Theoretical background
Voluntary disclosure theory

Despite the voluntary nature of pursuing CSR activities and disclosure, firms appear to increasingly engage with these activities. CSR disclosure refers to the disclosure of information that includes social and environmental concerns in business operations and interactions with the firm's stakeholders. It is argued that CSR information is part of a dialogue between a firm and its stakeholders, and helps firms in legitimizing corporate conduct and establishing and maintaining a good corporate reputation (Perez, 2015). The rationale for the additional voluntary disclosure of CSR reports can be theoretically explained via voluntary disclosure (signaling) theory and the legitimacy theory. Voluntary disclosure (signaling) theory assumes that there is a positive relationship between CSR performance and the extent to which firms disclose information regarding their relative superior CSR performance to increase their market value.

Firms with superior CSR performance are likely to disclose this information, thereby signaling their superior performance to inform shareholders, and reduce information asymmetry by demonstrating their commitment to improve transparency regarding their long-term performance and risk management (Connelly, Certo, Ireland, & Reutzel, 2011; Dhaliwal, Li, Tsang, & Yang, 2011). This should improve the firm's reputation and brand loyalty, and enable external stakeholders to understand the organization's true value (GRI, 2018; Clarkson, Li, Richardson, & Vasvari, 2008). To signal the firm's superior performance, boost its reputation, brand loyalty and to provide external stakeholders with information that enables them to understand the true organization's value, the firm must provide stakeholders with high-quality information. According to van Bommel, (2014) high-quality information is "hard" information which is objective, reliable, fairly represents reality and is often assured by a third party or auditor.

Legitimacy theory

On the other hand legitimacy theory assumes that there is a negative relationship between CSR performance and disclosure, and argues that firms with relative poorer CSR performance mitigate their negative exposure, and are thereby incentivized to disclose offsetting CSR information to reduce threats to their legitimacy (Hummel & Schlick, 2016; Cho & Patten, 2007). Seen from this perspective, firms who perform worse relative to other firms, have an incentive to disclose CSR information in reports in which they try to distract investors from their bad performance and try to increase their reputation. Disclosure of CSR reports than becomes a mean from firms to make society at large, including investors, believe that they are functioning well and adhere to their responsibilities, effectively legitimizing their business conduct (Lanis & Richardson, 2012; Fernando & Lawrence, 2014). To distract investors and legitimize the firm's corporate conduct, firm's often disclose a greater amount of lower quality information in their reports, designed to overflow the reader, thus distracting them from their relatively poor performance, and via this way legitimizing corporate conduct. Lower quality information is "soft" information, which is subjective and easier to acquire than high-quality information and its objectiveness, reliability and faithful representation of reality is seldom assured by third parties or auditors (van Bommel, 2014).

Implication of CSR disclosure: A lower cost of equity capital

The two theories above provide explanations on why firms voluntarily disclose CSR information, but do not offer any insight into the consequences of CSR disclosure. Recent research of Dhaliwal, Li, Tsang, & Yang, (2011), El Ghoul, Guedhami, Kwok, & Mishra, (2011) and Reverte, (2012) suggests that relative higher CSR performance and quality of disclosure of firms significantly lowers the cost of

equity capital. These studies explain their obtained results by stating that CSR disclosure provides investors with more and better information that they can use to determine the true value of the firm and based on this information more accurately forecast future sustainable profitability. The authors argue that CSR reporting is a communication tool in order to decrease information asymmetries between managers and investors, attract additional analyst coverage and expand the firm's investor base to further reduce the cost of equity capital.

This paper adds to this strand of literature by examining whether this relationship holds, or differs for firms operating under different regulatory regimes who offer investors with different degrees of protection, leading to different ownership structures of firms. A primary argument used to explain the empirically found negative relationship between CSR disclosure and the cost of equity capital in existing literature is that CSR disclosure reduces information asymmetry between the firm's management and its investors. However, it is possible that the prevailing regulatory regime in a country and the ownership structures of firm's that result from it reduce or increase the information asymmetry between the firm's management and the firm's shareholders.

2.2 Hypotheses development

The research findings of Dhaliwal, Li, Tsang, & Yang, (2011), El Ghoul, Guedhami, Kwok, & Mishra, (2011), and Reverte, (2012) who found a negative relationship between the quality of CSR disclosure and a firm's cost of equity capital lead to the first hypothesis of this paper.

H1a: The relationship between the quality of CSR disclosure and a firm's cost of equity capital is significantly negative.

Studies who found this negative relationship in an empirical setting argue that a higher quality of CSR disclosure reduces information asymmetry between the firm and its (potential) investors. The disclosure of high-quality CSR information will provide investors with more and better information to forecast their expected returns and base their investment decisions on, reducing the firm's overall cost of equity capital.

Information asymmetry is an important assumption within agency theory. Information asymmetry is present in the corporate environment due to the separation of ownership and control. In a general sense, agency theory is directed at the relationship between a principal and an agent. The principal delegates work to the agent, who performs that work (Eisenhardt, 1989). An example of information

asymmetry that exists between principals and agents can be found in today's corporate environment, where the firm's owners can be regarded as principals and the firm's senior managers can be regarded as the agents. Information asymmetry exists between the firm's owners and it's management, since managers, tasked with running the business and managing day-to-day operations, have more and better information regarding the firm and its performance than the owners have. The principals have several options which they can utilize to reduce this information asymmetry, but these are beyond the scope of this paper. Instead of focusing on the options that principals have to reduce information asymmetry, this paper focuses on one action that agents can take to reduce the information asymmetry from their part, namely voluntarily disclosing complementing CSR information to shareholders. Evidence, based on a quasi-natural experiment performed by Hung, Shi, & Wang, (2013) indicates that CSR disclosure decreases information asymmetry in firms and that information disadvantages, of investors who possess less information regarding the firm's true value and performance, are reduced. Similarly, Clarkson, Fang, Li, & Richardson, (2010) conclude that voluntary environmental disclosure provides investors with additional useful information which they can use to better assess the future performance of a firm, and therefore information disclosure, according to Healy & Palepu, (2001), is critical for the functioning of an efficient capital market.

Research documented large differences between countries in the efficient working of capital markets, dividend policies, firm's access to external finance and in the ownership concentration of listed firms. These differences can be explained by the degree of protection a country's legal system, i.e. regulatory regime offers investors. The effectiveness of shareholder protection that a regulatory regime offers investors, depends on the nature of rules governing investor protection in areas such as company law and bankruptcy law, as well as on the quality of enforcement of those rules. It is argued that the quality of laws governing investor protection differs across countries, and is partly explained by whether a country's regulatory regime has inherited its basics forms and processes from the English common law or from the French, German or Nordic civil law (Armour, Deakin, Sarkar, Siems, & Singh, 2009).

Regulatory regimes, their laws, rules, processes, and quality of enforcement have direct consequences for the ownership structures of firms. The ownership structure of firms operating under a regulatory regime who offers investors with a low degree of protection is often more concentrated in fewer larger shareholders, where the ownership structures of firms operating under a regulatory regime who offer investors with a high degree of protection is often dispersed among

many smaller investors (La Porta, Lopez-de-Silanes, Schelifer, & Vishny, 2000; La Porta, Lopez-de-Silanes, Schleifer, & Vishny, 2002).

