Capital market consequences of corporate social responsibility disclosure : The case of Europe

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Chapter 1: Introduction and Overview

This chapter introduces the thesis that deal with the capital market consequences of corporate social responsibility (CSR) disclosure. The thesis investigates the association between CSR disclosure and information asymmetry. It aims to determine how this association is impacted by exposure to environmental, social, and governance issues and national culture. Moreover, the thesis also explores the impact of the European Union non-financial reporting directive (NFRD) on CSR disclosure and, eventually, information asymmetry.

This introduction is organised as follows. Section 1.1 describes the definition of CSR disclosure used in this thesis. Section 1.2 briefly explains the concept of information asymmetry and how information asymmetry is measured for this study. Section 1.3 provides a succinct overview of the extant literature on capital market impacts of CSR disclosure. Section 1.4 discusses the motivation and relevance of the topic under study. Section 1.5 details the theoretical perspectives. Section 1.6 outlines the contents of the subsequent chapters of this thesis. The main contributions of the study are highlighted in Section 1.7.

1.1 Corporate Social Responsibility Disclosure

In the recent past, corporate scandals such as Enron or Lehman Brothers were eye-openers for complete reliance on corporate disclosures and attracted a lot of attention to corporate social responsibility (CSR) and CSR disclosure. Such scandals happened due to the absence or inappropriate corporate disclosure. Also, increased awareness towards social implications of a firm's operations, climate change worldwide, gender equality, and unfair labour practices, among other challenges, have forced companies to be more socially responsible. Environmental and social disclosures have seen tremendous growth in quantity and intricacy over the last three to four decades (Archel, Chulian, & Larrinaga, 2008).

The corporate world is encountering the concept of CSR wherever it goes nowadays. On a global range of issues, firms are encouraged to act in a socially responsible way (Welford & Frost, 2006). However, there is vagueness in both the academic and corporate world regarding how CSR should be defined. Many research features and outcomes are coming forward due to these extensively

wavering explanations and CSR understandings (Garriga & Mele, 2004). Although CSR definitions vary, most studies suggest that it generally refers to serving people, communities, and the environment in ways that go above and beyond what is legally required of a firm (Ioannou & Serafeim, 2014; Margolis & Walsh, 2003).

Jackson & Hawker (2001) went to the extent of saying that there is no CSR definition in principle. Dahlsrud (2008) argues that the difference in opinion about CSR's meaning is not backed by empirical evidence. This problem is further exacerbated by the fact that there are no concrete insights into the type of CSR drivers. Such as laws and regulations (that would be highlighted later in the study) on the one hand, and the public's attitude and perception toward CSR on the other hand (Lopatta, Buchholz, & Kaspereit, 2016).

According to Dahlsrud (2008), there are numerous perspectives to define CSR. One of the most comprehensive definitions was given by the Commission of the European Communities back in 2001. According to the Commission of the European Communities (2001), CSR is defined as a notion where businesses incorporate the concern about society and the environment in their day-to-day operations and their collaboration with their business participants, i.e., stakeholders, voluntarily. Stakeholder theory proposes that a socially responsible corporation would strive hard to be responsible for a wide range of stakeholders, notably investors (Freeman R. , 1984). CSR disclosure aims to provide stakeholders with diverse information on the firm's involvement in responsible and sustainable practices in such a background.

Companies can be socially responsible, but they need to communicate how they impact the environment and behave towards society and their employees. CSR disclosure refers to the systematic disclosure of information on the social performance of the company. The term social performance is understood in the broadest sense. It encompasses environmental, social, and governance issues that are generally not included in financial performance metrics. CSR disclosure functions as an instrument to change the company's external perceptions, initiate a dialogue with stakeholders, and ultimately play a vital role in building a relationship between the company and its stakeholders. CSR disclosure helps build the company's legitimacy towards both specific stakeholders and the public. It is part of the social contract between the company and society.

Stakeholders use the company's disclosure in their decision-making process. Each stakeholder, including but not limited to investors, employees, local communities, customers, suppliers,

governments, has different expectations towards the firm (Freeman R. , 1984). In this study, I use the latter approach by considering both CSR disclosure as a whole and each of its environmental, social, and governance components. It is essential to focus on these components because some disclosures may be more relevant to some companies and some stakeholders than others. Companies that operate in environmentally sensitive industries are expected to disclose more environmental information as that information is more relevant to their stakeholders than financial firms. In contrast, companies operating in financial sectors are expected to disclose more social and governance information than environmental information, being less involved in environmental issues.

I use the Bloomberg ESG (environmental, social and governance) disclosure score as a proxy for CSR disclosure in my research. This disclosure index has been used in various past studies (Qiu, Shaukat, & Tharyan, 2016; Tamimi & Sebastianelli, 2017). Bloomberg ESG disclosure index gives points to companies for the quantitative and qualitative environmental, social, and governance policy-related data. Bloomberg provides insight on ESG metrics for over 10,000 companies across more than 70 countries. Bloomberg Environmental-Social-Governance (ESG) disclosure scores use multidimensional mechanisms based on approximately 120 quantitative and qualitative data points. To ensure accuracy and consistency, Bloomberg rates companies on environmental, social, and governance policies and practices by utilizing publicly available data, sustainability and annual reports, direct contact and communications, research by a third party, news items, and press releases.

The three scores on environmental, social, and governance dimensions, are each scaled from 0 showing no disclosure to 100 representing full disclosure. The three scores are then added up to form a single score using a proprietary method. The ESG scores and rating are updated annually. Some of the environmental, social, and governance indicators include waste recycling, electricity usage, number of accidents reported, ethical policies, fatalities, community spending, CEO gender, shareholders' rights, and age limit for serving on the board of directors. Bloomberg ESG disclosure's data themes are divided into the environment, social, and governance scores (Tamimi & Sebastianelli, 2017). The Blomberg ESG score systematically captures only the information disclosed on environmental, social, and governance issues through the sources mentioned above and rates companies on each component. The more environmental, social, and governance

information disclosed by the company, the higher is the related disclosure score. Bloomberg ESG metric does not measure or capture CSR's performance, environmental, social, or governance issues as such. Instead, it measures the extent to which a firm is committed to transparency and accountability and, ultimately, the level of environmental, social, and governance disclosure.

1.2 Information Asymmetry

One of the most concerning issues for the well-functioning of any market is asymmetric information. Information asymmetry occurs when one party in a transaction has more or better information than another. Regarding firms and capital markets, information asymmetry can exist between managers and investors and among investors themselves. Information asymmetry results in market imperfections, notably because it creates adverse selection and moral hazard problems (Johnson & So, 2016).

As it turns private information into public information, corporate disclosure may effectively reduce information asymmetry (Yoon, Ciganek, & Zo, 2011). As such, CSR disclosure has vital implications for information asymmetry as management knows more about the firm's plans, goals, and objectives than any other stakeholder (Lys, Naughton, & Wang, 2015). CSR disclosure helps investors and other stakeholders evaluate the firm's potential social and environmental liabilities, thus reducing the information disadvantage of uninformed investors compared to more informed investors.

CSR disclosure is crucial in assessing a company's future environmental and social risks. The disclosure of CSR information provides greater confidence and reassures investors and other stakeholders concerning various operations of the company. It increases the company's visibility and ultimately reduces the information gap between managers, investors, and other stakeholders. CSR information may therefore be value relevant as it helps reduce the information costs incurred by investors and other stakeholders. Information asymmetry and resulting agency costs are lower for companies providing their stakeholders with relevant information. CSR performing companies may use voluntary CSR disclosure as a tool to differentiate themselves from low CSR performing companies. Because it results in less asymmetric information, and therefore reduces transaction

costs for stakeholders and more especially investors, capital markets should place a positive value on the disclosure of CSR information (Frías-Aceituno, Rodriguez-Ariza, & Garcia-Sanchez, 2013)

Information asymmetry is not directly observable. Therefore, it is captured using proxies, which are also affected by several market-related factors. I use the following three metrics to capture the magnitude of information asymmetry (Jayaraman, 2008; Amihud, 2002; Liu, Luo, & Wang, 2017)

- Bid-ask spreads
- Amihud illiquidity measure
- Zero daily stock returns

1.3 The Capital Market Impacts of CSR Disclosure: Overview of the Empirical Literature.

A brief review of the literature on CSR disclosure's capital market consequences is presented in this section. A detailed overview of this literature is shown in the coming chapters. Literature shows that CSR is beneficial to firms in many ways: firms achieve higher analyst following (Hong & Kacperczyk, 2009) and receive more favourable recommendations from analysts (Ioannou & Serafeim, 2014); CSR encourages more effective corporate governance and higher firm value (Jo & Harjoto, 2012); CSR improves credit rating (Attig, El Ghoul, Guedhami, & Suh, 2013) and results in higher analyst forecast accuracy (Dhaliwal, Radhakrishnan, Tsang, & Yang, 2012).

Dhaliwal et al. (2012) find that firms with higher CSR ratings attract dedicated analyst coverage. They also find that analysts' forecast errors and forecast dispersion both decrease with CSR disclosure quality. Cheng et al. (2014) find that CSR engagement makes financial constraints less severe and access to financial markets easier. They argue that firms with better CSR performance face lower capital constraints. Similarly, Attig et al. (2013) show that credit rating agencies award high ratings to CSR firms. They also find that high CSR firms' prolific Wall Street coverage attracts more significant investor and media attention, which increases the demand for information disclosure. Cormier et al. (2009) find a negative impact of Web-based social and human capital disclosure on stock volatility and Tobin's Q. Jo & Kim (2008) indicate that improved corporate transparency through frequent voluntary disclosure reduces information asymmetry between insiders and outsiders. Kim et al. (2014) examine whether CSR mitigates the risk of a stock price

crash, defined as the conditional skewness of return distribution, which captures asymmetry in risk. Their findings support the mitigating effect of CSR on the crash risk. Thus, the idea that socially responsible firms committing to a high standard of transparency and engaging in less hoarding of bad news have a lower crash risk. El Ghoul et al. (2011) also claim that information asymmetry is likely to be more severe for low CSR firms. Accordingly, firms conduct CSR activities to enhance their reputation, even though this is not a legal or regulatory requirement, anticipating a better information environment over time. If managers use CSR engagement and disclosure as a signalling channel (Lys, Naughton, & Wang, 2015) to build and maintain a good reputation, and outsiders perceive CSR activities and disclosure as an effective sign, the greater CSR disclosure, the lower information asymmetry.

1.4 Motivation and Relevance of the Research

A real challenge for any economy is the optimal allocation of savings to investment opportunities. There are typically many new entrepreneurs and companies that are interested in attracting household savings. Although both entrepreneurs and savers try to establish ties, matching savings to investment opportunities is problematic for at least two reasons. Firstly, savers encounter information asymmetry when they invest in business projects. Businesses commonly have better information than savers about the value of their investment opportunities and have the motive to exaggerate their worth. Secondly, once savers have invested in a business venture, entrepreneurs have an incentive to expropriate them, thus giving rise to ‘‘agency problems’’.

Both businesses and investors are rational. They value investments depending on the information they possess. Following Akerlof (1970), if investors cannot differentiate between ‘good’ and ‘bad’ business ideas, businesses with ‘bad’ ideas will do their best to convince them that their ideas are as valuable and profitable as the ‘good’ ones. Aware of this prospect, investors will value both good and bad ideas at an average level. Consequently, if this problem, i.e., the ‘lemons problem’, is not fully resolved rationally, investors will overvalue bad ideas and undervalue good ideas.

As suggested by Healy & Palepu (2001), there are several solutions to the above problem. One is found in optimal contracting between businesses and investors. Optimal contracting will provide necessary motives for maximum disclosure of private information, hence extenuating the problem

of mis-valuation. Optimal contracts, such as compensation agreements or debt covenants, seek to align the managers' interests with those of external equity and debt holders. These indentures regularly require businesses to disclose value relevant information that allows investors to monitor compliance with the contractual agreements and assess whether the firm's resources have been managed in the best interests of external owners. Another solution lies in information intermediaries, e.g., rating agencies and financial analysts, who are engaged continuously in issuing ratings or forecasts that reveal the valuable and superior information possessed by managers. Indeed, businesses can communicate directly with concerned stakeholders through financial and non-financial reports, but they can also communicate through information intermediaries such as financial analysts and rating agencies. These intermediaries play a vital role in reducing information asymmetry among managers and external debt and equity claimants by uncovering private information. A third solution to reduce information asymmetry between managers and investors lies in regulations or directives that require businesses to fully disclose their private information, thus lowering managers' information advantage. There are various institutional and economic factors likely to impact the effectiveness of each of the three solutions. Determining the most effective one in mitigating information asymmetry is, to a large extent, a purely empirical question.

The information asymmetry and agency framework raise essential questions for corporate reporting and disclosure research. Most of them deal with the effectiveness of corporate disclosures and the ability of corporate disclosure regulations to mitigate information asymmetry and related agency problems. How much useful are such rules in facilitating the communication of reliable information between businesses and outside investors? What are the determinants of their effectiveness? How do corporate disclosure impact firms' information asymmetry, stock liquidity, and cost of equity capital? How do investors respond to corporate disclosure? Do they find it value relevant? The answers to these questions are crucial to allow better allocation of available resources and make capital markets more efficient.

Several studies examine the determinants and consequences of corporate financial and non-financial disclosure. Few of them investigate the impact of CSR disclosure on information asymmetry. Only a handful focuses on the determinants of the association between CSR disclosure and information asymmetry, moreover for a sample of European firms. CSR is growing around

the world at a different pace from country to country and even from one firm to another. Analysing 108 countries, which represent 96% of the global GDP, the Responsible Competitive Index (RCI) found that developed economies perform better on the avenue of CSR. The top 20 countries in terms of CSR performance include Sweden, Denmark, Finland, Iceland, UK, Norway, New Zealand, Ireland, Australia, Canada, Germany, Netherlands, Switzerland, Belgium, Singapore, Austria, France, USA, Japan, and Hong Kong, etc. (Maricic & Kostic-Stankovic, 2016). The majority of the top 20 performing countries belong to Europe, indicating that CSR practices in Europe are quite mature. Besides, regulations and directives are prevalent in Europe such as, at the country level, the French Nouvelles Régulations Economiques (New Economic Regulations), Grenelle Act 1 and Act 2, Spanish Sustainable Economy Law (SSEL), Danish CSR Reporting Statutory Requirement, Italian National Action Plan 2012-2014, and more recently, at the European Union level, the 2014 non-financial reporting directive. Such regulations give an ideal setting to examine the consequences of making such disclosures mandatory.

Following the above reasoning, this thesis investigates the association between CSR (environmental, social, and governance) disclosure and information asymmetry. It also examines whether the strength of the association depends on the firm's exposure to environmental, social, and governance issues. It further analyses how cultural features (measured by the Hofstede cultural dimensions) impact the association between CSR disclosure and information asymmetry. Last, it scrutinizes the impacts of legal provisions aimed at regulating corporate disclosure, and especially the effects of the EU non-financial reporting directive (Directive 2014/95/EU) on both the magnitude of CSR disclosure and information asymmetry.

The next chapter, Chapter two, explores the association between information asymmetry and CSR disclosure as a whole and environmental, social, governance disclosure considered separately, for a sample of firms operating in Europe. It also assesses this association for firms exposed to environmental, social, and governance issues. Chapter three extends the research question of Chapter two by investigating the impact of national culture on the association between CSR disclosure and information asymmetry. Chapter four is dedicated to the effectiveness of the EU non-financial reporting directive. It investigates how the directive's adoption induced changes in the magnitude of both CSR disclosure and information asymmetry.

1.5 Theoretical Framework

Although the association between CSR disclosure and information asymmetry does not rely on any universally agreed framework, I suggest a stakeholder theory-based and legitimacy theory-based framework to support this association.