If a country's legal system is weak and offers shareholders with a minimal degree of legal protection, the threat of appropriation by management is severe, more monitoring is required and monitoring becomes less effective. A more concentrated ownership of shares is therefore needed to implement the higher level of monitoring to overcome some of the agency problems inherent in the separation of ownership and control. If on the other hand investors enjoy a higher degree of legal protection, the threat of appropriation by management is low, and less monitoring by investors themselves is needed, since the laws and regulations act as a monitoring and protection mechanism, enabling investors to diversify their holdings over more firms, spreading and reducing the risk of appropriation even further leading to a higher market liquidity, and resulting in more dispersed ownership (Burkart & Panunzi, 2006; Ahlering & Deakin, 2007).

Schnatterly, Shaw, & Jennings, (2008) argue that large shareholders have both a greater incentive as well as ability to monitor the firm. Larger shareholders typically have more resources at their disposal to gather information as opposed to smaller investors. Furthermore, larger investors may also receive special attention from management, often in the form of value-relevant information, due to their large financial commitment. Besides their access to value-relevant information, large shareholders also engage with management more easily than smaller investors can, giving them access to even more superior information. Information which is much harder for smaller investors to obtain, since they have fewer resources at their disposal and no direct access to the firm's management. Information differences amongst large and small investors have long been the topic of many debates in both research and regulators. The information investors obtain to evaluate past and forecast future sustainable performance is a key determinant of investor's expected return on a firm's stock price, and therefore on its cost of capital (Lambert, Leuz, & Verrecchia, 2011).

The regulatory regime a country has and its effect on ownership structures of firms may influence the extent to which voluntary CSR disclosure reduces information asymmetry and reduces a firm's cost of equity capital. If larger investors are, on average, better informed and have access to superior information, one can question whether the additional voluntarily disclosed CSR information contains any relevant information that these investors could use to revise and improve the accuracy of their forecasts regarding future sustainable performance. If this information is not new, investors would not revise their expectations regarding the expected future return on a firm's stock price, and therefore the cost of capital of the firm would remain the same if the firm is owned by a few large

shareholders, as opposed to many smaller ones. This notion is supported by Hahn & Kühnen, (2013) who state that CSR reporting may not offer a few large shareholders, typically found in a firm with a concentrated ownership, any benefits, since these large shareholders are supposed to already have access to relevant information. In contrast when a firm is characterized by a dispersed ownership structure, i.e. owned by many smaller investors, the need to reduce information asymmetry increases, which can be achieved by disclosing CSR reports. Thus, voluntary disclosure of complementing CSR information may not necessarily reduce, or eliminate, information asymmetry if the company has a few large shareholders, as opposed to many smaller ones.

Differences in ownership structures have been identified and attributed to the degree of legal protection that shareholders receive via law and regulations. According to La Porta, Lopez-de-Silanes, Schleifer, & Vishny, (2000) the extent to which laws and regulations protect investors varies systematically across legal origins. Common law countries offer investors with the highest degree of protection, French civil law countries offer investors with the lowest degree of protection, and German and Scandinavian civil law lies in between the common law and French civil law countries in terms of the degree of protection they offer investors. Laws and regulations and the regulatory regime within which these fall, as stated, co-determine the ownership structures of firms, but also have large economic consequences (Mahoney, 2009). One of these consequences has been documented by Hail & Leuz, (2006), who found evidence that firms operating in countries with more sophisticated, better and stricter enforcement of laws and regulations enjoy a reduction in their cost of capital, indicating that regulatory regimes may moderate the relationship between the quality of CSR disclosure and the cost of equity capital. It is therefore expected that the relationship between the quality of CSR disclosure and the cost of equity capital is less negative for firms operating under a French regulatory regime than it is for firms operating under a English common law, or German or Nordic regulatory regime.

Voluntary CSR disclosure reduces information asymmetry and provides investors with better, more accurate information that they use to evaluate past and forecast future sustainable performance, which reduces a firm's cost of equity capital. However as has become apparent, regulatory regimes, their laws, rules, processes, and quality of enforcement affects ownership structures of firms, thereby moderating the extent to which CSR disclosure reduces information asymmetry. This leads to the second hypothesis of this paper.

H1b: The negative relationship between the quality of CSR disclosure and the cost of equity capital is moderated by a country's prevailing regulatory regime.

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Additionally, as an extension of research conducted by El Ghoul, Guedhami, Kwok, & Mishra, (2011) the relationship between CSR performance and the cost of equity capital is investigated. As stated, the authors argue that CSR performance and disclosure of CSR information may be used as a communication tool, which decreases information asymmetry between managers and investors, attracts additional analyst coverage and expand the firm's investor base to further reduce the cost of equity capital. Evidence that CSR performance reduces information asymmetry between a firm and its owners, and has a positive effect on a firm's accessibility to capital is found by Cho, Lee, & Pfeiffer Jr., (2013) who argue that actual CSR performance as indicated by, for instance, KLD or ESG scores drives transparency because it stimulates firms to voluntary disclose CSR information through which they explain their CSR performance to stakeholders. Additionally, Ng & Rezaee, (2015) explain that a focus on ESG performance could create opportunities for firms to identify risks that could affect future firm performance and value, and that financial and non-financial sustainability performance is associated with better communication and interaction with all stakeholders. The authors further argue that CSR performance is relevant for equity valuation, and thus the cost of equity capital, since transparency with regards to CSR performance are as important as financial performance, in the sense that they provide investors with useful information about new risks and opportunities in assessing portfolio investment valuation. For instance, Dhaliwal, Li, Tsang, & Yang, (2011) explain that information about CSR performance related to protecting the environment or improving employee welfare can reduce possible litigation charges or pollution costs. Information associated with CSR performance thus provides investors with valuable information that they can use to forecast their expected returns and base their investment decisions on, reducing the firm's overall cost of equity capital. This leads to the third hypothesis of this paper.

H2a: The relationship between CSR performance and a firm's cost of equity capital is significantly negative.

However, as was argued above, if the regulatory regime under which the firm operates offers investors with a low degree of protection, the shares are likely to be concentrated into a few large shareholders. These large shareholders are assumed to have more easy and direct access to the firm's management, enabling them to obtain relevant information. Based on the same line of argumentation as was presented above, the relationship between CSR performance and a firm's cost of equity capital may differ for firms operating under different regulatory regimes. This leads to the last hypothesis of this paper:

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H2b: The negative relationship between CSR performance and the cost of equity capital is moderated by a country's prevailing regulatory regime.