The stakeholder theory emphasizes the relationships between a business and its stakeholders. At the root of this theory, Emshoff & Freeman (1978) advocate strong cooperation between enterprises and their stakeholder groups. The stakeholder theory gained popularity in the mid-1980s from Freeman & Reed (1983), who emphasized that companies should consider stakeholders other than the customary ones such as shareholders, employees, customers, and suppliers. Thus, Freeman (1984) suggested to broaden the groups interested in the firm's operations by including political parties, NGOs, professional associations, and public administrations (Malik, 2015).

According to Foster & Jonke (2005), the stakeholder theory explains how we should think about the firms' responsibilities. This theory suggests that it is impossible to maximize shareholders' wealth without satisfying the other stakeholders' needs. The likelihood of a firm successfully serving its shareholders may be affected by its other stakeholders' welfare. The stakeholder theory essentially includes moral and ethical values serving as directions for the management to help firms attain their social legitimization. Companies that operate with such values show a sense of acknowledgement toward addressing silent stakeholders' needs, including the environment and local communities (Simmons, 2004). Firms can benefit from decreased asymmetric information by having good CSR performance and appropriately communicating it. The empirics provide evidence that firms operating in stakeholder-oriented countries tend to disclose more and issue better quality CSR reports than firms operating in countries where there is less focus on social issues and greater inclinations toward shareholders' expectations (Van der Laan Smith, Adhikari, & Tondkar, 2005).

The switch from mostly voluntary to mandatory CSR disclosure implies reconsidering the CSR reporting's theoretical framework. The legitimacy theory explains that the survival of firms depends on whether they share the same values as the society. There is a sort of social contract between the firm and the society (Magness, 2006). The legitimacy theory is primarily recognized

as a socio-political theoretical framework likely to justify voluntary CSR disclosure (Archel, Husillos, Larrinaga, & Spence, 2009; Cho, Freedman, & Patten, 2012). Legitimization can occur through both mandatory and voluntary disclosures (Magness, 2006; Lightstone & Driscoll, 2008). Companies voluntarily undertake environmental and social disclosure with a view that their operations are regarded as legitimate, that is, to gain and uphold organizational legitimacy (Deegan, 2002).

Voluntary disclosure of CSR information responds to stakeholders' demands and expectations to make the firm more legitimate. Any action or practice becomes an informal norm when collectively perceived by the society as legitimate (Bebbington, Kirk, & Larrinaga, 2012). Mimetic isomorphism also encourages implementation-specific practices in companies. Companies undertake voluntary CSR disclosure to gain legitimacy because other companies do the same (Dumay, Frost, & Beck, 2015). Such voluntary action results from the need for legitimacy. Therefore, mimetic isomorphism acts as a coercive force in the voluntary disclosure of non-financial information framework. In the framework of mandatory reporting, the coercive force of the law uploads legitimacy. Dumay et al. (2015) propose a model where disclosure is influenced by legitimacy based on material legitimacy and transparency.

There is a difference between the two socio-political theories (legitimacy theory and stakeholder theory). The difference lies in the breadth of the notion of stakeholders. The legitimacy theory states that the information must be addressed to society as a whole. In contrast, the stakeholder theory recognizes several groups of interest with different ideologies and abilities to affect the firm's activities. In line with the theoretical framework adopted in this thesis, the following section briefly describes the content of the next chapters and their contributions to the literature.

1.6 Outline of the Thesis Chapters

Assuming that good CSR performing companies use CSR disclosure to differentiate themselves from bad CSR performing companies, which helps mitigate information asymmetry between managers and investors, and between investors themselves, Chapter two examines how CSR disclosure is associated with information asymmetry. The chapter adds to the literature because it considers each of the three CSR disclosure components: environmental, social, and governance

disclosure. In contrast, extant literature focuses only on the association between information asymmetry and environmental or global CSR disclosure. It is crucial to split CSR into its components as each component is not identically relevant to every firm. Firms operating in environmentally sensitive industries should disclose more on environmental matters than firms in sectors that are less or not exposed to environmental issues. In contrast, social disclosure is more relevant for firms operating in industries where labor productivity is crucial.

Chapter two also adds to the literature on the association between CSR disclosure and information asymmetry because it investigates how this association is impacted by the firm's exposure to environmental, social, and governance issues. Lastly, the empirical evidence from Chapter two is based on companies domiciled in European countries, a region that has been largely ignored in previous studies.

As the first step of my assessment, I determine whether the outcomes in prior research on the negative association between CSR disclosure and information asymmetry apply to my sample. I then split CSR disclosure into its three components and analyse their association with information asymmetry individually. Secondly, to ascertain the extent of the association between CSR disclosure and information asymmetry for firms that are more exposed to environmental, social, and governance issues, I split my sample into two subsamples. Firms that are the most exposed to either environmental, social, or governance issues and firms that are the less exposed to each issue. The association between CSR disclosure (as well as the three individual components of CSR) and information asymmetry is then evaluated for each subsample.

The association is estimated using three different proxies for information asymmetry to ensure the robustness of the findings. The results' robustness is also examined by considering the endogeneity that can affect the association between CSR disclosure and information asymmetry. Chapter two's main findings show that CSR disclosure as a whole and environmental disclosure, social disclosure, and governance disclosure considered separately reduce information asymmetry. The negative association between CSR disclosure and information asymmetry is stronger for firms that are more sensitive to environmental and governance issues. The association between CSR disclosure (as well as environmental disclosure, social disclosure, governance disclosure) and information asymmetry holds after considering the issue of endogeneity.

Chapter three explores the influence of culture on the association between CSR disclosure and information asymmetry through a cross-country analysis. National culture is one of the vital environmental features that acts as a driving force for systematic differences in managerial behavior as well as stakeholders' orientation. Cultural norms and beliefs are powerful forces affecting the actions, perceptions, and characters of the people. Numerous studies rely on differences in national cultures to explain differences in reporting practices (Han, Kang, Salter, & Yoo, 2010). Therefore, the quality of CSR disclosure and the association between CSR disclosure and information asymmetry does not depend only on the magnitude of such disclosure. It also depends on how cultural values and norms push the management to be transparent and provide informative disclosures. Following these lines, Chapter three investigates how culture measured by the Hofstede's six cultural dimensions (namely power distance, individualism, masculinity, uncertainty avoidance, long-term orientation, and indulgence) impacts the association between CSR disclosure and information asymmetry. To the best of my knowledge, this study is the first one to examine the impact of culture on the association between CSR disclosure and information asymmetry.

To determine the extent of the association between CSR disclosure and information asymmetry mediated by the six cultural variables, I split my sample into two subsamples for each of the six Hofstede cultural dimensions. For each dimension, the first subsample includes the sampled firms with the lowest scores; the second one comprises the highest scores. The association between CSR disclosure and information asymmetry is then evaluated for each cultural dimension using the same three proxies for information asymmetry as in Chapter 2 (relative spreads, Amihud illiquidity index, and proportion of zero daily stock returns). Lastly, the robustness of the results is determined by considering the endogeneity likely to affect the association under study. The results show that cultural dimensions do not systematically impact CSR disclosure's informativeness. The negative association between CSR disclosure and information asymmetry is stronger only for companies operating in countries with high indulgence. The level of power distance, individualism, masculinity, uncertainty avoidance, and long-term orientation do not impact the association between CSR disclosure and information asymmetry systematically.

Chapter four investigates the consequences of the EU non-financial reporting directive (NFRD) by exploring the directive adoption impact on CSR disclosure and information asymmetry. The

chapter is motivated by the fact that CSR disclosure was mainly voluntary in the EU before the directive adoption. Voluntary disclosure differs from mandatory disclosure in many ways. Firstly, voluntary disclosure is an endogenous choice of the firm. Firms that disclose voluntarily decide to disclose or not, and they choose what they disclose. The adoption of a regulation aimed at mandating disclosure is an exogenous shock to the firm. In contrast, firms that are mandated to disclose CSR information are subject to several constraints relating to the timing, nature, content, and disclosure format. Consequently, the predicted association between information asymmetry and CSR disclosure may differ from before the directive adoption. Therefore, NFRD provides an interesting setting to investigate how regulation can enhance disclosure and how mandating disclosure may help mitigate information asymmetry. Since the transposition of NFRD has occurred recently, this study is the first one to explore its impacts on both the level of disclosures and information asymmetry.

I proceed as follows. First, I determine the effective NFRD adoption date in each EU member state since EU countries transposed the directive into their respective national laws at different dates. Second, I define a control sample to match the EU treatment firms that adopted NFRD with non-EU control firms that did not adopt the directive. Third, I use a difference-in-difference approach to compare the changes in disclosure levels and the changes in information asymmetry for treatment firms and control firms around the NFRD adoption dates. This comparison enables to control for the simultaneous factors not related to the NFRD mandate that may affect the magnitude of disclosures and information asymmetry.

The control sample consists of US companies from the S&P 1500. The control firms are matched with the treatment firms based on industry and size (the I/S method). The directive gives flexibility to the member states in setting the minimum disclosure requirement. Several member states raised the minimum limit and made the disclosure requirements more stringent while other transposed NFRD at the minimum. Following this, I split my sample into high requirement countries and low requirement countries. I then investigate the impact of NFRD adoption on CSR, environmental, social, and governance disclosure for both subsamples. Lastly, I examine the impact of NFRD adoption on non-financial disclosure for low disclosing firms (firms with low CSR disclosure before the NFRD adoption) compared to high disclosing firms (firms with high CSR disclosure before the NFRD adoption).

The primary findings suggest that NFRD adoption impacted CSR disclosure positively. The adoption of NFRD is associated with increased CSR disclosure, resulting in less information asymmetry. The increase in CSR disclosure as a whole and in environmental and governance disclosure considered independently resulting from the NFRD adoption reduced information asymmetry significantly. Further, the more rigorous the disclosure requirements, the stronger the growth in CSR, environmental, social, and governance disclosure. The directive's impact on disclosure is stronger for the lowest disclosing firms before the directive adoption. Lastly, and surprisingly, high disclosing firms before the NFRD adoption lowered their environmental and governance disclosure to match the directive requirements after its adoption. NFRD had a favourable impact on the information environment of EU firms. The directive adoption resulted in a significant decrease in information asymmetry.

1.7 Main Contributions of the Research

My thesis adds to the scarce extent of literature on CSR disclosure's capital market impacts in several ways. First, I add to the limited empirical research on the consequences of CSR disclosure by extending Wang et al. (2016), Axjonow et al. (2016), Dhaliwal et al. (2014) & (2012). Whereas these authors focused on the consequences of CSR disclosure as a whole, I investigate CSR disclosure as a whole as well as its three components (environmental disclosure, social disclosure, and governance disclosure) considered individually.

Second, while Wang et al. (2016) focus on the mean effect of CSR disclosure on information asymmetry, I examine how the association between CSR disclosure and information asymmetry depends upon the firm's exposure to environmental, social, and governance issues.

Third, I extend the literature on implications of CSR disclosure by assessing the individual impact of the three dimensions of CSR disclosure on information asymmetry for firms exposed to environmental, social, and governance issues (Lu, Shailer, & Yu, 2017; Plumlee, Brown, Hayes, & Marshall, 2015).

Fourth, I add to the literature on CSR engagement, CSR disclosure, and information asymmetry (Johnson & So, 2016; Lopatta, Buchholz, & Kaspereit, 2016; Chia-Wu & Ting-Shu, 2015; Wang & Li, 2016; Cho, Lee, & Pfeiffer Jr, 2013) by focusing on European companies, which have been

understudied in the past. The results obtained are robust even after controlling for endogeneity, an essential dimension often ignored in past studies.

Till to date, several studies have shown the impact of the Hofstede cultural dimensions on CSR practices and disclosures (Feng, Kang, & Nabar, 2017; Gallén & Peraita, 2018). To the best of my knowledge, this study is the first to explore the mediating impact of the Hofstede cultural dimensions on the association between CSR disclosure and information asymmetry. It is imperative to explore this impact since national cultural features influence both the management's reporting norms and the investors' orientation. I, therefore, add to the limited empirical research on the consequences of CSR disclosure by investigating the association between CSR disclosure and information asymmetry mediated by Hofstede's cultural dimensions. Two cultural dimensions, long-term orientation and indulgence, incorporated only recently by Hofstede (2010), have been rarely analysed in the CSR disclosure literature. This thesis provides evidence on the impact of these two cultural dimensions on the association between CSR and information asymmetry.

Lastly, as the NFRD adoption is a recent phenomenon, the investigation of its capital market consequences and its usefulness to market participants is still limited. This study is the first to examine the consequences of NFRD adoption at the EU level to the best of my knowledge. Therefore, my research contributes to the almost non-existent literature on NFRD adoption. It shows how such regulations can improve disclosure leading to decreased information asymmetry and, therefore, help investors make better-informed decisions.

The rest of the thesis is organized as follows. The first study, titled 'Corporate Social Responsibility Disclosure and Information Asymmetry: A European Perspective,' is presented in chapter two. The second study, 'Impact of National Culture on the Association between Corporate Social Responsibility Disclosure and Information Asymmetry: A Cross-country Analysis,' is detailed in chapter three. Chapter four presents the third study titled 'Does Good Quality Disclosure Need Good Quality Regulation? The case of 2014/95/ EU Directive'. Chapter five summarises and discusses the main findings. In the same chapter, the findings are placed in a broader context, limitations are explored, and implications and suggestions are proposed for future research.

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Chapter 2: Corporate Social Responsibility Disclosure and Information Asymmetry: A European Perspective

ABSTRACT

The chapter investigates how corporate social responsibility (CSR) disclosure and each of its three dimensions (environmental, social, and governance disclosure) are associated with information asymmetry (IA) for a sample of 1000 publicly listed European companies from 2009 to 2017. The study also tests whether the strength of this association differs depending on the firms' exposure to environmental, social, and governance issues. The Bloomberg ESG disclosure score is used as a proxy for CSR disclosure. Relative bid-ask spreads, the Amihud illiquidity measure, and the proportion of zero daily stock returns are used as proxies for information asymmetry. The results show that CSR disclosure as a whole, and environmental disclosure (ENV), social disclosure (SOC), and governance disclosure (GOV), considered individually, reduce information asymmetry regardless of the metric for information asymmetry. The association between CSR disclosure and information asymmetry is stronger for firms sensitive to environmental and governance issues. Social sensitivity failed to mediate the association between CSR and social disclosure and information asymmetry. The association between CSR disclosure (environmental disclosure, social disclosure, governance disclosure) and information asymmetry holds even after controlling for potential endogeneity.

Keywords: Information asymmetry, Voluntary disclosure, Bid-Ask spreads, Amihud, Zeros, Corporate social responsibility disclosure, Environmental disclosure, Social disclosure, Governance disclosure, Bloomberg ESG disclosure Score

2.1 Introduction

Companies provide a wide range of benefits to society, such as employment or production outputs, and contribute to various social and environmental issues. Many of the worst ecological disasters, such as the Gulf of Mexico oil spill or BP oil spill, have been caused by companies. Therefore, stakeholders are increasingly sensitive towards the social and environmental impacts of firms' activities. Information about CSR initiatives and performance is essential to the firm's stakeholders in general and investors in particular. For instance, asset managers in the US have approximately $8.72 trillion assets identified as socially responsible investments as of 2016, suggesting CSR performance impacts investors' wealth (US SIF, 2016). Companies are not just required to be good CSR performers, but the results of their CSR initiatives need to be communicated, notably in the form of sustainable reports. According to Cohen et al. (2011), investors actively seek such reliable information through public or private channels and use that information in their decision-making.

According to Modigliani & Miller (1963), information is symmetric if investors have access to the same information as the firm's management. However, managers have more and better information than investing and non-investing stakeholders. Thus, CSR disclosures have vital implications for information asymmetry as the managers know more about the firms' plans, goals, and objectives than outsiders. Making private information public CSR disclosure may signal a firm's prospects (Lys, Naughton, & Wang, 2015). Due to CSR disclosure, investors become more informed about the impact of the firm's operations on the environment and society, resulting in better and more informed decisions. CSR disclosure has, therefore, significant implications for information asymmetry between management and stakeholders and among stakeholders themselves. CSR reporting is then a key channel through which stakeholders, and notable investors, may infer management's private information about the firm's prospects.

This chapter aims to assess how CSR disclosure is associated with information asymmetry (IA). More specifically, I use three components of CSR disclosure: environmental, social, and governance disclosure and investigate how they impact IA globally and individually. My motivation for focusing on this association is that CSR engagement and disclosure around the world are at a different pace. This pace varies from region to region up to the point that it differs

from one firm to another. Cultural, institutional, and regulating differences impact financial and disclosure practices. For example, for French firms, as compared to Anglo-American ones, capital concentration is relatively higher. Investor protection is stronger in the US than in France. Before adopting the EU non-financial reporting directive, CSR disclosures were mostly voluntary in Germany. Simultaneously, there were specific guidelines or regulations for disclosing non-financial information in other European countries like France, the UK, and the Netherlands.

Considering such differences, it is valuable to study whether the results obtained from studies using US samples hold for European countries. The Responsible Competitive Index (RCI) 2007 shows that top-performing CSR countries are domiciled in Europe. Furthermore, various regulations and guidelines about CSR disclosure have been proposed in the European territory, such as the Global Reporting Initiative guidelines (1997), Nouvelles Régulations Economiques (New Economic Régulations), Danish CSR Reporting Statutory Requirement, Italian National Action Plan 2012-2014. Thus, in contrast to the studies that focused on the association between CSR disclosure and IA, mostly for US companies, I empirically evaluate this association for a substantial sample of European companies previously overlooked.

As the first step in my evaluation, I determine whether the outcomes in prior research on CSR disclosure and IA's negative association apply to my sample. More interestingly, I split CSR disclosure into its three components to analyse their association with IA individually. Secondly, I ascertain the extent of the association between CSR disclosure and IA for firms most exposed to environmental, social, and governance issues. I split my sample into subsamples to consider separately firms that are the most exposed to environmental, social, and governance issues to firms that are the less exposed to such issues. Each subsample is then evaluated for the association between CSR disclosure (as well as the three individual constituents of CSR) and IA. The association is estimated along with three proxies for IA. Lastly, the robustness of the results is determined by considering the endogeneity that can affect the association between CSR disclosure and IA.

The Bloomberg ESG disclosure index is used as a proxy for CSR disclosure. Various CSR disclosure indices could have been used, such as the Dow Jones Sustainability North America Index (DJSI) or KLD STAT. However, I preferred the Bloomberg ESG scores because they are personalized to be relevant to the industry. Certain items are taken into account only for some

sectors. ‘CO Emission’ is used only to calculate the scores of companies operating in the oil and gas and chemical sector. Companies operating in other sectors are not scored negatively for not disclosing this item. Similarly, ‘Phones Recycled’ is taken into account for telecommunication companies only. Thus, the scores show the quantity, quality, and relevance of CSR disclosure for each company under study. The rest of the data is collected from Datastream.

I find a negative association between CSR disclosure and IA. This result is consistent with the findings of Hapsoro & Zidni (2015). I also find that environmental disclosure, social disclosure, and governance disclosure reduce IA along the three proxies. The association between CSR disclosure and IA is stronger for firms sensitive to environmental and governance issues. Social sensitivity failed to mediate the association between CSR disclosure and IA as well as social disclosure and IA. The association between CSR disclosure and IA holds after controlling for potential endogeneity.

My research adds to the scarce extent literature on CSR disclosure's capital market impacts in several ways. First, I add to the limited empirical research on the consequences of CSR disclosure by extending Wang et al. (2016), Axjonow et al. (2016), Dhaliwal et al. (2014) & (2012). Whereas these authors focused on the consequences of CSR disclosure as a whole, I consider each of the three dimensions of CSR disclosure: environmental disclosure, social disclosure, and governance disclosure. Second, while Wang et al. (2016) focused on analyzing CSR disclosure's mean effects, I examine whether CSR disclosure and IA's association depends upon firms’ exposure to environmental, social, and governance issues. Third, I extend the literature on implications of CSR disclosure by assessing the individual impact of each of the three dimensions of CSR disclosure on IA for firms exposed to environmental, social, and governance issues (Lu, Shailer, & Yu, 2017; Plumlee, Brown, Hayes, & Marshall, 2015). Fourth, I add to the literature on CSR engagement, CSR disclosure, and IA (Cui, Jo, & Na, 2018; Lopatta, Buchholz, & Kaspereit, 2016; Chia-Wu & Ting-Shu, 2015; Wang, Cao, & Ye, 2016; Cho, Lee, & Pfeiffer Jr, 2013) by extending the sample to European companies, which have been understudied in the past.

The rest of the chapter is organized as follows. Section 2.2 reviews the literature, proposes a theoretical framework, and develops the hypotheses. Section 2.3 describes the sample and research design. Section 2.4 presents and discusses the empirical findings. Section 2.5 concludes the chapter.

2.2 Literature Review, Theoretical Framework and Hypotheses Development

2.2.1 Literature Review

One of the most concerned issues in market microstructure studies is the problem of asymmetric information among market participants and corporate stakeholders. IA appears where one investor or several investors has/have private information about an enterprise's value while most of the investors have only publicly available information. Disclosure essentially turns private information into public information and may therefore reduce IA. IA has a fundamental role in matching economic theories with observable economic behavior (Johnson & So, 2018). Insufficient corporate disclosure may create inefficiencies in capital markets resulting in inefficient resource allocation (Yoon, Ciganek, & Zo, 2011).

The literature shows that CSR disclosure is beneficial to firms in many ways. Ioannou & Serafeim (2014) conducted a study on a large sample of publicly traded US firms with a sample period of 15 years. They find that firms with significant CSR disclosure achieve higher analyst following and receive more favourable analysts' recommendations. Dhaliwal *et al.* (2012), with an international sample from 31 countries, find that firms with higher CSR ratings attract dedicated analyst coverage. They also show that analysts' forecast errors and dispersion decrease with the magnitude of CSR disclosure. In a study conducted from 1991 to 2010 for 1,585 unique firms, Attig et al. (2013) determined that CSR disclosure improves credit rating. They further argue that high CSR firms' prolific Wall Street coverage attracts more significant investor and media attention, which increases the demand for information disclosure. Jo & Harjoto (2012), in a study employing a large and extensive US sample of 2,952 companies for the period 1993-2004, conclude that CSR disclosure encourages more effective corporate governance and higher firm value.

Cheng *et al*. (2014), utilizing Thomson Reuters ASSET4 for 2,439 public listed firms from 2002-2009, find that CSR engagement makes financial constraints less severe and access to financial markets easier. They show that credit rating agencies tend to award relatively high ratings to high CSR firms. They argue that firms with better CSR performance face lower capital constraints. Jo

& Harjoto (2012) attribute the negative relation between CSR performance and capital constraints to improved stakeholder engagement. This engagement increases mutual trust and cooperation and reduces potential informational opacity and agency costs by pushing managers to adopt a long-term rather than short-term orientation. Recently, using a dataset of Australians listed firms from 2004 to 2014, Nguyen *et al.* (2018) conclude that CSR performance is negatively associated with IA. They further noticed that the relationship is stronger for larger firms and firms with more substantial market power. Jo & Kim (2008) indicate that improved corporate transparency through frequent voluntary disclosure reduces information asymmetry between insiders and outsiders.

2.2.2 Theoretical Framework and Hypotheses Formulation

The association between CSR disclosure and IA does not have any universally agreed rationale behind it. I propose a stakeholder theory-based association between CSR disclosure and IA for this study. Emshoff & Freeman (1978) put forward a basic philosophy to reinforce the stakeholder theory. They support the idea that there should be global cooperation among corporations and the whole stakeholder group network. Stakeholder theory gained importance since the mid-1980s from Freeman & Reed (1983). Freeman's (1984) work was highly influential in making the firms realize that they should also consider external stakeholders other than the customary ones like shareholders, employees, customers, and suppliers. Thus, the stakeholder theory broadens the groups interested in the firm's operations, including NGOs, professional associations, and public administrations (Malik, 2015). Different stakeholders have different expectations from the firm. The way firms react to stakeholders' expectations is vital to the firm's success in the short and long run.

The stakeholder theory includes moral and ethical values serving as guidelines for the managers to help firms attain their social legitimization. Firms operating with such values would show a sense of acknowledgement toward addressing the silent stakeholders' needs, including the environment and local communities (Simmons, 2004). The stakeholder theory gives an idea of how we should think about the organization's responsibilities by proposing that without the satisfaction of all stakeholders' needs, it is impossible to maximize shareholders' wealth, as explained by Foster & Jonke (2005). They posit that the likelihood of a firm successfully serving its shareholders may be affected by the other stakeholders. Papasolomou et al. (2005), in Cypriot

businesses, used the stakeholder theory with the intuition that stakeholders are affected by or affect the businesses and, hence, can be regarded as levying various responsibilities on them. Thus, the stakeholder theory forms the basis of shareholder wealth maximization even though CSR disclosure might not be directed primarily towards them.

Firms are required not only to perform better on CSR avenues, but the effects of such activities and processes need to be communicated systematically in the shape of CSR reports. Companies operating in stakeholder-oriented countries tend to disclose more and better-quality CSR reports than companies operating in countries less focused on social issues (Van der Laan Smith, Adhikari, & Tondkar, 2005). In line with the signaling theory, firms can benefit from decreased IA by being good CSR performers and appropriately communicating CSR information. Firms would be more willing to disclose their CSR activities and performance if CSR involvement increases the public value and shareholders' wealth. Increased CSR performance leads to increased voluntary CSR disclosure, resulting in increased firm transparency, reducing IA, and positively impacting stock prices.

Cui *et al.* (2018) show an inverse association between CSR engagement or disclosure and several proxies for IA after controlling for various firm-specific characteristics. Using a sample of MSCI World Index U.S. listed firms and Global Engagement Service (GES) as a source for industry and firm-level CSR rating, Lopatta *et al.* (2016) find that firms with higher CSR scores create investor confidence and benefit from lower IA. With a sample of companies from Dow Jones Sustainability North America Index (DJSI) with 764 firm-year observations spanning over the period from 2002 to 2010, Chia-Wu & Ting-Shu (2015) point out a significant and negative association between CSR and bid-ask spreads. This suggests that capital markets respond to CSR disclosure with smaller bid-ask spreads.

Wang *et al.* (2016) analyse the impact of mandatory CSR disclosure on IA in a quasi-natural experiment in China and conclude the negative and significant effect of mandatory CSR disclosure on IA. Cho *et al.* (2013), with an initial sample of 51,086 firm-year observations from Compustat and CRSP covering seven years from 2003 to 2009 and using CSR score from KLD STAT, find a negative association between CSR performance and bid-ask. Nguyen *et al.* (2018) conclude a negative relationship between CSR and IA for a sample of publicly listed Australian firms. Following the theoretical justifications supported by this stream of research, I hypothesize:

H1: CSR disclosure is negatively associated with information asymmetry.

According to Clark *et al.* (2014), 85% of economic, social, and governance studies focus only on one dimension of CSR performance, not all three at the same time. As mentioned earlier, CSR is related to social, environmental, and governance issues. I am interested in disentangling the effect of CSR disclosure on IA and determine how each of these three aspects of CSR impacts IA individually.

An extensive literature shows that environmental disclosure impacts the appreciation of a firm's underlying risk. Moreover, environmental disclosure conveys value-relevant information to stock market participants and influences their behaviour. Hapsoro & Zidni (2015) study the impact of CSR disclosure on bid-ask spreads, trading volume, and share price volatility. They conclude that the effect of overall CSR disclosure and, more specifically, two of its dimensions (environment, human rights) on bid-ask spreads is negative and significant. Aerts *et al.* (2008) find in their study of European and North American firms that environmental disclosure is related to a decrease in analysts' forecast dispersion. Therefore, the extant literature on environmental disclosure leads me to hypothesize:

H1A: Environmental disclosure is negatively associated with information asymmetry.

Cormier *et al.* (2009), in their study of Canadian firms, show that social disclosure increases the earnings valuation multiple of companies, thus resulting in a lower cost of equity capital. Individual investors are interested in the social information disclosed in annual reports and align with the signaling theory. Using the Bloomberg ESG score as a proxy for CSR disclosure of American versus European firms, Eccles *et al.* (2011) conclude that equity investors use social information to gauge management quality. Following the legitimacy theory, a firm's existence depends upon the fact that its values are in harmony with the values of the society in which it operates. There is a sort of social contract between the firm and the society. According to this theory, firms are therefore compelled to disclose any information likely to make them legitimate and change the external users' opinion, which would, in turn, reduce IA. Thus, I hypothesize:

H1B: Social disclosure is negatively associated with information asymmetry.

Corporate governance, the third aspect of CSR disclosure, is found in prior literature to be associated with lower borrowing costs and relatively smaller credit spreads. Different constituents

of corporate governance have proved to have a significant impact on the cost of debt. Several researchers have studied the impact of governance on a firm's value. Bebchuk *et al.* (2010) notice that good corporate governance boosts stakeholders' confidence, resulting in higher firm value. Similar results are obtained by Cormier *et al.* (2010) for a sample of Canadian firms. Exploring the impact of corporate governance on IA between investors and managers shows that the audit committee size and board size, and corporate governance disclosure level reduce IA. Bauwhede & Willekens (2008) conclude that companies benefit from decreased IA by undertaking corporate governance-related disclosures. Because poor corporate governance may lead to management's misconduct often detrimental to the interests of firm's stakeholders and shareholders, and because governance disclosure is effective in mitigating such misconduct, I hypothesize:

H1C: Governance disclosure is negatively associated with information asymmetry.

As CSR disclosure is expected to have a significant negative impact on IA, it is imperative to investigate the conditions that might intensify or diminish the association between CSR and IA. An examination of past studies shows that the level of CSR involvement and disclosure varies significantly across countries and industries depending on regulatory environments, goods produced, and social standards. In China, Wang et al. (2016) provide evidence showing that CSR disclosure and IA's negative association is more noticeable for firms with a more inadequate information environment, greater political or social risks, and better CSR reporting quality. Cui et al. (2018), in their study on the effects of CSR on IA, conclude that the negative association between CSR and IA is amplified for high-risk firms, i.e., firms operating in a high-risk industry or with a high risk of failure. This can be interpreted as extra efforts undertaken by the management to disclose more CSR information to build the firm's reputation, consequently reducing IA.

According to the stakeholder theory, firms should focus on their stakeholders' needs. One way of doing it is to be more transparent. Therefore, good CSR performers should disclose information on their CSR performance in a useful way. The inclination to showcase as a good performer is intensified for firms highly exposed to environmental, social, and governance issues. To reduce the uncertainty faced by their stakeholders, and notably shareholders, firms strongly exposed to environmental, social, and governance risks should disclose more. Consequently, I hypothesize:

H2: The strength of the association between CSR disclosure and information asymmetry depends on the firm's exposure to environmental, social, and governance issues.

2.3 Sample and Research Design

To assess whether and how IA and CSR disclosure are associated, I use regression of IA metrics against a metric of the magnitude of CSR disclosure and various control variables. This section describes my research design and the variables under study.

2.3.1 Metrics for Information Asymmetry

IA is not directly observable. Therefore, it is generally captured using proxies, which are also affected by several market-related factors. This chapter, as well as subsequent chapters, uses the following three metrics for IA (Jayaraman, 2008; Amihud, 2002; Liu, Luo, & Wang, 2017)

- Bid-Ask Spreads

The bid-ask spread refers to the difference between buyers' price and sellers' price for a given security. Bid-ask spreads consist of three components: an order processing component, an inventory component, and an adverse selection component. The adverse selection component rewards market makers, and more generally liquidity providers, for transacting with better-informed traders. The higher the likelihood of trading with better-informed traders, the higher the bid-ask spreads' adverse selection component, and the higher the information asymmetry. Therefore, a greater degree of IA results in wider bid-ask spreads. Consistent with prior works, such as Jayaraman (2008), I calculate relative spreads (RSPRD) as follows. First, I compute daily relative spreads by dividing daily closing bid-ask spreads by the mean daily midpoints. Then, I compute the mean of relative spreads for the year by dividing the sum of daily relative spreads by the number of trading days in a year.

$$\text{RSPRD}_{i,y} = \left\{ \sum \frac{SPR_{i,t}}{\frac{BID_{i,t} + ASK_{i,t}}{2}} \right\} / n$$

where $\text{RSPRD}_{i,y}$ is the relative spread of year 'y' for stock 'i', $BID_{i,t}$ is the last bid price of day 't' for stock 'i', $ASK_{i,t}$ is the last ask price of day 't' for stock 'i', 'n' is the number of trading days in year y.