3. Sample and methodology

3.1 Sample description

To answer the research questions, whether regulatory regimes moderate the negative relationship between the quality of CSR disclosure and the cost of equity capital, and the relationship between CSR performance and the cost of equity capital, a panel dataset containing 308 firms issuing CSR reports in the period 2011 – 2016 were selected. Descriptive statistics for all variables are reported in table L in the appendices. The selected firms operate in countries who have the broad prevailing regulatory regimes identified by La Porta, Lopez-de-Silanes, Schelifer, & Vishny, (2000). The regulatory regimes and countries in which the firms operate are Common law regime in the United States, French civil law regime in France, Germanic civil law regime in Germany, and the Scandinavian civil law regime in Norway and Sweden. Firms from both Norway and Sweden operating under the Scandinavian civil law were included since including firms from only one Scandinavian country resulted in few firms operating under the Scandinavian civil law regime. The number of firms operating under the different regulatory regimes are presented in figure 1 below. The industry in which the firms operate are presented in figure 2. Firms are categorized into primary industries based on the standard industrial classification (SIC) codes that identify the firm's primary business (siccode.com).
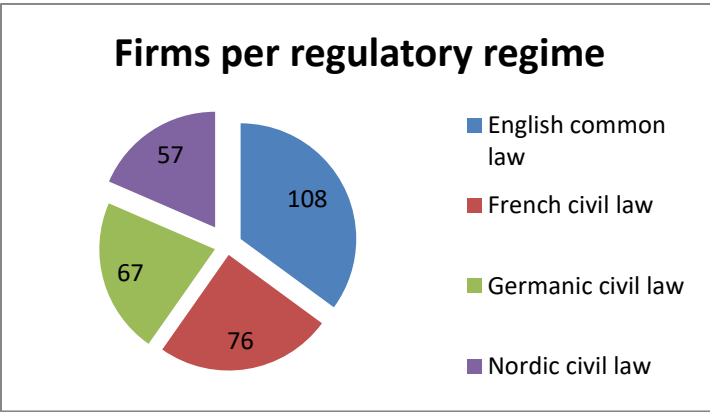

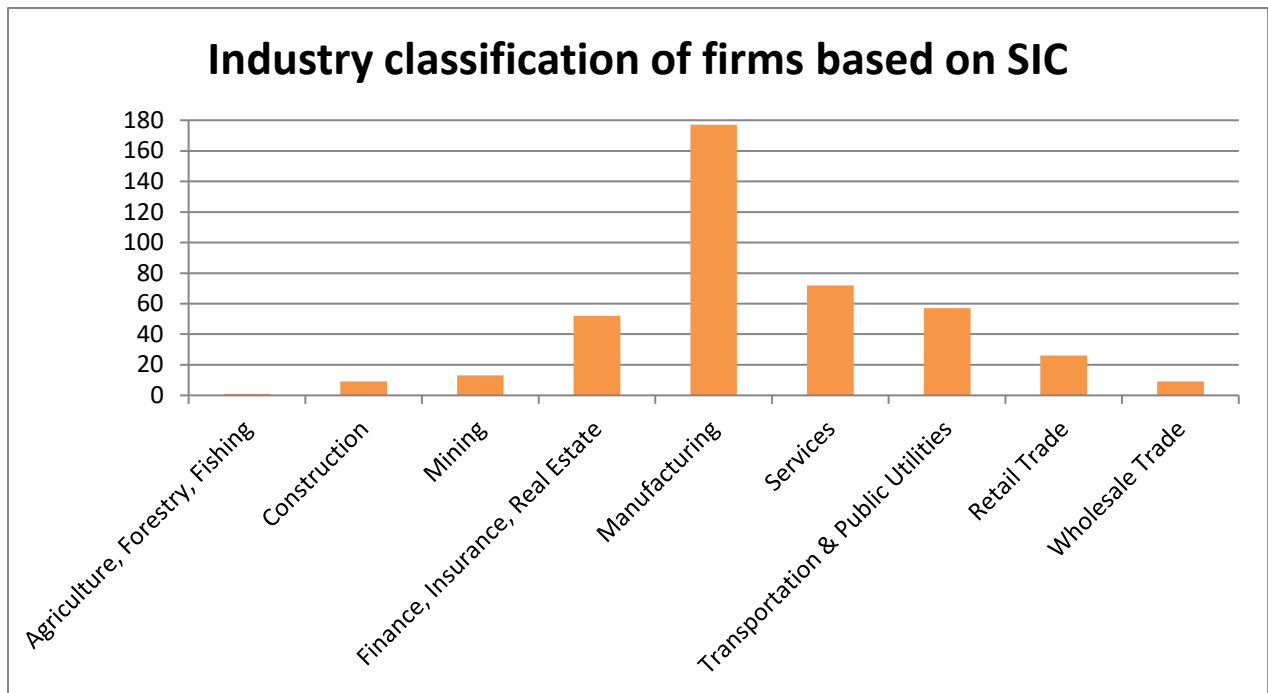Figure 1. Firms per regulatory regime.

Industry classification of firms based on SIC

Figure 2. Industry classification based on primary SIC codes.

3.2 Variable definitions

The cost of equity capital

Scholars have used several approaches to estimate a firm's cost of equity capital, which relies on the stock price and analysts forecasts of earnings to derive an estimate of the cost of equity capital (Clarkson, Fang, Li, & Richardson, 2010). Clarkson et al. conclude that the PEG estimate outperforms other estimates to derive a firm's cost of equity capital. Based on their conclusions, and in line with prior research of Dhaliwal, Li, Tsang, & Yang, (2011), this study will use the PEG model, developed by Easton, (2004) to calculate the cost of equity capital of the firms included in the final sample, which is illustrated in figure 3 below.

$$Cost\ of\ equity\ capital = \sqrt{\frac{(eps_2 - eps_1)}{P_0}}$$

Equation 1. PEG model taken from (Easton, 2004).

CSR disclosure quality score

Measuring the quality of CSR disclosure is not an easy straightforward task. CSR disclosure focuses on reporting goals, processes, and outputs in relation with their effects on environmental and social welfare. What topics or line items firms include, and how these are defined and measured in CSR reports varies widely across firms (Zahller, Arnold, & Roberts, 2015), arguably due to a lack of (mandatory) regulations and laws. To assess and assign quality scores to CSR reports, researchers often construct a sample specific score index based on a conceptual content analysis of disclosed information (Chiu & Wang, 2015). For instance researchers studying the quality of voluntary

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environmental disclosure quality, usually, an element of CSR reports, construct quality score indexes based on content analysis of issued reports and a set of checks to which the content should adhere to. Plumlee, Brown, Hayes, & Marshall, (2015) constructed such an index based on a line-by-line analysis of disclosures using hand-collected data, similar to Clarkson, Li, Richardson, & Vasvari, (2008). With regards to assessing the overall quality of disclosed CSR reports, researchers have utilized similar methods. For instance, Zahller, Arnold, & Roberts, (2015) construct a quality score index based a content analysis of disclosed CSR reports based on two components of quality of CSR information identified by the literature, namely accuracy, and completeness.

Arguably a content analysis is a suitable and a good way to assess and determine the quality of CSR reports disclosed, but due to strict time restrictions, such an analysis is not feasible in this study. Additionally, a matter of subjectivity is involved in performing a content analysis since researchers have to interpret the evidence that they collect, and as Chua, (1996) argues, in practice accounting information may be attributed diverse meanings, based on the social, political, and historical contexts of the researcher performing these analyses. To overcome the time restriction, and to remain as objective as possible with regards to assessing and assigning quality scores to CSR disclosures, a simplified average score methodology was used.

All disclosed CSR information, whether as a section in annual reports or as a standalone CSR report of firms were assigned an average quality score based on single quality scores that database Eikon has collected on several aspects of disclosed CSR information. Eikon provides scores, ranging from 0 to 100 points on the following aspects of disclosed CSR information presented in table A.

Quality aspects of disclosed CSR information	Minimum and maximum score to be assigned
Does the company publish a separate CSR report or publish a section in its annual report?	0 – 100 points
Is the company's CSR information published in accordance with GRI guidelines?	0 – 100 points
Does the company have an external auditor of its CSR report?	0 – 100 points
Does the company describe the implementation of its integrated strategy through a public commitment from a senior management or board member? AND Does the company describe the implementation of its integrated strategy through the establishment of a CSR committee or team?	0 – 100 points

Table A. Scoring of individual aspects of a firm's disclosed CSR information.