- Amihud illiquidity measure

In response to addressing the potential problems of providing a liquidity measure for all markets, Amihud (2002) put forward a price impact measure, the daily price response associated with a euro of the trading volume. The Amihud metric is determined by scaling the absolute value of daily stock returns by trading volume in euro. This metric is averaged yearly by dividing the sum of daily relative price responses by the number of trading days in a year. This estimator's benefit is that it can be calculated for any day, even if there is no change in price. The Amihud illiquidity index is measured as:

$$ILLIQU_{i,t} = \frac{\sum_{1}^{n} \frac{|R_{i,t}|}{DVol_{i,t}}}{n}$$

where $R_{i,t}$ is the return of stock 'i' on day 't,' $\text{DV0}L_{i,t}$ is the daily euro trading volume of stock 'i' on the day 't,' n represents the number of trading days during the year under consideration.

- Zero daily stock returns

The intuition behind this measure is that if available information for a given stock is not sufficient to offset transaction costs, investors do not trade. As a result, the observed stock return is zero (Liu, Luo, & Wang, 2017). The zero daily return index (Zeros) is measured by dividing the number of days with zero returns by the total number of trading days in a year.

2.3.2 Factors affecting the Measures of Information Asymmetry

Bid-ask spreads, the Amihud illiquidity metrics and the proportions of zero returns are affected by numerous variables other than disclosure quality. The most usual explanatory variables for these metrics are price volatility and trading activity and, to a lesser extent, firm size, stock price level, and firm profitability (Yoon, Ciganek, & Zo, 2011), (Cho, Lee, & Pfeiffer Jr, 2013), Chia-Wu &

Ting-Shu (2015); Michaels & Grüning (2017). Therefore, I use standard deviations of stock returns, trading volumes scaled by the number of shares outstanding, market values of equity, closing stock prices, and operating profits scaled by total assets as control variables.

2.3.3 Metrics for CSR Disclosure

I use the Bloomberg ESG disclosure scores as proxies for CSR disclosure. Despite being new, these scores have been used in numerous studies (Utz & Wimmer, 2014; Arayssi, Dah, & Jizi, 2016; Nollet, Filis, & Mitrokostas, 2016; Qiu, Shaukat, & Tharyan, 2016; Tamimi & Sebastianelli, 2017).

Bloomberg assigns scores to companies based on quantitative and ESG policy-related data to capture their ESG disclosure's completeness. Bloomberg publishes data using more than 700 indicators for more than 10,000 publicly listed companies worldwide. Some of the environmental, social, and governance indicators include Direct CO2 emissions, hazardous waste, discrimination, human rights policy, health, safety policy, fatalities, community spending, independent directors, shareholders' rights, and takeover defense. The data themes of Bloomberg ESG disclosure are divided into the environment, social, and governance scores. Table A shows a few ESG metrics tracked by Bloomberg to reach a final ESG disclosure score based on environmental, social, and governance scores (Tamimi & Sebastianelli, 2017). Table B shows a few examples of Bloomberg's units of measurement for environmental, social, and governance metrics.

<Insert Table A>

<Insert Table B>

The disclosure scores are assigned by Bloomberg using data points gathered through company websites, sustainability reports, and annual reports (Qiu, Shaukat, & Tharyan, 2016). As mentioned earlier, disclosure scores are customized according to the characteristics of each firm. Certain items are considered only for some industries or some firms. 'CO2 Emission', for instance, is used only for firms rejecting carbon dioxide in the atmosphere. Companies that are not concerned by CO2 emissions are not scored negatively for not disclosing this item. Similarly, 'paper recycled' is taken into account only for firms that use paper extensively (Qiu, Shaukat, & Tharyan, 2016). Furthermore, the same sector's data points are given different weights depending

on their significance within each group. 'Direct CO emission' would be given higher weight than the other data points in the environment class (Qiu, Shaukat, & Tharyan, 2016). Thus, the scores show both the quantity and quality of CSR disclosure.

2.3.4 Baseline Model

To test hypotheses H1, I use the following baseline model.

$$IA_{i,t} = \beta_0 + \beta_1 DISC_{i,t} + \sum_k \gamma_k CONTROL_{k,i,t} + \text{Fixed effects} + e_{i,t} \quad \text{Eq-1}$$

IA stands for information asymmetry and is represented by the three proxies described above: relative spreads ($RSPRD_{i,t}$), the Amihud illiquidity measure ($Amihud_{i,t}$) and the proportion of zero returns ($Zeros_{i,t}$). DISC stands for the disclosure and is represented by the four disclosure scores mentioned above: $ESG_{i,t}, ENV_{i,t}, SOC_{i,t}, GOV_{i,t}$. $ESG_{i,t}$ denotes the overall disclosure scores. $ENV_{i,t}$ stands for environmental disclosure scores. $SOC_{i,t}$ is used for social disclosure scores. $GOV_{i,t}$ reflects governance disclosure scores. Subscripts i and t denote firms and years, respectively.

$CONTROL_{k,i,t}$ are the control variables that include $Size_{i,t}$ [Size of the firm measured by the log of the market value of the equity 'i']; $StockPrice_{i,t}$ [stock price measured by the log of the daily closing stock price of a firm 'i']; TRADVOLU [Daily trading volume measured by the log of the average daily trading volume (number of traded stocks) scaled by the number of shares outstanding]; $Risk_{i,t}$ [stock return volatility calculated by taking the standard deviation of the daily stock returns of a firm 'i']; $RIC_{i,t}$ [Return on firm's invested capital measured by operating profit scaled by total assets]. Fixed effects are country, industry, and time effects.

2.3.5 Sample

My initial sample contains the Bloomberg ESG universe of 1,458 publicly quoted European companies. Four hundred fifty-eight firms were dropped on the grounds of data unavailability. Therefore, my final sample consists of 1,000 European companies with 9,000 firm-year observations from 2009 to 2017. It is an unbalanced panel since data on certain variables are not available for the entire period. The breakdown of the sample by country and industry is given in Table 2.1, panel A and panel B, respectively. The sample is divided into 21 industries and 33

countries. The companies are categorized into industries using GICS industry codes. The data on all variables except ESG are obtained from Datastream. ESG data is taken from Bloomberg. Daily observations are winsorised at the 0.05 level to alleviate the effect of extreme values (See the summary statistics to know the extremity of the values).

<Insert Table 2.1>

I break down my sample into firms that are most sensitive to environmental issues (ES) and firms that are less sensitive to environmental issues (ELS). I follow the usual criterion based on industry codes to split my sample into ES and ELS (Cho & Patten, 2007; Chatterji & Toffel, 2010; Barbu, Dumontier, Feleagă, & Feleagă, 2014). The ES firms, those with strong environmental exposure, are the ones with primary industry SIC codes of 10YY (metal mining), 12YY (coal and lignite mining), 13YY (oil exploration), 26YY (paper), 28YY (chemical and allied products), 29YY (petroleum refining), 32YY (glass), 33YY (metals), 45YY (air transportation). My sample has 247 ES and 753 ELS firms.

Different economies are at different stages of development, with varying sophistication in civil society. Companies are also at different stages of corporate responsibility maturity. Likewise, the stakeholder demand for CSR can vary substantially across nations, regions, and business lines. I use the same definition of the socially sensitive firm as the one used by Sweeney & Coughlan (2008) and Garcia *et al.* (2017). Sweeney & Coughlan (2008) emphasize that firms focus on specific stakeholders more than others depending on the industry in which they operate. The industries whose primary stakeholders are customers, employees, communities, and NGOs are socially sensitive. The companies operating in tobacco, gambling, alcohol, adult entertainment, weapons, nuclear, cement, biotech, financial services, pharmaceutical, telecommunications, and retail businesses are more sensitive to social pressure. My sample has 141 firms that are more sensitive to social pressure (SS) while 859 firms less sensitive to social pressure (SLS).

Jensen & Meckling (1976) identified two agency costs: agency cost due to conflicts of interest between management and shareholders and agency cost due to conflict of interest between shareholders and creditors. Later Jensen (1986) suggested that debt financing can help mitigate conflicts of interest between managers and shareholders by reducing free cash flows available to managers. Managers may overinvest and expand the firm's resources beyond optimal level with free cash flows at their disposal. As debt financing results in less free cash flow on account of

timely interest payment to creditors, debt financing may curb the management's propensity to overinvest. Furthermore, the creditors may take the management to court for bankruptcy if managers do not abide by their regular interest payment promises. An event of bankruptcy is not favourable both for managers and owners. The use of debt thus aligns the interest of managers and shareholders, reducing the first type of agency problems.

A firm's debt works as a corrective device to reduce managerial discretion and, consequently, align shareholders' and managers' interests. Leverage and, in particular, bank debt are key factors in mitigating conflict of interest between shareholders and managers. Thus, it is safe to assume that firms with greater debt financing in their capital structure are less exposed to agency problems. The mean leverage (Debt/ Asset ratio) for my sampled firms is 0.26. Firms with leverage less than or equal to 0.26 are marked as sensitive to governance issues (GS), while those with leverage higher than 0.26 are less sensitive to governance issues (GLS). Following this criterion, the sample has 541 GS firms and 459 GLS firms. Table 2.1 panel C gives the sample breakdown by exposure to environmental, social, and governance issues.

2.4 Empirical Results

2.4.1 Univariate Results

The summary statistics of the main variables are shown in Table 2.2. CSR disclosure's GOV dimension has a mean value of 49.84, which is the highest among the three dimensions of CSR disclosure. This shows that the sample firms are most transparent regarding disclosure of information about governance-related issues such as the number of directors on the company's board, CEO gender, percentage of women employed. Surprisingly, the environmental component has the lowest mean score of 28.02 among the three dimensions even though many countries in Europe have already put forward various regulations on environmental issues. A possible explanation is that such European regulations are not adequately enforced, resulting in low environmental disclosures. Last, the minimum and maximum value of the overall ESG scores is 0.8 and 80.5, respectively, which shows substantial heterogeneity. The sample follows the same heterogeneity along the ENV, SOC, and GOV dimensions.

<Insert Table 2.2>

Table 2.3 panel A gives the correlation coefficients between the explanatory variables. The table shows that the variables are not correlated to the extent that would alter the association's strength and direction between the variables of interest (ESG, ENV, SOC, GOV) and the dependent variables (RSPRD, Amihud, Zeros). There is a high degree of correlation between ESG and its other three dimensions as they stem from the company's CSR disclosure and are related to each other. The high correlation among the environmental, social, and governance disclosure indicates that companies that disclose the most do not disclose rich information on one dimension only but on all other dimensions.

<Insert Table 2.3>

Variance inflation factor (VIF) test rules out the effect of multi-collinearity between the variables involved in our regressions. The mean VIF of 1.54, as evident from table 2.3 panel B, shows that multi-collinearity is not a crucial issue.

2.4.2 Multivariate Results

Panel A and Panel B of Table 2.4 show the results of Eq-1. Overall, 12 models are utilized to test the association between ESG (ENV, SOC, GOV) and IA (RSPRD, Amihud, Zeros). It is clear from the results that the coefficients of the variables of interest, i.e., ESG, SOC, and GOV scores, are negative and statistically significant along all three proxies of IA. The coefficient of ENV is negative but insignificant only when Zeros is used to measure IA. It is negative and significant with RSPRD and Amihud. The overall results validate my hypothesis H1. Management can benefit from a decrease in the information gap with investors by undertaking more CSR disclosure. This is true for each dimension of CSR disclosure. Environmental disclosure, social disclosure, and governance disclosure reduce IA.

<Insert Table 2.4>

To test hypothesis H2, I introduce a dummy variable for each CSR dimension, namely the ENV, SOC, and GOV components, to differentiate firms highly exposed from firms less exposed to any of these dimensions.

- Dummy variables ES, SS, GS take the value of 1 if the firm is more sensitive to environmental (ES), social (SS), or governance issues (GS), respectively.
- Interaction variables ESxESG, SSxESG, GSxESG capture the impact of CSR disclosure on IA for firms that are more sensitive to environmental, social, and governance issues, respectively.
- Interaction variables ESxENV, SSxSOC, GSxGOV capture the association between environmental, social, governance disclosure, and IA for firms that are most sensitive to environmental, social, and governance issues, respectively.

My baseline model takes the following form.

$$\mathrm{IA_{i,t}} = \beta_0 + \beta_1 \mathrm{DISC_{i,t}} + \beta_2 \mathrm{EXP} \quad + \beta_3 \mathrm{DISC_{i,t}} * \mathrm{EXP} \quad + \sum_k \gamma_k \mathrm{CONTROL_{k,i,t}} + \text{Fixed effects} + \mathrm{e_{i,t}} \quad \text{Eq-2}$$

IA stands for information asymmetry and is represented by the three proxies mentioned above: relative spreads ($\mathrm{RSPRD}_{i,t}$), Amihud's illiquidity measure ($\mathrm{Amihud}_{i,t}$) and Zeros ($\mathrm{Zeros_{i,t}}$). DISC stands for disclosure, $\mathrm{ESG_{i,t}}, \mathrm{ENV_{i,t}}, \mathrm{SOC_{i,t}}$, and $\mathrm{GOV_{i,t}}$ respectively. $\mathrm{ESG_{i,t}}$ is the Bloomberg corporate disclosure score; $\mathrm{ENV_{i,t}}$ the environmental disclosure score; $\mathrm{SOC_{i,t}}$ the social disclosure score; $\mathrm{GOV_{i,t}}$ the governance disclosure score. EXP stands for the ES, SS, GS dummies. Therefore, $\mathrm{DISC_{i,t}} * \mathrm{EXP}$ represents the interaction variables [ESxESG, SSxESG, GSxESG, ESxENV, SSxSOC, GSxGOV] that capture the association between CSR and environmental social, governance disclosure, and IA for firms that are the most sensitive to environmental, social, or governance issues, respectively.

β_1 shows the association between CSR, ENV, SOC, GOV disclosure, and IA for firms that are less sensitive to environmental, social, and governance issues, respectively. β_3 stands for the association between CSR, ENV, SOC, GOV disclosures, and IA for ES, SS, GS firms, respectively. They are the coefficients of interest.

The introduction of dummy variables in each regression results in 18 different regression models. Table 2.5 panel A shows the regression results aimed at testing the impact of the exposure to environmental issues. The interaction variables ESxESG and ESxENV show the impact of CSR disclosure and ENV disclosure on IA for firms the most sensitive to environmental issues (in our

case operating in environmentally sensitive industries). The coefficients on ESxESG and ESxENV show consistent results along the three measures of IA, with ESxESG being negative but insignificant only when Zeros is used as a proxy for IA.

The inconsistent values on ESG (which show the impact of CSR disclosure on IA for firms that are less sensitive to environmental issues) in models 1, 2, and 3 indicate that the association between CSR disclosure and IA is not significant for firms that are less exposed to environmental issues. On the other hand, the coefficients of ESxESG posit that CSR disclosure affects IA negatively and significantly for firms that are the most exposed to environmental issues, favoring hypothesis H2. The coefficients for the dummy ES are positive and often significant, indicating that firms that are the most exposed to the environmental issues have a higher degree of information asymmetry, such firms being seen as riskier.

The coefficients for ESxENV in models 4, 5 and 6, have negative and significant values suggesting that environmental disclosure reduces IA significantly for firms the most exposed to environmental issues, thus validating hypothesis H2. The coefficients for ENV disclosure are inconsistent, which again reinforces the hypothesis that the strength of the association between environmental disclosure and IA depends on how much the firm is exposed to environmental issues.