Based on scores of these different aspects of a firm's disclosed CSR information, provided by database Eikon, all disclosed CSR information of the firms included in the data sample over the years 2011 – 2016 were assigned an average CSR disclosure score. For example, German steel manufacturer Thyssenkrupp was assigned a average CSR disclosure quality score of 82.94 in the year 2016, based on a indicator score of 86.31 on the disclosed CSR report, a indicator score of 93.86 for adhering to GRI guidelines, a indicator score of 69.57 for having an external auditor of its CSR report and a indicator score of 82.02 for describing the implementation of its strategy through public commitment and through the establishment of a CSR committee or team.

Adhering to GRI guidelines should produce a higher quality report. According to the GRI, (2018) their standards represent a global best practice in sustainability reporting, and are designed to be applied by, and encourage and enable, firms to credible report sustainability information. Secondly, the existence of a CSR committee, or a closely related committee such as a social, or ethics committee, should focus on establishing policies and standards based on recognized and accepted instruments addressing corporate social responsibility practices, such as monitoring, reporting and, compliance with established policies and standards (Kloppers, 2013). On a related note, Kent & Monem, (2008) argue that the presence of an environmental or sustainable development committee reflects a company's commitment to sustainable development, and is likely to exist when a company is committed to social accountability and transparency. Lastly, assurance from an external auditor for a CSR report is a valuable tool to provide CSR reports with a higher credibility, and investors will look for assurance as a disclosure credibility signal (Zorio, Garcia-Benau, & Sierra, 2013; Brown-Liburd & Zamora, 2014; Michelon, Pilonato, & Ricceri, 2015).

This method of assigning scores to the quality of disclosed CSR information provides an objective basis for assessing the quality of CSR information disclosed but is not without limitations. By using the scores of individual aspects of disclosed CSR information provided by database Eikon, future researchers are enabled to replicate and verify the findings of this research by applying and using the same score methodology as was used in this paper. As stated, in previous research, the quality scores of disclosed CSR reports are calculated via a quality index based on an extensive content analysis. Applying this methodology in this research is, regrettably, not possible. Therefore as an alternative measure for CSR disclosure quality, the average quality score will be calculated as an average of the last three indicator scores, since these more precisely state to what aspect of quality they are related.

CSR performance

Studies investigating the effect of CSR performance and the cost of equity capital, primarily rely on KLD stats as a proxy for CSR performance. KLD evaluates CSR on several different dimensions and contains ratings on a wide range of CSR related items extracted from different sources (Kim, Park, & Wier, 2012; El Ghoul, Guedhami, Kwok, & Mishra, 2011). As a complementing analysis, besides the quality of CSR disclosure and its relation to the cost of equity capital, CSR performance, measured as a firm's ESG score taken from the asset 4 module of database Eikon, and its relation to the cost of equity capital will also be investigated. The ESG scores of firms will be used as a proxy for CSR performance, rather than KLD stats, since these are only available for US firms. ESG is similar to KLD and represents a firm's environmental, social, and governance (ESG) score. ESG scores are available for all firms, including US and European firms included in the final data sample. Complementing the main analysis, which is focused on the quality of CSR disclosure, with a CSR performance measure, poses an opportunity to verify the results obtained by El Ghoul, Guedhami, Kwok, & Mishra, (2011), who found an overall significant negative relationship between CSR performance and the cost of equity capital.

Moderating variable: Regulatory regimes

As was discussed in the literature section, it is expected that the relationship between the quality of CSR disclosure and the cost of equity capital depends on the prevailing regulatory regime under which a firm operates. In other words, the relationship is expected to be moderated by the prevailing regulatory regimes. Baron & Kenny, (1986) explain that a moderator may be a qualitative variable that affects the direction and/or strength of the relationship between a dependent and independent variable, and is often represented in statistical tests as an interaction effect. The four distinguished regulatory regimes, based on La Porta, Lopez-de-Silanes, Schelifer, & Vishny, (2000), are qualitative variables that will be included as dummy variables into the model. The variables will be coded as can be seen in table B below.

Regulatory regimes coding schematic	
RR = 0	French civil law regime – France
RR = 1	English common law regime – United states
RR = 2	Germanic civil law regime – Germany
RR = 3	Scandinavian civil law regime – Norway and Sweden

Table B. Coding scheme of regulatory regime dummy variables.

These dummy variables will be included in the model to test for a possible moderating effect that they have on the relationship between the quality of CSR disclosure and the cost of equity capital of

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firms by creating an interaction effect between the quality of CSR disclosure and the regulatory regime dummy variables. When working with dummy variables, it is important to leave one dummy out of the model which will serve as a reference group. Researchers often choose as a reference group a category at the lower boundary (Hardy, 1993).

Based on the literature review, the reference group for the model will be the French civil law regime. Under this regime investors enjoy the lowest degree of protection, resulting in highly concentrated ownership structures of firms. As argued, large, dominant, shareholders are assumed to have access to superior information, meaning that high-quality information disclosed in CSR reports may not contain new information to investors which would otherwise alter their expectations regarding returns on a firm's stock. It is thus expected that the relationship between the quality of CSR disclosure and the cost of equity capital is less negative for firms operating under the French civil law regime than it is for firms operating under the other regimes. Based on the literature it is also expected that the relationship between the quality of CSR disclosure and the cost of equity capital for firms operating under the Nordic and German civil law regimes is less negative than it is for firms operating under the US common law regime.

To test whether regulatory regimes moderate the relationship between the quality of CSR disclosure and the cost of equity capital, the approach of Baron & Kenny, (1986), Jaccard & Turrisi, (2003), and Aguinis, (2004) will be used where the moderation effect of regulatory regimes is captured by creating a product term, also known as an interaction effect, between the quality of CSR disclosure and regulatory regimes.

Control variables
Consistent with prior research several controls will be included in the model who affects the cost of equity capital. The firm-specific controls that will be included in the model are BETA, size, book-to-market ratio, leverage, and return on equity. Size is measured as the natural logarithm of total assets. A firm's book-to-market ratio is the ratio of a firm's book value of equity to the market value of equity. Leverage is measured as the ratio of a firm's total debt to total capital, and return on equity is included as a profitability measure. According to Reverte, (2012) who draws upon the work of Botosan & Plumlee, (2005) beta should be positively related to the cost of capital, while size and the market-to-book ratio should be negatively related to the cost of equity capital. According to El Ghoul, Guedhami, Kwok, & Mishra, (2011) and Dhaliwal, Li, Tsang, & Yang, (2014) leverage should be positively related to the cost of equity capital. In addition a return on equity is also included as a profitability control variable into the model.

3.3 Empirical model

A moderated multiple regression (MMR) model will be used to test whether regulatory regimes moderate the relationship between the quality of CSR disclosure and the cost of equity capital. According to Aguinis, (2004) MMR has been recognized as an appropriate technique to determine whether a relationship between two variables is being moderated by a third one. To apply this technique, two models will be constructed, one without, and the other with the product term. If a moderation effect is found, the model with the product term should explain a significantly higher proportion of the variance of the cost of equity capital than the model without the product term does. Additionally the coefficient of the product term will indicate in which direction the relationship between CSR disclosure quality and the cost of equity capital differs. The models that will be used to test the hypotheses are as follows:

$$CoC = \alpha + \beta_1 CDQS_{i,t} + \beta_2 Regime_{i,t} + \beta_3 \sum Controls_{i,t} + u_{i,t} + \varepsilon_{i,t}$$
Model 1 without product term.

Where:

CoC	=	Cost of equity capital
α	=	Constant term
CDQS	=	CSR disclosure quality-score,
Regime	=	Joint significance test of regulatory regimes in general
∑Controls	=	BETA, Size, Book-to-market ratio, and Leverage
u and ε	=	Error terms

And:

$$CoC = \alpha + \beta_1 CDQS_{i,t} + \beta_2 XRR_{i,t} + \beta_3 CDQS * XRR \quad \sum Controls_{i,t} + u_{i,t} + \varepsilon_{i,t}$$
Model 2. The moderated multiple regression model for CSR disclosure quality.

Where:

CoC	=	Cost of equity capital
α	=	Constant term
CDQS	=	CSR disclosure quality-score
XRR	=	A set of dummies for all four regulatory regimes
CDQS*XRR	=	Interaction effect between CSR disclosure quality and regulatory regimes
∑Controls	=	BETA, Size, Book-to-market ratio, Leverage and ROE
u and ε	=	Error terms

Additionally, as a complementing analysis, the relationship between CSR performance and the cost of equity capital will be investigated via the following model.

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$$CoC = \alpha + \beta_1 ESG_{i,t} + \beta_2 XRR_{i,t} + \beta_3 ESG * XRR \quad \sum Controls_{i,t} + u_{i,t} + \varepsilon_{i,t}$$

Model 3. MMR model for CSR performance.

Where:

CoC	=	Cost of equity capital
α	=	Constant term
ESG	=	CSR performance score
XRR	=	A set of dummies for all four regulatory regimes
CDQS*XRR	=	Interaction effect between CSR disclosure quality and regulatory regimes
∑Controls	=	BETA, Size, Book-to-market ratio, Leverage and ROE
u and ε	=	Error terms

4. Results

A panel dataset containing data regarding multiple individual companies from different countries spanning the period 2011 – 2016 is used to test both hypotheses of this paper. Panel data sets possess several major advantages over cross-sectional or time-series datasets, such as an increased number of data points, more degrees of freedom and a reduction in collinearity among explanatory variables (Hsiao, 2014). A MMR model, which allows that the relationship between the dependent and independent variable depends on the level of another independent variable, will be used to test whether CSR disclosure quality is negatively related to the cost of equity capital and whether this relationship is being moderated by the regulatory regime under which a firm operates. The summary statistics of the data that were collected can be found in table L in the appendices.

4.1 Specification test and tests for collinearity

A MMR model can be applied in a pooled OLS regression model, a random effects model, or a fixed effects model. Since the regulatory regimes under which the firms operate and most of the firm's individual betas do not vary over time, a fixed effects model is not appropriate to be used, since variables who do not vary over time are omitted in this type of model. To determine whether a pooled OLS or a random effects model should be used, a Breusch and Pagan Lagrangian multiplier test was conducted. In this test, the hypothesis is tested which states that the variance equals 0 and that there are no random effects. The test results were significant, indicating that the random effects model is more suited to be used than the pooled OLS model, as can be seen in table C below.

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Breusch and Pagan Lagrangian multiplier test for random effects		
CoC [Firms, t] = Xb + u [Firms] + e [Firms, t]		
Estimated Results		
	VAR	sd= sqrt (VAR)
CoC	0,0141835	0,1190935
E	0,0028572	0,0534524
u	0,0083006	0,0911076
Test: Var(u) = 0		
chibar2 (01)	=	1735.90
Prob > chibar2	=	0,0000

Table C. Test results for the Breusch and Pagan Langrangian multiplier test.

As stated, one of the benefits of using panel data is a reduction of collinearity among explanatory variables, however, if collinearity is present in the data sample, the regression results may be biased and less reliable due to skewed coefficients of the variables (O' Brien, 2007). There are multiple methods of screening and detecting collinearity, such as looking at pairwise correlation coefficients and the variance inflation factors. After examining these statistics it appears that collinearity is not an issue in this dataset. Although the pairwise correlation coefficient for the market-to-book ratio and return on equity was a little below 0.8, all variance inflation factors of the variables were below 3.1, which is below the commonly accepted tolerance level of 10 (O' Brien, 2007; Dormann, et al., 2013). The pairwise correlation coefficients matrix and the table containing the variance inflation factors are reported in tables D & E.

Pairwise correlations.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) CDQS	1.000						
(2) Regime	-0.275	1.000					
(3) lnTA	0.359	0.054	1.000				
(4) BETA	0.026	0.050	0.101	1.000			
(5) MVtB	-0.077	0.130	-0.051	-0.039	1.000		
(6) LevTDTC	0.046	-0.031	0.025	-0.009	-0.028	1.000	
(7) ROE	-0.064	0.160	-0.023	-0.075	0.770	0.043	1.000

Table D. Correlation matrix of independent variables.

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Variance inflation factor.

	VIF	1/VIF
MVtB	3.066	.326
ROE	3.034	.33
lnTA	1.472	.679
CDQS	1.291	.775
LevTDTC	1.237	.808
regime	1.133	.883
BETA	1.032	.969
Mean_VIF	1.752	.969

Table E. Variance inflation factors of independent variables.

4.2 Main analysis

To test whether CSR disclosure quality has a significant negative effect on the cost of equity capital and whether this relationship is being moderated by the regulatory regime under which a firm operates, two separate regressions were run. In the first model the cost of equity capital, calculated via Easton's, (2004) PEG model was regressed against a firm's CSR disclosure quality score, calculated as an average of four indicator scores provided by database Eikon, the regulatory regimes under which the firms operate and a number of controls. If CSR disclosure quality is negatively related to the cost of equity capital, the coefficient for CSR disclosure quality should be negative and significant. Secondly, a moderated multiple regression (MMR) analysis was performed containing an interaction variable, to test the second hypothesis.

The first model yielded some interesting, but unexpected, results. CSR disclosure quality has a negative coefficient of -0.0000859, but is not statistically significant with a p-value of 0.613. Even though it appears that the quality of CSR disclosure is negatively related to the cost of equity capital, this relationship is not statistically significant. However, no distinction has been made between the effect of CSR disclosure on the cost of equity capital per regulatory regime. Interestingly regulatory regimes in general appear to have a significant positive effect on the cost of equity capital at the one percent level, with a coefficient of 0.0188499 and a p-value of 0.000. This model is able to explain 12.38 percent of the variance in the cost of equity capital between the firms and able to explain 15.43 percent of the overall variance in the cost of equity capital of the firms included in the data sample. The regression results are presented in table F.

First regression model, excluding the interaction term CDQS*Regime.

VARIABLES	(Regression results) CoC
CDQS	-8.59e-05
	(0.000170)
Regime	0.0188***
	(0.00482)
lnTA	-0.0188***
	(0.00323)
BETA	0.0327***
	(0.0102)
MVtB	-0.000283
	(0.000618)
LevTDTC	0.000905***
	(0.000177)
ROE	-0.000229***
	(8.63e-05)
Constant	0.372***
	(0.0500)
Observations	1,493
Number of firmID	337
r2_w	0.0291
r2_b	0.124
r2_o	0.154

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

Table F. Regression results after running a regression analysis testing the effects of CSR disclosure quality and regulatory regimes in general on the cost of equity capital.