<Insert Table 2.5 >

Table 2.5 panel B shows the regression results for the social dimension of CSR disclosure. The interaction variables SSxESG and SSxSOC show the impact of CSR disclosure and SOC disclosure on IA for firms the most sensitive to social issues. The coefficients for ESG and SSxESG and those for SSxESG and SSxSOC are all insignificant along the three measures of IA. This invalidates hypothesis H2. The association between CSR disclosure and IA and SOC disclosure is not sensitive to social pressure even though the dummy SS coefficients are positive and significant, suggesting that firms exposed to social issues face greater information asymmetry.

Table 2.5 panel C shows the results for the governance dimension of CSR disclosure. The interaction variables GSxESG and GSxGOV show the impact of CSR disclosure and GOV disclosure on IA for firms the most sensitive to governance issues (in my case, firms with debt to asset ratio less than the mean value of the sample). The coefficients for GSxESG and GSxGOV

show consistent results along the IA measures, GSxESG being negative but insignificant when Amihud is used as an IA measure.

The inconsistent values on the ESG coefficients in models 1, 2, and 3 in Table 2.5 panel C indicate that the association between CSR disclosure and IA is not significant for firms that are less exposed to governance issues. On the other hand, coefficients of GSxESG posit that CSR disclosure significantly reduces IA for firms most exposed to governance issues favoring hypothesis H2. This makes sense since firms exposed to governance issues are expected to disclose more to be more transparent and investment-worthy to cater to their stakeholders' needs, as suggested by stakeholder theory and the agency theory.

The negative values of the coefficients for GSxGOV in models 4, 5, and 6 suggest that governance disclosure reduces IA significantly for firms that are the most exposed to governance issues. This validates hypothesis H2. The coefficients for GOV have inconsistent value, reinforcing the hypothesis that the extent of the association between GOV disclosure and IA depends on the firm's exposure to governance issues. The coefficients for the GS dummy are positive and significant along the three proxies indicating a high degree of information asymmetry for firms exposed to governance issues.

2.4.3 Robustness Check (Control for Endogeneity)

CSR disclosure is not an exogenous random variable. Two forms of endogeneity can impact the association between CSR disclosure and IA, first endogeneity caused by omitted variables, and second, endogeneity because of reverse causality.

Management quality impacts both CSR engagement and IA (Chemmanur, Paeglis, & Simonyan, 2009). Ignoring management quality (omitted variable) may result in errors in estimated residuals and significance levels. Fixed effects help control the endogeneity caused by omitted variables (Nguyen, Agbola, & Choi, 2018; Gormley & Matsa, 2014). This chapter adopts a fixed effect estimation aimed at controlling for the first source of endogeneity. It also adopts an instrumental variable approach.

Firms with low IA have more financing opportunities and thus more resources dedicated to CSR engagement and disclosure. In this situation, disclosure might be correlated with the disturbance

terms, leading to inconsistent parameter estimates. There are many approaches to deal with endogeneity, such as using the lagged values of the suspected variable (temporary solution) known as ad hoc solution, but this can lead to a loss of precision in some cases. Besides, there is no way of empirically measuring how serious the endogeneity problem is and if the ad hoc solution is sufficient to solve it. Another method is to use an instrumental variable (IV).

The challenge with IV estimation is to select a variable that is strongly correlated with the potentially endogenous regressor. Further, it should influence the dependent variable through the potentially endogenous independent variable. Following similar studies (Nguyen, Agbola, & Choi, 2018; Harjoto & Jo, 2015), I use the average industry CSR disclosure score (measured by the Bloomberg average industry ESG disclosure score) as an IV variable. Any firm's CSR disclosure score is expected to be closely related to its industry average CSR disclosure score.

A two-stage SLS regression is performed with IV. The results show that even after controlling for potential endogeneity, ESG, ENV, SOC, GOV disclosures impact IA negatively. The 2SLS regression results are given in Table 2.6 for ESG and individual ENV and SOC, GOV dimensions. They suggest that the negative association between IA and disclosure is robust to endogeneity.

<Insert Table 2.6 >

2.5 Post Estimation Test

2.5.1 Testing the Strength of the Instrument

The IV approach should be handled with care since the IV method can lead to extremely biased estimates if the instrument is weakly correlated with the regressor. In such instances, the IV estimates are more biased than the simple OLS approach and lead to wrong statistical inference (Larcker & Rusticus, 2010).

To cope with this issue, I perform a post-estimation test under the null hypothesis that the instrument chosen in the 2SLS regression is weak. The scale of biasness of IV estimation would approach OLS estimation as R-squared values between the endogenous regressor and instrument approach 0. Higher values of R-squared and adjusted R-squared indicate stronger instruments, and IV estimators exhibit less bias when the instruments are strongly correlated with the endogenous

variable. The R-squares and adjusted R-squares from the first stage 2SLS regression are 0.5349 and 0.5345, respectively (see Table 2.7), suggesting that the instrument chosen is moderately correlated with the regressor. The partial R-squared value of 0.4255 shows the correlation between ESG Score and IV variable after partialling out the effect of an exogenous variable. The value shows a moderate correlation between ESG score and average industry ESG score.

The robust F-test value in the first stage regression comes out to be 1395.94. It is much larger than any of the critical values of the LIML estimator. Thus, I can reject the null hypothesis that the instrumental variable is weak. There are no critical values available for 2SLS relative bias since, with one endogenous regressor, the critical values are only available if there are at least three excluded instruments. Minimum eigenvalue statistic is also given as a further test of weak instruments. The test statistics is 1395.94, which is the same as F-statistics because my model contains one endogenous regressor. To perform the test, we must first choose either the largest relative bias of the 2SLS estimator we are willing to tolerate or the largest rejection rate of the nominal 5% Wald test we are willing to tolerate. The minimum eigenvalue statistic exceeds the nominal 5% Wald test's critical values indicating that my instrument is not weak. Table 2.7 shows the results.

<Insert Table 2.7>

2.6 Conclusion

This chapter investigates the association between corporate social responsibility disclosure and each CSR disclosure dimension: environmental, social & governance disclosure, and information asymmetry. It also explores whether the extent of this association depends upon how much a firm is exposed to environmental, social, and governance issues. The sample consists of 1,000 publicly listed European firms for the period 2009-2017. The Bloomberg ESG disclosure scores are used as a proxy for CSR disclosure. Bid-ask spreads, the Amihud illiquidity metric and the proportion of zero returns are used as proxies for information asymmetry.

The results show that CSR disclosure reduces IA. I find significant evidence that environmental disclosure, social disclosure, and governance disclosure considered separately reduce information asymmetry regardless of the IA metric under consideration. I also provide conclusive evidence

that the association between CSR disclosure, environmental disclosure, governance disclosure, and information asymmetry is driven by the firm's exposure to environmental and governance disclosure, regardless of the metric used to capture IA. I find no significant evidence that social sensitivity mediates the association between CSR disclosure, as well as social disclosure, and information asymmetry. The negative association between CSR (ENV, SOC and GOV) disclosure and information asymmetry holds even after controlling for the potential endogeneity caused by omitted variables and reverse causality.

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Table A: Examples of Bloomberg ESG disclosure Score metrics

Environmental Metrics	Social Metrics
Direct greenhouse gas emissions (GHG)	Number of employees
Electricity usage	Presence of labor unions
Renewable energy usage	Percentage of women employed
Water usage	Percentage of women employed in managerial positions
Waste discarded	Percentage of minority employees
Waste recycled	Number of accidents reported
Waste sent to landfills	Number of fatalities reported as a result of operations
ISO 14000 certification	Initiatives employed to reduce social risks in the supply chain
Energy efficiency policy	Number of suppliers audited
Environmental supply chain management	Community spending
Green building policy	Fair remuneration policy
Sustainable packaging	Training initiatives
Presence of environmental quality management policies	Commitment to equal opportunity policies
	Child labor prevention policies
Protection of biodiversity (e.g. protection of trees, vegetation, and wild life)	Ethical policies
	Whistle blower policies
Climate change policies	Signatory of the United Nations Global Compact (UNGC)

Governance Metrics
Number of directors on the company's board
Number of female directors on company board
CEO gender
Board of directors age range
Age limit for serving on the board of directors
Number of board meetings for the year
Percentage of members in attendance at board meetings
Number of meetings of the board's audit committee
Number of directors on the company's compensation committee
Executive compensation is based on ESG disclosure scores

Source : (Tamimi & Sebastianelli, 2017)

Table B

Panel A: Examples of units of measurement for environmental metrics.

Metric	Units of measurement
Direct greenhouse gas emissions (GHG)	Thousands of metric tons
Electricity usage	Thousands of megawatt hours (MWh)
Renewable energy usage	Thousands of megawatt hours (MWh)
Water usage	Thousands of cubic meters
Waste discarded	Thousands of metric tons
Waste recycled	Thousands of metric tons
Waste sent to landfills	Thousands of metric tons
ISO 14000 certification	Yes/No
Energy efficiency policy	Yes/No
Environmental supply chain management	Yes/No
Green building policy	Yes/No
Sustainable packaging	Yes/No
Presence of environmental quality management policies	Yes/No
Protection of biodiversity (e.g. protection of trees, vegetation, and wild life)	Yes/No
Climate change policies	Yes/No

Panel B: Examples of units of measurement for social metrics

Metric	Units of measurement
Number of employees	Count
Presence of labor unions	Yes/No
Percentage of women employed	Count
Percentage of women employed in managerial positions	Count
Percentage of minority employees	Count
Number of accidents reported	Count
Number of fatalities reported as a result of operations	Count
Initiatives employed to reduce social risks in the supply chain	Yes/No
Number of suppliers audited	Count
Community spending	Dollar amount ($)
Fair remuneration policy	Yes/No
Training initiatives	Yes/No
Commitment to equal opportunity policies	Yes/No
Child labor prevention policies	Yes/No
Ethical policies	Yes/No
Whistle blower policies	Yes/No
Signatory of the United Nations Global Compact (UNGC)	Yes/No

Panel C: Examples of units of measurement for governance metrics

Metric	Units of measurement
Number of directors on the company's board	Count
Number of female directors on company board	Count
CEO gender	Count
Board of directors age range	Years of age
Age limit for serving on the board of directors	Years of age
Number of board meetings for the year	Count
Percentage of members in attendance at board meetings	Count
Number of meetings of the board's audit committee	Count
Number of directors on the company's compensation committee	Count
Executive compensation is based on ESG disclosure scores	Yes/No

Source: (Tamimi & Sebastianelli, 2017)

Table 2.1: Sample Breakdown by Country, Industry, and Exposure

Panel A: Sample breakdown by country

Country	n	%	Country	n	%
Austria	19	1.9	Poland	15	1.5
Belgium	24	2.4	Portugal	12	1.2
Denmark	27	2.7	Russia	41	4.1
Finland	40	4.0	Spain	36	3.6
France	113	11.3	Sweden	60	6.0
Germany	97	9.7	Switzerland	59	5.9
Ireland	22	2.2	Turkey	27	2.7
Italy	40	4.0	UK	241	24.1
Netherlands	40	4.0	Others	40	4.0
Norway	47	4.7			
Total					**1000**

Panel B: Sample breakdown by industry

GICS Industry	n	%	GICS Industry	n	%
Automobiles & Components	25	2.5	Pharmaceuticals, Biotechnology & Life Sciences	56	5.6
Capital Goods	170	17.0			
Commercial & Professional Services	40	4.0	Real Estate	62	6.2
Consumer Durables & Apparel	49	4.9	Retailing	40	4.0
Consumer Services	31	3.1	Semiconductors & Semiconductor Equipment	16	1.6
Energy	80	8.0			
Food & Staples Retailing	22	2.2	Software & Services	30	3.0
Food, Beverage & Tobacco	*53*	5.3	Technology Hardware & Equipment	24	2.4
Health Care Equipment & Services	20	2.0			
Household & Personal Products	9	0.9	Telecommunication Services	29	2.9
Materials	103	10.3	Transportation	47	4.7
Media & Entertainment	43	4.3	Utilities	51	5.1
Total					**1000**

Panel C: Sample breakdown by exposure to environmental, social, and governance issues

ES	ELS	SS	SLS	GS	GLS	
247	753	141	859	541	459	
24.7%	75.3%	14.1%	85.9%	54.1%	45.9%	
Total						**1000**

ES: Environmentally sensitive, ELS: Environmentally less sensitive, SS: Socially sensitive, SLS: Socially less sensitive, GS: Governance sensitive, GLS: Governance less sensitive

Table 2.2: Summary statistics for the variables under study

Variables	Obs	Mean	Std. Dev	Min	Max
Dependent Variables					
RSPRD	8992	0.00176	0.000295	0.0000212	0.004136
Amihud	8994	0.00189	0.000307	0.0000730	0.005223
Zeros	9000	0.0748444	0.0571879	0.0229885	0.2413793
Variables of interest					
ESG	7478	31.9714	15.66467	0.8264	80.5785
ENV	*6311*	28.02566	16.6553	0.7752	84.4961
SOC	6623	37.28477	16.66034	3.125	84.2105
GOV	7473	49.84014	12.42207	3.5714	85.7143
Control Variables					
Size	9000	7.861004	1.784013	4.698296	11.23216
Risk	8996	33.07232	12.42261	17.26112	63.64154
RIC	8967	0.0725089	0.0620711	-0.0441532	0.2097349
StockPrice	8996	3.933032	1.706708	1.092631	7.188906
TRADVOLU	8997	-0.5420	1.5630	-1.4651	-0.2645

The sample consists of all firm-year observations with control variable data available in Datastream. RSPRD: relative spreads computed by dividing daily closing bid-ask spreads by the mean daily midpoints followed by calculating the mean of relative spreads for the year by dividing the sum of daily relative spreads by the number of trading days in a year. Amihud: Amihud illiquidity measure is determined by scaling the absolute value of daily stock returns by trading volume in euro. This metric is averaged on a yearly basis by dividing the sum of daily relative price responses by the number of trading days in a year. Zeros: Days with zero stock return is measured by dividing the number of days with zero returns by the total number of trading days in a year. ESG: Overall CSR disclosure score, ENV: Environmental disclosure score, SOC: Social disclosure score, GOV: Governance disclosure score. ESG, ENV, SOC, and GOV disclosure scores come from Bloomberg. Size: Size of the firm measured by the log of the market value of the equity. Risk: Measured by the stock return volatility calculated by taking the standard deviation of the firm's daily stock returns. RIC: Return on firm's invested capital measured by operating profit scaled by total assets. StockPrice: Log of the daily closing stock price of the firm. TRADVOLU: Daily trading volume measured by the log of the average daily trading volume (number of stocks traded) scaled by the number of shares outstanding.