In terms of the relationships between the control variables and the cost of equity capital, all control variables, except the market-to-book ratio, were found to be significantly related to the cost of equity capital at the one percent level. As expected BETA and leverage are significantly positively related to the cost of equity capital. Additionally, size, market-to-book ratio and return on equity are significantly negatively related to the cost of equity capital. All control variables had the expected signs.

This model does not reveal information whether regulatory regimes moderate the relationship between CSR disclosure quality and the cost of equity capital. Neither does it make a distinction between the four regulatory regimes, and thus provides no information regarding the differences between the effects of CSR disclosure quality between the four regimes. To explore these questions, the individual slope coefficient of the effect of CSR disclosure quality on the cost of equity capital per regulatory regime were examined, and a moderated multiple regression analysis was run.

The separate effects of CSR disclosure quality per regulatory regime are presented in table G.

Slope coefficients for CSR disclosure quality per regulatory regime.

Average marginal effects			Number of obs =	1493		

Model VCE : Conventional
Expression : Linear prediction, predict()
dy/dx w.r.t. : CDQS

1._at	: French_cl	=	0
2._at	: German_cl	=	1
3._at	: Nordic_cl	=	2
4._at	: US_col	=	3

			Delta-method			
	dy/dx	Std.Err.	z	P>z	[95%Conf.	Interval]
CDQS						
_at						
1 (French_cl)	-.0003302	.0002558	-1.29	0.197	-.0008316	.0001713
2 (German_cl)	-.0005457	.000301	-1.81	0.070*	-.0011357	.0000442
3 (Nordic_cl)	.0002132	.0003342	0.64	0.524	-.0004418	.0008681
4 (US_col)	-.0001124	.0003549	-0.32	0.752	-.000808	.0005833

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Table G. Slope coefficients of CSDQ per regulatory regime.

Upon inspection of the slope coefficients, some evidence is found which supports the first hypothesis. For firms operating under the German civil law regime, the relationship between CSR disclosure quality is significantly negatively related to the cost of equity capital at the ten percent level. For firms operating under the French civil law and US common law regime, the relationship between CSR disclosure quality and the cost of equity capital is negative, but not significant. For Nordic firms, the relationship appears to be positive, however not significant. Based on the results it appears that CSR disclosure quality does have a significant negative impact on the cost of equity capital, but only for firms operating under the German civil law regime. Based on this, hypothesis 1a cannot be accepted, but neither can it be fully rejected.

The results from the MMR model indicate that, although there is a significant difference between the effect of the French and German civil law regime on the cost of equity capital, regulatory regimes do not significantly moderate the relationship between CSR disclosure quality and the cost of equity capital. The results from the MMR model are presented in table H.

MMR model, CSR disclosure quality and its effect on the cost of equity capital.

VARIABLES	(MMR results) CoC
CDQS	-0.000330
	(0.000256)
1.German_cl	0.0175
	(0.0288)
2.Nordic_cl	0.127***
	(0.0310)
3.US_col	-0.0167
	(0.0305)
0b.Regime#c.CDQS	
1.German_cl#c.CDQS	-0.000216
	(0.000388)
2.Nordic_cl#c.CDQS	0.000543
	(0.000415)
3.US_col#c.CDQS	0.000218
	(0.000433)
lnTA	-0.00626**
	(0.00278)
BETA	0.0389***
	(0.00867)
MVtB	0.000109
	(0.000564)
Lev	0.000631***
	(0.000159)
ROE	-0.000265***
	(8.50e-05)
Constant	0.178***
	(0.0467)
Observations	1,493
Number of firmID	337
r2_w	0.0233
r2_b	0.480
r2_o	0.432

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Table H. Regression results after running the MMR analysis.

The coefficient for CSR disclosure quality represents the effect that CSR disclosure quality has on the cost equity capital moderated by the French civil law regime. The coefficients for Regime#c.CDQS represent the differences between the effects of CSR disclosure quality on the cost of equity capital who are moderated by the German and Nordic civil law and US common law regulatory regimes. No evidence is found is that regulatory regimes moderate the relationship between CSR disclosure quality and the cost of equity capital. Therefore hypothesis 1b which states that regulatory regimes

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moderate the relationship between CSR disclosure quality and the cost of equity capital is rejected. The p-values for the interaction effects were 0.578 for the interaction effect between CSR disclosure and the German civil law regime, 0.191 for the interaction effect between CSR disclosure quality and the Nordic civil law regime, and 0.584 for the interaction effect between CSR disclosure quality and the US common law regime.

An additional regression analysis was run using an alternative measure of CSR disclosure quality. In this model the quality scores for the firm's disclosed CSR reports have been calculated as an average of the last three indicator scores stated in table A. The last three indicator scores are more clearly defined and refer to distinct aspects related to the quality of disclosed CSR information, whereas the first indicator score is less clearly defined and seems to refer to the overall quality of disclosed CSR reports. The same MMR regression was run as was run in the main model. The results from this regression yielded no significant results unlike the main MMR model, and are presented in table L, as well as the individual slope coefficients for CSR disclosure quality per regulatory regime are presented in table M, which can be found in the appendices.

To test the last two hypotheses, CSR performance, as measured by a firm's ESG score, was regressed against the cost of equity capital using a MMR model. The results obtained from running the MMR analysis yielded interesting results. Inspection of the separate effects of CSR performance on the cost of equity capital per regulatory regime revealed contradicting results. The separate effects of CSR performance, as proxied by the firm's ESG scores, are presented in table I.

Slope coefficients for ESG scores as a measure of CSR performance per regulatory regime.

Average marginal effects		Number of obs	=	1493

Model VCE   : Conventional
Expression   : Linear prediction, predict()
dy/dx w.r.t. : ESGS

1._at	: French_cl	=	0
2._at	: German_cl	=	1
3._at	: Nordic_cl	=	2
4._at	: US_col	=	3

			Delta-method				
	dy/dx	Std.Err.	z	P>z	[95%Conf.	Interval]
ESGS						
_at						
1 (French_cl)	-.0003885	.0002158	-1.80	0.072*	-.0008115	.0000346
2 (German_cl)	.0002603	.0002531	1.03	0.304	-.0002358	.0007563
3 (Nordic_cl)	.0004977	.000276	1.80	0.071*	-.0000431	.0010386
4 (US_col)	-.0002522	.0003414	-0.74	0.460	-.0009214	.000417

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Table I. ESGS as proxy for CSR performance and its effect on cost of equity capital per regulatory regime.

Based on the coefficients, it appears that CSR performance has a significant negative effect on the cost of equity capital for firms operating under the French civil law regime at the ten percent level, and a significant positive effect for firms operating under the Nordic civil law regime also at the ten percent level. These results do not replicate the findings of El Ghoul, Guedhami, Kwok, & Mishra, (2011). Since both a negative, as well as a positive effect of CSR performance on the cost of equity capital was found, it cannot be concluded that a higher CSR performance leads to a lower cost of equity capital. Rather, the results indicate that CSR performance has a significant effect on the cost of equity capital, an effect which can be both negative and positive depending under which regulatory regime a firm operates. Therefore hypothesis 3a cannot be accepted, nor fully rejected.

The MMR model which included the ESG scores as a proxy for CSR performance yielded very interesting results. Several significant interaction effects are found, indicating that regulatory regimes moderate the relationship between CSR performance and the cost of equity capital. This model is able to explain almost 48 percent of the variance in the cost of equity capital between firms, and 43 percent of the overall variance in cost of equity capital. The results of this additional MMR analysis are presented in table J.

MMR model, CSR performance and its effect on the cost of equity capital.

VARIABLES	(2 ESGS) CoC
ESGS	-0.000388*
	(0.000216)
1.German_cl	-0.0287
	(0.0214)
2.Nordic_cl	0.113***
	(0.0231)
3.US_col	-0.00684
	(0.0246)
0b.Regime#co.ESGS	
1.German_cl#c.ESGS	0.000649*
	(0.000333)
2.Nordic_cl#c.ESGS	0.000886**
	(0.000350)
3.US_col#c.ESGS	0.000136
	(0.000404)
lnTA	-0.00816***
	(0.00262)
BETA	0.0383***
	(0.00869)
MVtB	1.80e-05
	(0.000564)
Lev	0.000644***
	(0.000159)
ROE	-0.000261***
	(8.47e-05)
Constant	0.207***
	(0.0447)
Observations	1,493
Number of firmID	337
r2_w	0.0278
r2_b	0.476
r2_o	0.430

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Table J. ESGS as proxy for CSR disclosure quality.

Upon inspection, it seems that the effects of CSR performance, as proxied by the firm's ESG scores, on the cost of equity capital is significantly being moderated by the French, German and Nordic civil law regimes. The coefficient for ESGS represents the effect that CSR performance has on the cost of equity capital moderated by the French civil law regime. The coefficients for Regime#co.ESGS represent the differences between the effects of CSR performance on the cost of equity capital moderated by the German and Nordic civil law and US common law regulatory regimes. Were

regulatory regimes do not moderate the relationship between CSR disclosure quality and the cost of equity capital, they do appear to moderate the relationship between CSR performance and the cost of equity capital. The results indicate that the French, German and Nordic civil law regulatory regimes significantly moderate the relationship between CSR performance and the cost of equity capital. The French civil law regime significantly negatively moderates the relationship between CSR performance and the cost of equity capital with a coefficient of -0.0003885 and a p-value of 0.072. The German and Nordic civil law regimes significantly positively moderate that relationship with coefficients of 0.0006487 and a p-value of 0.051 for the German civil law regime and a coefficient of 0.0008862 and a p-value of 0.011 for the Nordic civil law regime.

These results indicate that regulatory regimes, with the exception of the US common law regime, moderate the relationship between CSR performance and the cost of equity capital. In other words, the relationship between CSR performance and the cost of equity capital depends on a country's prevailing regulatory regime. This relationship is significantly more negative for firms operating under the French civil law regime as compared to the relationship for firms operating under the English common law, or German and Nordic civil law regime. The relationship between CSR performance and the cost of equity capital is significantly more positive for firms operating under the German and Nordic civil law regime as compared to relationship for firms operating under the French civil law regime, but not as compared to the relationship between CSR performance and the cost of equity capital for firms operating under the US common law regime. Based on these results, hypothesis 2b is accepted.

5. Discussion and conclusion

This study differs from previous studies who have examined the relationship between CSR disclosure or performance and the cost of equity capital by placing a greater emphasis on the quality aspects of CSR disclosure and its relationship with the cost of equity capital. In this sense, this study may be seen as an explorative study who investigates whether CSR disclosure quality is related to the cost of equity capital and whether this relationship is moderated by a country's prevailing regulatory regime.

No overall significant effect between CSR disclosure quality and the cost of equity capital was found. Previous studies such as Dhaliwal et al., (2011; 2014) found an overall statistical negative relationship between issuing/disclosing CSR reports and the cost of equity capital, while El Ghoul et al., (2011) found an overall significant negative relationship between CSR performance and the cost of equity

capital. It is important to note that CSR performance and CSR disclosure quality are different dimensions related to corporate social responsibility. Based on the differences between the results obtained in this study as compared to the mentioned studies above, one might be tempted to conclude that overall CSR disclosure quality is of less importance than disclosing CSR information or CSR performance. However, after distinguishing between different regulatory regimes under which the firms operate, one significant negative relationship between CSR disclosure quality and the cost of equity capital was found for firms operating under the German civil law regime. This significant relationship was only found when CSR disclosure quality is measured as an average of four indicator scores.

Theory suggests that a higher CSR disclosure quality reduces information asymmetry between a firm's management and its owners. Investors provided with higher quality information can use this information to evaluate past and forecast future sustainable performance, enabling them to more accurately determine their expected returns on a firm's stock, thereby reducing the cost of equity capital. Differences in ownership concentration of firms, as a result from the protection that a country's regulatory regime offers investors, may result in differences in the effect of CSR disclosure quality on the cost of equity capital. Under the German civil law regime, investors are protected fairly well, resulting in less concentrated ownership structures. Under this regime, the results indicate that a higher quality of CSR disclosure reduces information asymmetry, which lowers a firm's cost of equity capital. Under the French civil law regime, investors are relatively poorly protected via laws and regulations, resulting in more concentrated ownership structures. Since a firm's shares are controlled by a smaller concentrated group of investors, a higher quality CSR disclosure, or CSR disclosure itself, may not provide investors with new information, and under these circumstances, a higher quality CSR disclosure does not have a negative effect on the cost of equity capital.

When this mechanism is in fact in place, we would expect a significant negative influence of CSR disclosure quality on the cost of equity capital for firms operating under the English common law regime, since it is argued in the literature that this regime offers investors with the highest degree of protection, resulting in dispersed ownership structures of firms. This relationship was not found, nor was evidence obtained that regulatory regimes moderate the relationship between CSR disclosure quality and the cost of equity capital. Additionally, the relationship found in the main analysis did not prove to be robust to an alternative measure of CSR disclosure quality. These results need to be interpreted with caution, since the way the variables were operationalized opens up the door for measurement errors.

Operationalizing a complex construct such as CSR disclosure quality is a complex task. The overall CSR disclosure quality scores per report disclosed were calculated as an average of four indicator scores, related to disclosed CSR information and quality aspects of that information provided by database Eikon. Additionally, the average CSR disclosure quality score was calculated as an average of three, instead of four, indicator scores, but this measure hardly differs, or distinguishes itself, from the measure of CSR disclosure quality that was used in the main analysis. Although this methodology is objective and easy to replicate, it may well be that it falls short to fully capture the quality of CSR disclosure (Dhaliwal, Li, Tsang, & Yang, 2014). Preferably it would be better to adopt a more comprehensive scoring methodology to derive overall CSR disclosure quality scores like Clarkson, Li, Richardson, & Vasvari, (2008) and Plumlee, Brown, Hayes, & Marshall, (2015) have done. These studies assigned overall quality scores by using a quality index based on the GRI framework and performing content analysis on all disclosed reports. Future researchers interested in this subject are encouraged to adopt a more comprehensive scoring methodology to reduce the likelihood of measurement error when operationalizing such a complex construct, but also to include alternative measures of CSR disclosure quality, such as an average quality score as was used in the main analysis of this study. Including multiple measures, or proxy's, to capture the quality of CSR disclosure would reduce measurement error associated with operationalizing this construct and may offer scholars a better understanding into the relationship between CSR disclosure quality and the cost of equity capital.