Table 2.3: Correlation matrix and VIF Scores

Panel A: Correlation matrix

	RSPRD	Amihud	Zeros
RSPRD	1		
Amihud	0.628***	1	
Zeros	0.679***	0.364***	1

	ESG	ENV	SOC	GOV
ESG	1			
ENV	0.952***	1		
SOC	0.935***	0.846***	1	
GOV	0.832***	0.656***	0.740***	1

	Size	RISK	RIC	Stock Price	TRADVOLU
Size	1				
RISK	-0.347***	1			
RIC	0.284***	-0.278***	1		
StockPrice	0.246***	-0.277***	0.360***	1	
TRADVOLU	0.661***	-0.0978***	0.165***	0.131***	1

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Panel B: VIF Scores

Variables	VIF	1/VIF
Size	2.28	0.439202
ESG	1.32	0.756654
Risk	1.31	0.762144
TRADVOLU	1.85	0.540817
StockPrice	1.22	0.713611
RIC	1.25	0.817818
Mean VIF	1.54	

Table 2.4: Baseline regression model

Panel A: Regression results for ESG and ENV disclosure

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	RSPRD	Amihud	Zeros	RSPRD	Amihud	Zeros
ESG	**-0.00427*** **	**-0.00336*** **	**-0.00164*** **			
	(0.000431)	**(0.000547)**	**(0.000148)**			
ENV				**-0.00129*** **	**-0.00154** **	**-0.00127**
				(0.00202)	**(0.000578)**	**(0.000167)**
Size	-0.361***	-0.305***	-0.0173***	-0.377***	-0.315***	-0.0182***
	(0.0196)	(0.0178)	(0.00629)	(0.0215)	(0.0193)	(0.00711)
RISK	0.00737**	0.00452*	-0.00547***	0.00735**	0.00448*	-0.00547***
	(0.00222)	(0.00197)	(0.000793)	(0.00219)	(0.00198)	(0.000794)
RIC	-0.609***	0.288	-0.0562***	-0.570***	0.307	-0.0538***
	(0.116)	(0.298)	(0.00831)	(0.117)	(0.300)	(0.00853)
TRADVOLU	0.0948***	0.217***	0.000313	0.0893***	0.214***	0.00213
	(0.00667)	(0.0111)	(0.000339)	(0.00635)	(0.0104)	(0.000308)
StockPrice	-0.0276***	-0.0109	-0.00487***	-0.0289***	-0.0119	-0.00492***
	(0.00376)	(0.00642)	(0.000240)	(0.00379)	(0.00643)	(0.000240)
Constant	2.438***	2.167***	0.237***	2.487***	2.192***	0.240***
	(0.226)	(0.154)	(0.00808)	(0.232)	(0.164)	(0.00850)
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Country effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,956	8,957	8,960	8,956	8,957	8,960
R-squared	0.487	0.444	0.515	0.484	0.443	0.513

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Panel B: Regression results for SOC and GOV disclosure

	(7)	(8)	(9)	(10)	(11)	(12)
Variables	RSPRD	Amihud	Zeros	RSPRD	Amihud	Zeros
SOC	**-0.00357*** **	**-0.00270*** **	**-0.00125*** **			
	(0.000377)	**(0.000456)**	**(0.000133)**			
GOV				**-0.00640*** **	**-0.00426*** **	**-0.00321*** **
				(0.000586)	**(0.000518)**	**(0.000251)**
Size	-0.363***	-0.307***	-0.0175***	-0.350***	-0.300***	-0.0165***
	(0.0197)	(0.0173)	(0.000639)	(0.0182)	(0.0153)	(0.000532)
RISK	0.00746***	0.00459**	-0.000544***	0.00766***	0.00472**	-0.00533***
	(0.00221)	(0.00198)	(7.94e-05)	(0.00224)	(0.00197)	(0.000793)
RIC	-0.604***	0.295	-0.0557***	-0.532***	0.348	-0.0531***
	(0.117)	(0.298)	(0.00845)	(0.114)	(0.300)	(0.00811)
TRADVOLU	0.0927***	0.215***	0.000211	0.0971***	0.218***	0.00530
	(0.00646)	(0.0111)	(0.000333)	(0.00744)	(0.0115)	(0.000334)
StockPrice	-0.0258***	-0.00959	-0.00481***	-0.0269***	-0.0105	-0.00481***
	(0.00373)	(0.00653)	(0.000235)	(0.00361)	(0.00618)	(0.000256)
Constant	2.442***	2.172***	0.237***	2.491***	2.211***	0.239***
	(0.224)	(0.151)	(0.00806)	(0.217)	(0.139)	(0.00728)
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Country effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,956	8,957	8,960	8,956	8,957	8,960
R-squared	0.487	0.444	0.514	0.494	0.447	0.521

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2.5: Regression models for the impact of exposure to environmental, social, and governance issues.

Panel A: Regression results for the impact of exposure to environmental issues

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	RSPRD	Amihud	Zeros	RSPRD	Amihud	Zeros
ESG	**-0.0054**	**-0.00118**	**-0.00583**			
	(0.000746)	**(0.000854)**	**(0.000405)**			
ESxESG	**-0.00403*** **	**-0.00229** **	**-0.00495**			
	(0.00126)	**(0.00124)**	**(0.000631)**			
ENV				**-0.00163***	**-0.00285**	**-0.00635***
				(0.000705)	**(0.000795)**	**(0.000936)**
ESxENV				**-0.00444*** **	**-0.00474*** **	**-0.00504*** **
				(0.00124)	**(0.00126)**	**(0.000132)**
ES	**0.211*** **	**0.0796**	**0.00282**	**0.155*** **	**0.109***	**0.0199*** **
	(0.0601)	**(0.0623)**	**(0.00290)**	**(0.0566)**	**(0.0621)**	**(0.00593)**
Size	-0.317***	-0.249***	-0.0155***	-0.307***	-0.249***	-0.0279***
	(0.00906)	(0.0106)	(0.00469)	(0.00935)	(0.0111)	(0.00167)
RISK	0.00391***	0.00136	-0.00334***	0.00195	-3.76e-05	-0.00715***
	(0.00109)	(0.00118)	(0.000593)	(0.00123)	(0.00142)	(0.000183)
RIC	-0.600***	-0.329**	-0.0315***	-0.161	0.359**	-0.0122
	(0.101)	(0.137)	(0.00371)	(0.137)	(0.142)	(0.0120)
StockPrice	-0.00208	0.00568	-0.00267***	0.00830	0.0172**	-0.00185**
	(0.00841)	(0.00776)	(0.000425)	(0.00912)	(0.00817)	(0.000782)
TRADVOLU	0.0709***	0.107***	0.00261***	0.0600***	0.0903***	0.00610***
	(0.00997)	(0.0130)	(0.000357)	(0.00899)	(0.0121)	(0.000932)
Constant	1.792***	1.604***	0.198***	1.685***	1.533***	0.307***
	(0.124)	(0.139)	(0.00640)	(0.131)	(0.155)	(0.0211)
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Country effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,369	7,371	7,371	6,229	6,231	6,231
R-squared	0.495	0.452	0.533	0.473	0.444	0.417

Robust standard errors in parentheses
*** p<0.01, **p<0.05,*p<0.1

Panel B: Regression results for the impact of exposure to social issues

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	RSPRD	Amihud	Zeros	RSPRD	Amihud	Zeros
ESG	**-0.00116**	**-0.00453**	**0.0055**			
	(0.000855)	**(0.000738)**	**(0.000494)**			
SSxESG	**-0.00148**	**-0.00550**	**-0.00171**			
	(0.00128)	**(0.00121)**	**(0.000122)**			
SOC				**-0.00883**	**-0.00704**	**0.00382**
				(0.000786)	**(0.000631)**	**(0.000355)**
SSxSOC				**0.00723**	**0.00186**	**-0.00152**
				(0.000997)	**(0.000957)**	**(0.000104)**
SS	**1.916*** **	**1.869** **	**0.154*** **	**1.930*** **	**2.212*** **	**0.0618*** **
	(0.528)	**(0.576)**	**(0.0282)**	**(0.128)**	**(0.491)**	**(0.00873)**
Size	-0.198***	0.0449	-0.00823***	-0.199***	0.0451	-0.00828***
	(0.0397)	(0.0314)	(0.00124)	(0.0396)	(0.0313)	(0.00126)
RISK	0.00597**	0.00330	-0.00624***	0.00600**	0.00330	-0.00623***
	(0.00195)	(0.00206)	(0.000689)	(0.00196)	(0.00205)	(0.000696)
RIC	-0.130	0.240	-0.0147	-0.136	0.234	-0.0148
	(0.200)	(0.329)	(0.0179)	(0.202)	(0.329)	(0.0178)
StockPrice	-0.225***	-0.349***	-0.0162***	-0.225***	-0.348***	-0.0163***
	(0.0399)	(0.0543)	(0.00124)	(0.0401)	(0.0545)	(0.00125)
TRADVOLU	0.0480**	0.109***	-0.00165	0.0472**	0.108***	-0.00170
	(0.0179)	(0.0267)	(0.00135)	(0.0174)	(0.0267)	(0.00140)
Constant	1.924***	0.477	0.201***	1.917***	0.483	0.199***
	(0.243)	(0.296)	(0.00997)	(0.241)	(0.296)	(0.0102)
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Country effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,956	8,957	8,960	8,956	8,957	8,960
R-squared	0.816	0.724	0.826	0.816	0.724	0.826

Robust standard errors in parentheses
*** p<0.01, **p<0.05,*p<0.1

Panel C: Regression results for the impact of exposure to governance issues

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	RSPRD	Amihud	Zeros	RSPRD	Amihud	Zeros
ESG	**-0.00234**	**-0.00868**	**-0.00122***			
	(0.000238)	**(0.000245)**	**(0.000438)**			
GSxESG	**-0.00983*****	**-0.00369**	**-0.00140****			
	(0.000298)	**(0.000314)**	**(0.00055)**			
GOV				**-0.00593***	**-0.00502**	**-0.00111***
				(0.000328)	**(0.000316)**	**(0.000609)**
GSxGOV				**-0.00118*****	**0.00113*****	**-0.00190*****
				(0.000391)	**(0.000425)**	**(0.000739)**
GS	**0.00561*****	**0.00228***	**0.00953*****	**0.00835*****	**0.000675*****	**0.0145*****
	(0.000118)	**(0.000125)**	**(0.00215)**	**(0.000215)**	**(0.000236)**	**(0.00402)**
Size	-0.0088***	-0.00666***	-0.0155***	-0.00856***	-0.00639***	-0.0146***
	(0.000253)	(0.000284)	(0.00467)	(0.000243)	(0.000267)	(0.00449)
RISK	0.00118***	0.00399	-0.00323***	0.00121***	0.000416	-0.00317***
	(0.000301)	(0.000315)	(0.000593)	(0.000302)	(0.000315)	(0.000592)
RIC	-0.00167***	-0.00885**	-0.0316***	-0.00163***	-0.00853**	-0.0312***
	(0.000278)	(0.00037)	(0.00383)	0.000272)	(0.000366)	(0.00374)
StockPrice	-0.00832	0.00131	-0.00271***	-0.00108	0.00103	-0.00277***
	(0.000235)	(0.000207)	(0.000421)	(0.000233)	(0.000205)	(0.000416)
TRADVOLU	0.00194***	0.00283***	0.00258***	0.00199***	0.00286***	0.00271***
	(0.000275)	(0.000347)	(0.000361)	(0.00028)	(0.000352)	(0.000362)
Constant	0.00733***	0.00549***	0.195***	0.00741***	0.00545***	0.195***
	(0.000343)	(0.000379)	(0.00628)	(0.000358)	(0.000386)	(0.00658)
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Country effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,369	7,371	7,371	7,365	7,367	7,367
R-squared	0.497	0.452	0.535	0.498	0.454	0.537

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2.6: Tests for endogeneity

Panel A: Results of 2 stage SLS regression with ESG and ENV disclosures

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	RSPRD	Zeros	Amihud	RSPRD	Zeros	Amihud
ESG	**-0.00976*** **	**-0.00217** **	**0.00410**			
	(0.00180)	**(0.000104)**	**(0.00427)**			
ENV				**-0.0140*** **	**-0.00312** **	**0.00438**
				(0.00265)	**(0.000150)**	**(0.00456)**
Size	-0.331***	-0.0169***	-0.345***	-0.310***	-0.0164***	-0.346***
	(0.0133)	(0.000748)	(0.0248)	(0.0168)	(0.000930)	(0.0257)
RISK	0.00710***	-0.00532***	0.00458***	0.00675***	-0.00539***	0.00474***
	(0.00101)	(0.00562)	(0.00122)	(0.00105)	(0.000578)	(0.00124)
RIC	-0.710***	-0.0607***	0.410**	-0.872***	-0.0643***	0.446**
	(0.163)	(0.00871)	(0.182)	(0.178)	(0.00940)	(0.198)
StockPrice	-0.0283***	-0.00491***	-0.0133	-0.0304***	-0.00496***	-0.0123
	(0.00918)	(0.000487)	(0.00902)	(0.00934)	(0.000487)	(0.00887)
TRADVOLU	0.103***	0.00217	0.203***	0.114***	0.00469	0.201***
	(0.0116)	(0.00676)	(0.0130)	(0.0128)	(0.00728)	(0.0140)
Constant	2.353***	0.234***	2.341***	2.194***	0.231***	2.360***
	(0.115)	(0.00634)	(0.172)	(0.129)	(0.00697)	(0.184)
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Country effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,956	8,960	8,957	8,956	8,960	8,957
R-squared	0.494	0.514	0.438	0.465	0.508	0.440

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Panel B: Results of 2 stage SLS regression with SOC and GOV disclosures

	(7)	(8)	(9)	(10)	(11)	(12)
Variables	RSPRD	Zeros	Amihud	RSPRD	Zeros	Amihud
SOC	**-0.00838*** **	**-0.00186** **	**0.00422**			
	(0.00154)	**(0.000892)**	**(0.00441)**			
GOV				**-0.00641*** **	**-0.00143** **	**0.00348**
				(0.00117)	**(0.00068)**	**(0.00364)**
Size	-0.335***	-0.0169***	-0.347***	-0.350***	-0.0173***	-0.341***
	(0.0128)	(0.000721)	(0.0273)	(0.0109)	(0.000613)	(0.0214)
RISK	0.00739***	-0.00525***	0.00447***	0.00719***	-0.00530***	0.00441***
	(0.000993)	(0.000553)	(0.00123)	(0.000996)	(0.000557)	(0.00123)
RIC	-0.703***	-0.0606***	0.419**	-0.553***	-0.0572***	0.340*
	(0.163)	(0.00869)	(0.186)	(0.155)	(0.00836)	(0.173)
StockPrice	-0.0239**	-0.00481***	-0.0157	-0.0296***	-0.00494***	-0.0132
	(0.00936)	(0.000498)	(0.00978)	(0.00903)	(0.000482)	(0.00904)
TRADVOLU	0.0985***	0.00117	0.204***	0.0945***	0.0028	0.205***
	(0.0114)	(0.00661)	(0.0125)	(0.0110)	(0.00650)	(0.0117)
Constant	2.352***	0.234***	2.356***	2.520***	0.238***	2.293***
	(0.115)	(0.00633)	(0.182)	(0.111)	(0.00613)	(0.148)
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Country effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,956	8,960	8,957	8,956	8,960	8,957
R-squared	0.493	0.514	0.435	0.506	0.518	0.435

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2.7: Results for the strength of the IV instrument

First stage regression summary statistics

Variable	R—sq.	Adjusted R—sq.	Partial R—sq.	Robust F(1,8950)	Prob > F
ESG Score	0.5349	0.5345	0.4255	1395.94	0.0000

Minimum eigenvalue statistic = 1395.94

Critical Values # of endogenous regressors: 1

Ho: Instruments are weak # of excluded instruments: 1

2SLS relative bias	5%	10% (not available)	20%	30%
	10%	15%	20%	25%
2SLS Size of nominal 5% Wald test	16.38	8.96	6.66	5.53
LIML Size of nominal 5% Wald test	16.38	8.96	6.66	5.53

Chapter 3: Impact of National Culture on the Association between Corporate Social Responsibility Disclosure and Information Asymmetry: A Cross-Country Analysis

ABSTRACT

This chapter presents a cross-country analysis of national culture's impact on the association between corporate social responsibility (CSR) disclosure and information asymmetry (IA). The underlying assumption is that national culture plays a vital role in shaping reporting practices and stakeholders' orientation due to their inherent flexibility. The informativeness of disclosure, and notably CSR disclosure, does not only rely on the magnitude of disclosed information. It also relates to the firm's propensity to transparency, which depends primarily on cultural factors. A higher level of disclosure does not necessarily mean higher transparency and lower information asymmetry. More disclosure and higher disclosure scores result in lower information asymmetry only if cultural values push the firm's management to be transparent and provide the firm's stakeholders with really informative data. Therefore, the informativeness of disclosure and the association between corporate disclosure and information asymmetry depend on the cultural values that shape management beliefs and managerial practices. This is what I intend to test in this chapter. My sample consists of 989 companies operating in 27 European countries from 2009 to 2017. I rely on the Geert Hofstede's six cultural dimensions to capture the firms' cultural values. I use the Bloomberg ESG disclosure score as a proxy for CSR disclosure. I use relative bid-ask spreads, the Amihud illiquidity metric, and the proportion of zero daily stock returns to proxy for IA. The results show that the cultural dimensions do not systematically impact the association between CSR disclosure and IA. The association between CSR disclosure and IA is stronger only for companies operating in countries with a high level of indulgence. These results hold even after controlling for potential endogeneity.