Like CSR disclosure quality, regulatory regimes and more specifically the degree of protection that they offer investors is a complex construct, which may only be partially captured by including dummy variables into the model as was done in this study. As Armour, Deakin, Sarkar, Siems, & Singh, (2009) state, the effectiveness of shareholder protection that regulatory regimes offers investors depends on a multitude of factors, such as the nature of rules governing this protection in areas such as corporate law, bankruptcy law and the quality of enforcement of these laws. In this study, a distinction between regulatory regimes was made based on dummy variables. From a technical point of view, these dummy variables are equal to country dummy variables, who, in this study, represent the distinction between regulatory regimes. However, country dummy variables capture more differences between countries than their respective regulatory regimes alone and thus include a degree of measurement error. Future researchers are encouraged to include a more comprehensive operationalization of regulatory regimes, like Leuz, Nanda, & Wysocki, (2003) and Francis & Wang, (2008) have done. Besides a country's legal tradition the authors have also included a number of other dimensions of investor protection, such as variables based on a country's mechanisms of

corporate and securities laws and the efficiency of the judicial system. Their work may offer future researchers a good starting point in how to operationalize regulatory regimes more thoroughly.

Lastly, CSR performance was found to be both negatively and positively related to the cost of equity capital. This result differs from El Ghoul, Guedhami, Kwok, & Mishra, (2011) who found an overall negative relationship between CSR performance and the cost of equity capital. The results obtained in this study provide a more nuanced picture of this relationship. Based on the regression results it can be concluded that the direction of the effect of CSR performance on the cost of equity capital depends on under which regulatory regime the firm operates. Furthermore, the results indicate that regulatory regimes moderate the relationship between CSR performance and the cost of equity capital. However, these results should be interpreted with caution based on the limitation, as mentioned above, associated with how regulatory regimes were operationalized in this study. The theoretical implication of these findings is that the relationship between CSR performance and the cost of equity capital, as found by El Ghoul et al., is more nuanced. The results indicate that there is no overall negative relationship between CSR performance and the cost of equity capital for all firms, but rather depends on circumstances, such as the prevailing regulatory regime, under which a firm operates. Further research into this topic is needed to gain a deeper understanding of the relationship between CSR performance and the cost of equity capital.

In this study research regarding corporate social responsibility and its impact on a firm's cost of equity capital has been expanded, by investigating whether the quality of CSR disclosure is negatively related to a firm's cost of equity capital and whether this relationship is being moderated by a country's prevailing regulatory regime. This study extends the line of research of Dhaliwal, Li, Tsang, & Yang, (2011), but differs from them by focussing more on the quality aspect of CSR disclosure, instead of disclosure itself and it's relationship with a firm's cost of equity capital. This study also extends the line of research of and El Ghoul, Guedhami, Kwok, & Mishra, (2011), by examining whether the relationship between CSR performance and the cost of equity capital differs for firms operating under different regulatory regimes. These topics are important to study, since they may offer a deeper insight and better understanding of the mechanisms through which capital markets work, and how CSR related issues impact the working of capital markets. This study may also provide firms with a better understanding of how corporate social responsibility may affect their business. CSR is a heavily debated topic and receives more and more attention from shareholders and other stakeholders, who increasingly pay attention to CSR related issues surrounding a firm's business conduct.

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All in all the results of this study are inconclusive. Based on the results obtained, the quality of CSR disclosure does seem to have an effect on the cost of equity capital for some firms, but not for all. Regulatory regimes do not moderate this relationship. The results also indicate that the relationship between CSR performance and the cost of equity capital is not the same for all firms, but rather depends on under which regulatory regime a firm operates. More interestingly, regulatory regimes appear to moderate the relationship between CSR performance and the cost of equity capital.

Future research is needed to come to a definitive conclusion whether CSR disclosure quality is significantly negatively related to the cost of equity capital and whether this relationship is being moderated by a country's prevailing regulatory regime.

This study is not without limitations and caveats. These were mentioned in the discussion section along with possible ways of how to overcome these, so that, future researchers are enabled to extend and improve the line of research that was started in this study.

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Appendices.

Descriptive Statistics.

Variable	Obs	Mean	Std.Dev.	Min	Max
firmID	1625	175.508	101.598	1	353
Year	1625	2013.606	1.703	2011	2016
CoC	1625	.15	.12	.012	1.154
CDQS	1625	66.995	19.649	31.865	88.102
Regime	1625	1.372	1.157	0	3
lnTA	1623	16.487	1.716	12.49	21.495
BETA	1531	1	.436	-.17	4.26
MVtB	1623	2.927	7.859	-57.53	211.12
LevTDTC	1623	46.073	206.272	-1520	7864.71
ROE	1588	14.966	34.262	-132.78	1059.74

Table K. Descriptive statistics.

Slope coefficients for CSR disclosure quality (average of 3 indicator scores) per regulatory regime.

Average marginal effects   Number of obs = 1493
Model VCE   : Conventional
Expression   : Linear prediction, predict()
dy/dx w.r.t. : CDQS3

1._at	: French_cl	=	0
2._at	: German_cl	=	1
3._at	: Nordic_cl	=	2
4._at	: US_col	=	3

	Delta-method					
	dy/dx	Std.Err.	z	P>z	[95%Conf.	Interval]
CDQS3						
_at						
1 (French_cl)	-.0002631	.0002223	-1.18	0.237	-.0006988	.0001726
2 (German_cl)	-.0003978	.0002452	-1.62	0.105	-.0008784	.0000827
3 (Nordic_cl)	.0000642	.000259	0.25	0.804	-.0004436	.0005719
4 (US_col)	-.0000143	.0002869	-0.05	0.960	-.0005766	.0005479

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

Table L. CSR disclosure quality measured as average of three indicator scores and its effect on cost of equity capital per regulatory regime.

Additional analysis, CSR disclosure quality as an average of three indicator scores.

VARIABLES	(3 CDQS3) CoC
CDQS3	-0.000263
	(0.000222)
1.German_cl	0.0129
	(0.0245)
2.Nordic_cl	0.142***
	(0.0258)
3.US_col	-0.0170
	(0.0260)
0b.Regime#co.CDQS3	0
	(0)
1.German_cl#c.CDQS3	-0.000135
	(0.000325)
2.Nordic_cl#c.CDQS3	0.000327
	(0.000337)
3.US_col#c.CDQS3	0.000249
	(0.000360)
lnTA	-0.00639**
	(0.00275)
BETA	0.0387***
	(0.00867)
MVtB	9.80e-05
	(0.000566)
LevTDTC	0.000630***
	(0.000159)
ROE	-0.000265***
	(8.51e-05)
Constant	0.175***
	(0.0456)
Observations	1,493
Number of firmID	337
r2_w	0.0226
r2_b	0.479
r2_o	0.431

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Table M. CSR disclosure quality score as an average of three indicator scores.

No significant negative effect of CSR disclosure quality on the cost of equity capital was found. After making a distinction between regulatory regimes, and the effect that CSR disclosure quality has on the cost of equity capital within the four regimes, no significant results were obtained. Whereas in the main model the relationship between CSR disclosure quality and the cost of equity capital was significantly negative for firms operating under the German civil law regime, this significant effect is no longer found in the additional analysis. The Nordic civil law regime on itself still has a significantly

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more positive impact on the cost of equity capital than the French civil law regime has, but the results, like in the main model, provide no evidence that regulatory regimes moderated the relationship between CSR disclosure quality and the cost of equity capital.

Based on the results obtained from this regression analysis, the first hypothesis, which states that CSR disclosure quality is negatively related to the cost of equity capital cannot be accepted, nor rejected. The second hypothesis, which states that regulatory regimes moderate the relationship between CSR disclosure quality and the cost of equity capital, is rejected.

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