Keywords: Information asymmetry, Culture, Hofstede six cultural dimensions, Bid-Ask spreads, Amihud, Zeros, Corporate social responsibility disclosure, Environmental disclosure, Social disclosure, Governance disclosure, Bloomberg ESG disclosure Score

3.1 Introduction

National culture is commonly recognized as a crucial environmental characteristic that drives systematic differences in management's behavior. Cultural norms, values, traditions, and beliefs are powerful forces that affect people's behaviors, perceptions, and characters. The variation in cross-cultural norms and values explains the similarities and differences of how human minds are programmed, which, as a result, characterizes societies around the globe. This suggests an association between the preferences of managers or stakeholders and specific cultural traits. Researchers have usually attempted to integrate the national differences in cultures in explaining management actions and reporting practices (Han, Kang, Salter, & Yoo, 2010). If corporate characteristics and internal corporate factors such as size, industry, and the board of directors' composition impact corporate social responsibility (CSR) reporting practices, actors like culture or institutional, legal, and economic frameworks also affect CSR disclosure (Adams, 2002).

CSR disclosure has key implications for information asymmetry (IA) since the management is more aware of the firm's goals and prospects than outsiders. The quality (and quantity) of the reported information is affected by national culture to a level that customs, morals, and traditions influence the information configuration. Institutions are determined by formal rules such as laws and regulations and informal constraints such as behavioral and cultural norms, determining how companies tend to act (North, 2010). In other words, the association between CSR disclosure and IA appears to be influenced by cultural factors.

It is imperative to explore this impact since national culture influences both the reporting norms of the management as well as investors' orientation. Numerous studies have shown that culture, being an informal institution, impacts CSR disclosure practices. The investors usually expect net benefits from CSR disclosure such as better-quality information, adherence to the rules, and convergence (in case of mandatory reporting), all of which have implications for information asymmetry. These expectations may vary from one culture to another. Thus, it becomes crucial to explore the impact of informal institutions such as culture on the association between CSR disclosure and IA in a cross-country analysis.

CSR disclosure has turned into an extensive managerial practice across companies operating in different cultures to answer the increased pressure exerted by the firm's stakeholders. According

to Cohen et al. (2011), investors actively seek such reliable information through public or private channels and use that information in their decision-making. CSR disclosure is a way of informing stakeholders about the company's position and prospect, thus reducing IA (Wang, Cao, & Ye, 2016). CSR disclosure makes investors better informed about the impacts of companies' operations on the environment and society. Consequently, it would result in lower asymmetric information and better investment decisions. The quality and informativeness of CSR disclosure do not only depend upon the magnitude of such disclosure. It is also related to how the cultural norms and values drive the management to be transparent and provide stakeholders with informative data. Only such quality disclosure can lead stakeholders to benefit from lower IA. This is my motivation to investigate how national cultural dimensions, as defined by Geert Hofstede and Hofstede et al. (1986; 2010), impact the association between CSR disclosure and IA. Therefore, the quality and relevance of non-financial disclosure.

Concerning the growth in CSR reports, a stream of research has identified the associated factors with CSR disclosure. Various studies have been carried out at the firm level, with only a few studies on sustainability disclosure focused on external factors affecting managerial decisions to disclose non-financial information. Disclosures might convey more or less information depending on the culture of the country where the firm is domiciled, notably the propensity to secrecy.

Gray (1988) suggests that disclosure is related to secrecy. Thus, he considers that Asian managers may be more secretive because of their propensity to avoid uncertainty. Consequently, corporate reports prepared by Asian companies are expected to contain less voluntary information. If this statement is correct, it would suggest that culture plays a vital role in explaining corporate disclosure differences worldwide. This chapter examines the influence of Hofstede et al. (2010) cultural variables on the association between CSR disclosure and IA for a sample of companies operating in European countries. The six cultural dimensions studied are power distance, individualism, masculinity, uncertainty avoidance, long-term orientation, and indulgence.

As the first step in my investigation, I split my sample into two subsamples for each cultural dimension under study. Firms operating in countries with low power distance are compared to firms operating in high-power distance countries. Firms in countries with low individualism are compared to firms in countries with high individualism. I do the same for masculinity, uncertainty avoidance, long-term orientation, and indulgence values. The scores of the Hofstede six cultural

variables remain constant over time and come from https://geert-hofstede.com. Each subsample is then evaluated for the association between CSR disclosure and IA. The association is estimated along the three proxies for IA that are relative daily spreads (RSPRD), Amihud illiquidity measures (Amihud), and proportion of zero daily stock returns (zeros). Lastly, the robustness of the results is determined by considering the endogeneity that can impact the association between CSR disclosure and information asymmetry.

Bloomberg ESG disclosure index is used as a proxy for CSR disclosure score. Various CSR disclosure indices exist, but Bloomberg ESG disclosure scores are personalized to be relevant to the industry. Certain items are considered only for some industries. The rest of the data is taken from Datastream. I use a fixed-effect OLS estimation for a sample of 989 firms operating in 27 European countries from the period 2009-2017. The results show that the negative association between CSR and information asymmetry is stronger in countries with high indulgence. I do not find significant evidence for the impact of power distance, individualism, masculinity, uncertainty avoidance, and long-term orientation on the association between CSR disclosure and information asymmetry. The results are not contaminated by endogeneity bias.

The main contributions of the study are the following. Till to date, numerous studies have been carried out on the impact of culture on CSR practices and sustainability disclosure (García-Sánchez, Cuadrado-Ballesteros, & Frías-Aceituno, 2016; Feng, Kang, & Nabar, 2017; Gallén & Peraita, 2018). To the best of my knowledge, this study is the first to explore the mediating impact of culture on the association between CSR disclosure and IA. The impact of two recent cultural dimensions (long-term orientation and indulgence) incorporated by Hofstede (2010) has been rarely analysed in CSR disclosure literature. Another contribution of this study is that it provides evidence on the impact of these two cultural dimensions on the association between CSR disclosure and IA.

The rest of the chapter is organized as follows. Section II reviews the literature, proposes a theoretical framework, and develops the hypotheses. Section III describes the sample and research design. Section IV presents and discusses the empirical findings. Section V concludes the chapter.

3.2 Literature Review, Theoretical Framework and Hypotheses Development

A national culture is created through various shared principles, ideas, and approaches that guide individual to behave in a particular way. Consequently, it impacts people's day-to-day lives, determining their roles, rights, and obligations. Put differently, culture is a "collective programming of the mind which distinguishes the members of one human group from another" (Hofstede, 1986). The cultural system of one society differs from another society based on the needs, desires, and preferences of the society's members. Such mental programming can have different layers at numerous levels that include regional, moral, ethical, gender, religious affiliations, and social class levels apart from organizational and corporate levels. Cultural norms are specific behaviors exhibited by the majority within a specific culture as observed by the culture members (Stephan & Uhlaner, 2010). Fundamentally, national culture is recognized as a parameter that defines and explains the differences in the organization's value system (Hofstede, Hofstede, & Minkov, 2010). Generally, stakeholders from different countries have varied expectations about corporate decisions such as CSR disclosure because of their different cultural settings, which results in different personal norms, values, and practices.

The impact of culture on the macro-social context has been studied and analysed mostly through the lens of the model presented by Hofstede (1986) and Hofstede et al. (2010), which defines six cultural dimensions, namely power distance, uncertainty avoidance, individualism, masculinity, long-term orientation, and indulgence. These six dimensions characterize independent preferences that differentiate people living in one country from another. The model was built from a very comprehensive study on how workplace values are impacted by culture. Hofstede et al. (2010) provide scores for each of the six dimensions for 76 countries, partially based on the reproduction and extension of the IBM study he conducted on an international population.

Numerous studies have observed significant differences in corporate reporting, notably CSR reporting, across countries and cultures (Orij, 2010; Joseph, et al., 2016; Midin, Joseph, & Mohamed, 2017). As the cultural system of society explains most of the differences in terms of the varied preferences of stakeholders, cultural traits may determine the stakeholders' demands for information and affect CSR disclosure. Thus, Sams et al. (2013), in their study about sustainability

for the NAFTA region, provide evidence showing that national culture impacts the disclosure-related decisions reflected in CSR disclosure reports. From a sample of 1189 firms from DJSI, Peng et al. (2014) observe that the stakeholders' demand for economic and financial reporting is stronger in countries where people prioritize masculine values such as career development and business success. In the same line, this study investigates how cultural differences, captured by Hofstede's 6-dimensional cultural model, impact the association between CSR disclosure and IA for a culturally diverse sample of companies from 27 European countries. It contributes to the existing literature by highlighting the cultural dimensions that impact the informativeness of CSR disclosures, which has never been done before.

The new institutionalism proposes a relevant framework to study the variations in CSR disclosure practices among countries. This approach focuses on institutional environments and maintains that companies operating in the same environment ultimately become organizationally similar as they face similar pressures: isomorphic pressures (DiMaggio & Powell, 1983). The economic conditions and the institutional settings both affect companies' CSR practices. The new institutionalism recognizes two theories to examine the CSR disclosure decision: stakeholder theory and legitimacy theory. According to the stakeholder theory, there should be global cooperation among corporations and the whole network of stakeholder groups [Emshoff & Freeman (1978)], including political parties, professional associations, and public administrations alongside other market participants (Malik, 2015). Without the satisfaction of the other stakeholders' needs, it is impossible to maximize shareholders' wealth [Foster & Jonke (2005)]. On the other hand, the legitimacy theory states an implicit contract between organizations and society through which organizations pursue legitimacy. The extent of CSR disclosure depends on institutional pressures since companies use CSR reporting as a part of their legitimizing strategies (Deegan, 2002). Both theories overlap each other and regard CSR disclosure as a strategic tool for managers. The stakeholder theory focuses on the stakeholders' pressure on managerial decisions. The legitimacy theory focuses on managers' various strategies to uphold their legitimacy, such as disclosing specific kinds of information to gain, maintain, and restore legitimacy.

While several studies investigate the impact of cultural differences on CSR disclosure practices, no study analyses how cultural differences mediate the association between CSR disclosure and IA. It is worth focusing on this unexplored association since national culture, generally proxied by

Hofstede's cultural dimensions, has been shown to influence corporate reporting quality (Jaggi & Low, 2000). In the same vein, Stulz & Williamson (2003) concluded that cultural differences in religion and language play an essential role in explaining investor protection differences across countries. Therefore, greater disclosure is likely to lower information asymmetry only if the cultural norms push the management to be transparent and provide informative data to firms' stakeholders. Testing the impact of national culture on the magnitude of CSR disclosure, as it is often done, is not enough. It is also necessary to investigate how national culture affects the salience, relevance, and informativeness of the disclosed information. This can be done by analysing whether and how cultural values affect the information asymmetry of CSR disclosing firms.

Since they shape managerial practices and stakeholders' orientation, the informativeness of corporate disclosure and, therefore, the association between corporate disclosure and IA depend on the cultural values shared by managers and stakeholders. Regarding accounting data, Gray (1988) distinguishes between four values: professionalism, uniformity, conservatism, and secrecy. They are closely related to and derived from Hofstede's cultural values. Professional versus statutory practices helps determine preference for exercising individual professional judgment instead of merely complying with existing legal requirements. Uniformity versus flexibility reflects preferences for uniform accounting practices for all companies instead of practices specific to each company. Conservatism versus optimism refers to a more cautious approach, as opposed to a risk-taking approach. Secrecy versus transparency shows a preference for confidentiality, as opposed to a more transparent approach. For instance, the higher a country's rank in terms of uncertainty avoidance, the higher it ranks in conservatism (Gray S. , 1988). The higher a country's rank in terms of power distance, the higher it ranks in secrecy (Jaggi & Low, 2000).

The above discussion implies that national culture is a decisive factor in shaping both the stakeholders' orientation as well as management's CSR reporting practices. This forms the basis of my hypotheses.

Hofstede (1986) categorized each national culture into four dimensions: 1) power distance, 2) individualism versus collectivism, 3) masculinity versus femininity, 4) uncertainty avoidance. Later, two other dimensions were added: 5) long-term versus short-term orientation 6) indulgence versus restraint (Hofstede, Hofstede, & Minkov, 2010).

3.2.1 Power Distance

Power distance (PD) is the degree to which the less powerful members of organizations and institutions within a country or culture accept the unequal distribution of power. Countries with high PD exhibit more compliance, inequality, and hierarchy (Hofstede, Hofstede, & Minkov, 2010). The members of societies with higher values of distance to power, such as Russia, Poland, France, accept their place and recognize formal hierarchies. On the other hand, in countries with low PD values, such as Austria, Denmark, and Sweden, individuals demand democratic relations. Firms operating in high-PD cultures usually have more freedom and feel comparatively secure in their privileged position. Given their freedom and comfortable position, these companies have little incentive to disclose. Companies operating in vertically stratified cultures have high PD and more significant differences among social classes. Thus, we can assume that more CSR disclosure is associated with lower PD. A low degree of PD is regarded as an egalitarian society, and companies in such cultures are likely to disclose more informative CSR-related information.

García-Sánchez et al. (2016), Gallego-Álvarez & Ortas (2017), and more recently Gallén & Peraita (2018) provide empirical evidence showing that companies from countries with lower PD have higher CSR disclosure. This makes sense since, as Gray (1988) explained, the higher a country's rank in terms of PD, the higher the propensity to secrecy. Managers in countries with higher PD tend, therefore, to be more secretive. They disclose less to maintain power inequalities. Since CSR disclosures are less constrained than financial disclosures, managers in low PD countries may use this flexibility to undertake more informative CSR disclosure and lower the cost of equity capital. So, CSR disclosure's informativeness and therefore the association between CSR disclosure and IA should be more negative in countries with lower PD. In light of the above discussion, I hypothesize:

H1: The strength of the association between CSR disclosure and IA is stronger in low PD countries.

3.2.2 Individualism

Individualism (IND) is the extent to which individuals in a society are united into groups. In individualistic cultures, individuals are expected to take care of only themselves and their immediate families. Hence, a high IND degree indicates that personal goals overpower collective welfare (Hofstede, Hofstede, & Minkov, 2010). People in countries with lower IND (collectivist countries, as Ukraine, Portugal, Slovenia) have a greater desire to belong to groups. In countries with high IND, such as UK, Netherlands, Italy, people have an orientation towards themselves. The cost of equity capital is higher as the investors' presumed risk is higher in countries with strong IND and exhibit risk-taking behaviour.

The cultural dimension of IND encourages competitive environments, which suggests that these societies would be less secretive. Relying on Gray's (1988) framework, Hope et al. (2008) explain that cultures ranking high on IND are more likely to rank low in secrecy. In the same vein, Disli et al. (2016) predict a positive correlation between CSR disclosure and IND because collectivist societies tend to favour certain groups more than others, giving rise to exploitation and moral insensitivity. In countries that score high on IND, managers have more flexibility in self-governance and CSR reporting. Thus, the informativeness of CSR disclosure, and therefore the association between CSR disclosure and IA, should be higher in countries with high IND. This leads me to hypothesize:

H2: The strength of the association between CSR disclosure and IA is stronger in high IND countries.

3.2.3 Masculinity

Masculinity (MAS) is the extent to which a culture distinguishes and highlights traditional roles between genders. A high MAS level means that the society gives more value to male characteristics such as competitiveness, decisiveness, stature, and success (Hofstede, Hofstede, & Minkov, 2010). Usually, countries with a higher MAS value, including Austria, Switzerland, Italy, give high regard to assertiveness, status, and competition. Cultures with low MAS scores such as Sweden, Norway, Latvia give less weightage to status. Masculine societies prioritize masculine values such as career

development, financial profitability, and firms' stakeholders demand more economic and financial information. In this regard, it is expected that companies operating in masculine societies show a higher level of corporate disclosure.

Jaggi & Low (2000) refer to Gray's (1988) framework to explain that the lower a culture ranks in MAS, the higher the propensity to secrecy. MAS's cultural dimension refers to a social preference for decisiveness, high achievement, and financial success. This implies that business institutions would be much stronger in these countries, and individuals will value the achievement of goals. The management would be less secretive and would disclose more financial information. Thus, there will be a positive association between MAS and financial disclosures. This leads Gray et al. (2013) to conclude that the cost of equity capital is negatively associated with the MAS level of the country where the firm is domiciled. According to the theoretical approach and related studies, it is safe to assume that the CSR disclosure quality and, therefore, the association between CSR disclosure and IA are more negative in countries with high MAS. This leads me to hypothesize:

H3: The strength of the association between CSR disclosure and IA is stronger in high MAS countries.

3.2.4 Uncertainty avoidance

Uncertainty avoidance (UA) is the extent to which individuals accept uncertain circumstances and bear uncertainty. The members of societies with a high level of UA feel uncomfortable with ambiguous scenarios and try to minimise or manage uncertainty by introducing laws, guidelines, protocols, and controls (Hofstede, Hofstede, & Minkov, 2010). In countries with higher UA, such as Greece, Portugal, and Belgium, individuals tend to be risk-averse and avoid unexpected situations. On the other hand, in countries with low UA, such as Denmark, Sweden, and Ireland, people are comfortable with uncertainty. Companies with low UA cultures are more likely to provide increased flexibility in individual decision-making. Managers could use that flexibility to make more corporate disclosure. Using Gray's (1988) framework, Jaggi and Low (2000) explain that the UA's cultural dimension is associated with a lower level of financial disclosure. In the same vein, Hope et al. (2008) clarify that people in high UA countries tend to be more secretive to avoid potential conflict with third parties.

Numerous studies find evidence of a negative impact of UA on CSR disclosure (García-Sánchez, Cuadrado-Ballesteros, & Frías-Aceituno, 2016; Halkos & Skouloudis, 2017), confirming that companies operating in countries with low UA are less secretive and more inclined to corporate disclosure. Consequently, I hypothesize that the informativeness of CSR disclosure and, therefore, the association between CSR disclosure and IA is stronger in countries with low UA.

H4: The strength of the association between CSR disclosure and IA is stronger in low UA countries.

3.2.5 Long-term orientation

The long-term orientation (LTO) dimension is the level to which people of society align their efforts towards the future compared to the past and the present. Societies with high LTO scores emphasize long-term goals. Societies with lower LTO scores are more focused on short-term goals and objectives. For instance, Germany, Estonia, Belgium have high LTO scores. People in these countries inspire persistence, struggle, and resolve goals. They do not expect instant satisfaction.

On the other hand, individuals in countries with lower LTO scores, such as Norway, Finland, Denmark, demand immediate gratification. Cultures with short-term orientation follow established traditions and norms and are suspicious to change. Therefore, societies having short-term orientation require customary reports such as financial statements, whereas cultures with LTO tend to be more focused on other issues such as CSR practices. Accordingly, companies operating in long-term oriented countries tend to undertake more CSR disclosure to satisfy stakeholders.

A review of the literature on the impact of LTO on CSR disclosure and practices reveals a positive relationship between LTO and the magnitude of CSR disclosure (Disli, Ng, & Askari, 2016; García-Sánchez, Cuadrado-Ballesteros, & Frías-Aceituno, 2016; Halkos & Skouloudis, 2017). Hackert et al. (2012) conclude that bigger investments in the prevention of pollution, recycling, and waste reduction are primarily carried out by companies operating in countries with high LTO. It is in line with the notion that cultures with higher levels of LTO are more devoted to the preservation and protection of environmental and sustainability practices. By investigating the impact of informal institutions on CSR disclosure practices, Halkos & Skouloudis (2017) confirm

the positive impact of LTO on sustainability practices. In contrast, Orij (2010) predicts a positive association between LTO and CSR disclosure, but he does not find conclusive evidence.

Investors' corporate risk assessments are hence assumed to be lower in countries with high LTO. Companies operating in high LTO have a lower cost of equity capital (lower IA level) due to their high corporate disclosure levels. Taking into consideration the above arguments and supporting literature, the following hypothesis is presented:

H5: The strength of the association between CSR disclosure and IA is stronger in high LTO countries.

3.2.6 Indulgence

Indulgence (INDU) is the extent to which a culture permits the fulfilment of natural human desires connected to appreciating life. Indulgent societies give more importance to freedom of speech (Hofstede, Hofstede, & Minkov, 2010). Countries such as the UK, Malta, Netherlands with higher INDU scores tend to be more optimistic and inclined to give more importance to freedom of expression. On the contrary, members of cultures such as Bulgaria, Latvia, Ukraine with lower INDU scores try to overpower their desires and impulses. Based on these classifications, I can assume that firms have more incentives to engage in CSR practices in indulgent cultures.

Halkos & Skouloudis (2017) find a positive association between INDU and CSR disclosure. Gallén & Peraita (2018) find similar results when analysing the national culture's effects on CSR disclosure. Investors' risk is expected to be higher in mainly indulgent countries (high risk-taking cultures). Firms have more flexibility in terms of reporting in INDU societies. The management would use this flexibility to undertake more CSR disclosure to decrease the asymmetric information between the management and stakeholders. Companies operating in countries with a high INDU level have a higher cost of equity capital, more asymmetric information due to the high levels of flexibility in reporting. Following this reasoning supported by literature, I hypothesize:

H6: The strength of the association between CSR disclosure and IA is stronger in high INDU countries.

3.3 Sample and Research Design

This chapter uses the same three metrics for IA (Jayaraman, 2008; Amihud, 2002; Liu, Luo, & Wang, 2017) as the ones used in chapter one.

- Bid-Ask Spreads are measured by

$$\text{RSPRD}_{i,t} = \left\{ \sum \frac{SPR_{i,t}}{\frac{BID_{i,t} + ASK_{i,t}}{2}} \right\} / n$$

where $\text{RSPRD}_{i,t}$ is the relative spread of stock 'i' on day 't,' $BID_{i,t}$ is the last bid price of day 't' for stock 'i', $ASK_{i,t}$ is the last ask price of day 't' for stock 'i', 'n' is the number of trading days in a year.

- Amihud illiquidity is measured as

$$ILLIQU_{i,t} = \frac{\sum_{1}^{n} \frac{|R_{i,t}|}{DVol_{i,t}}}{n}$$

where $R_{i,t}$ is the return of stock I on day t, $DV0L_{i,t}$ is the daily euro trading volume of stock i on day t; n represents the number of trading days during a year. 'n' is the number of trading days in a year.

- Zeros

The number of zero daily stock returns is determined by dividing the number of days with zero returns by the total number of trading days in a year. A lower value of Zeros shows higher liquidity (Liu, Luo, & Wang, 2017).

3.3.1 Factors affecting Information Asymmetry

A review of the literature shows that IA is affected by various variables. As discussed in chapter one, there is a negative association between IA and trading volume (Yoon, Ciganek, & Zo, 2011). Firm size is also negatively associated with IA (Chia-Wu & Ting-Shu, 2015; Michaels & Grüning, 2017). Following Cho et al. (2013), risk represented by stock return volatility results in wider spreads. Similarly, low-priced stocks are riskier and thus have wide bid-ask spreads. Lastly, a company's profitability is negatively related to IA (Chia-Wu & Ting-Shu, 2015).

3.3.2 Metrics for CSR Disclosure

As mentioned earlier in chapter one, this chapter uses the Bloomberg ESG disclosure scores as proxies for CSR disclosure (Utz & Wimmer, 2014; Arayssi, Dah, & Jizi, 2016; Nollet, Filis, & Mitrokostas, 2016; Qiu, Shaukat, & Tharyan, 2016; Tamimi & Sebastianelli, 2017). The disclosure scores awarded to the companies are adapted to be relevant to different industries. For instance, the 'greenhouse gas emission' indicator will be scored only for the companies operating in environmentally sensitive industries. Bloomberg award scores on more than 700 such indictors for over 10,000 publicly listed companies worldwide.

3.3.3 Baseline Model

To test hypotheses H1 to H6, I use the following baseline model.

$$IA_{i,t} = \beta_0 + \beta_1 DISC_{i,t} + \beta_2 CD + \beta_3 CDxDISC_{i,t} + \sum_k \gamma_k CONTROL_{k,i,t} + \text{Fixed effects} + e_{i,t} \quad \text{Eq-1}$$

IA stands for information asymmetry and is represented by the three proxies described above: relative spreads ($RSPRD_{i,t}$), Amihud illiquidity measure ($Amihud_{i,t}$) and Zeros ($Zeros_{i,t}$). DISC stands for CSR disclosure and is represented by $ESG_{i,t}$ i.e., the Bloomberg corporate disclosure score. CD stands for the cultural dimension under study. It is represented by dummy variables PD, IND, MAS, UA, LTO, and INDUL, which take the value 1 if the score for PD, IND, MAS, UA, LTO, and INDUL is 50 or higher (0 being the lowest score and 100 the highest), 0 otherwise. The rule of thumb is that if a score is under 50 for a given country, the cultural dimension is relatively

weak for the country. In contrast, it is strong if the score is over 50 (Hofstede, Hofstede, & Minkov, 2010). The interaction variable CDxDISC, representing $PDxESG_{i,t}$ through $INDULxESG_{i,t}$, captures the impact of each cultural dimension on the association between CSR disclosure and IA for companies operating in countries with high PD, IND, MAS, UA, LTO, and INDL scores. $CONTROL_{k,i,t}$ are control variables. They include $Size_{i,t}$ [Size of the firm measured by the log of the market value of the equity 'i']; $StockPrice_{i,t}$ [Stock price measured by the log of the daily closing stock price of a firm 'i']; TRADVOLU [Daily trading volume measured by the log of the average daily trading volume (number of traded stocks scaled by the number of outstanding shares)]; $Risk_{i,t}$ [Stock return volatility calculated by taking the standard deviation of the daily stock returns of a firm 'i']; $RIC_{i,t}$ [Return on firm's invested capital measured by operating profit scaled by total assets]. Fixed effects are country, industry, and time fixed effects.

3.3.4 Sample

My initial sample consists of the Bloomberg ESG universe of 1458 publicly quoted European companies. I selected all the European countries quantified in each of the six cultural dimensions of Hofstede's model. Subject to these criteria and data availability, my final sample consists of 989 European companies with 8901 firm-year observations from 2009 to 2017. The breakdown of the sample by country and industry is given in Table 3.1 and Table 3.2, respectively. The sample is divided into 21 industries and 27 countries. The companies are categorized into industries using GICS industry codes. The data on all variables except ESG are obtained from Datastream. ESG data is obtained from Bloomberg. Daily observations are winsorised at the 0.05 level to alleviate the effect of extreme values (See the summary statistics to know the extremity of the values)[1]. The scores of the Hofstede six cultural variables remain constant over time and come from https://geert-hofstede.com. Table 3.3 shows the scores of the six cultural dimensions for the sample countries.

<Insert Table 3.1>

<Insert Table 3.2>

<Insert Table 3.3>

[1] Although results are robust at 1% level

3.4 Empirical Results

3.4.1 Univariate Results

The summary statistics of the six cultural dimensions are shown in Table 3.4, along with the respective T-test scores, and p-values are given in parentheses. I split the sample into companies operating in low versus high score countries for each of the six Hofstede cultural dimensions. It is evident from the table that companies in countries with low PD (high PD), high IND (low IND), high MAS (low MAS), low UA (high UA), high LTO (low LTO), and high INDUL (low INDUL) on average disclose more ESG (less ESG) information. The difference in mean between low and high is statistically significant for all the cultural dimensions. Table 3.5 reports the summary statistics of the rest of the variables in my model.

<Insert Table 3.4>

<Insert Table 3.5>

Table 3.6 panel A shows the correlation coefficients for explanatory variables. The table shows that variables are not highly correlated to each other to the degree that it would alter the strength/ direction of the association between disclosure and IA.

<Insert Table 3.6>

Variance inflation factor (VIF) test rules out the effect of multi-collinearity among the variables involved in my regression. A mean VIF of 2.75, as stated in table 3.6 panel B, shows no issue of multi-collinearity in my model(s).

3.4.2 Multivariate Results

The regression results of eq-1 for PD are reported in Table 3.7. Robust standard errors are given in parentheses and are clustered at the country level. The coefficients on ESG are systemically negative and significant at a 10 percent level regardless of the proxies used for IA. The coefficients on PDxESG are systemically not significant but accepted only for Amihud at 10 percent level. This shows that CSR disclosure decreases IA identically for companies operating in both high and

low PD countries. The PD cultural dimension does not impact the informativeness of CSR disclosure. H1 is thus rejected.

<Insert Table 3.7>

Table 3.8 reports the regression results of eq-1 for IND. The variable ESG (INDxESG) shows the impact of IND on the association between CSR disclosure and IA for firms operating in countries with low (high) IND scores. The coefficients on ESG as well as INDxESG are systemically not significant. These findings suggest CSR disclosure does not impact IA. Also, the extent of IND in a country does not impact the association between CSR disclosure and IA. These results do not confirm H2.

<Insert Table 3.8>

The regression results of eq-1 for MAS are reported in table 3.9. The variable MASxESG shows the impact of MAS on the association between CSR disclosure and IA for firms operating in countries with high MAS scores. The coefficient on the variable of interest MASxESG is systemically negative and not significant at 5 percent level but accepted only at 10 percent level for Amihud and Zeros. The coefficient on ESG is systemically not significant regardless of the proxies used. These results point out that CSR disclosure does not impact IA. Further, the results indicate that MAS's level in a country does not significantly impact the association between CSR disclosure and information asymmetry. H3 is thus rejected.

<Insert Table 3.9>

The regression results of eq-1 on the impact of UA on the association between CSR disclosure and IA are detailed in table 3.10. The coefficient on ESG shows the impact of UA on companies operating in countries with low UA scores. It is systematically negative and significant at the 5 percent level regardless of the proxies used for IA. The coefficient on the variable of interest UAxESG is systemically insignificant. These results indicate that CSR disclosure decreases IA equally for companies operating in low and high UA countries. This leads me to reject H4.

<Insert Table 3.10>

The regression results of eq-1 on the impact of LTO on the association between CSR disclosure and IA are presented in table 3.11. The coefficient on LTOxESG is systematically negative but not

significant at 5 percent. The coefficients on ESG are negative but insignificant. Thus, indicating that CSR disclosure does not impact IA. These results further show that level of LTO in a country does not significantly impact the association between CSR disclosure and IA. This leads me to reject H5.

<Insert Table 3.11>

The results of eq-1 for INDU are detailed in table 3.12. The estimation yields negative and significant sign on the interaction variable INDUxESG. The coefficients on INDU*ESG are systematically negative and significant at a 5 percent level regardless of the proxies for IA. This confirms hypothesis H6. CSR disclosure significantly reduces IA for firms operating in countries such as the UK, Switzerland, and Austria with high INDU levels since they have more flexibility in reporting practices. Companies operating in countries with a high level of INDU have a higher cost of equity capital. Due to more flexibility and freedom, the companies in indulgent societies would undertake more CSR disclosure to decrease equity capital cost. Interestingly, the CSR disclosure of companies operating in high INDU countries drives the results in chapter 1, i.e., decreasing IA.

<Insert Table 3.12>

3.4.3 Control for Endogeneity

This chapter uses fixed effect estimation to control for endogeneity caused by omitted variables as used in the previous chapter. An instrumental variable (IV) is suggested to control for endogeneity because of reverse causality. Following the literature (Nguyen, Agbola, & Choi, 2018; Harjoto & Jo, 2015), I use the average industry CSR disclosure score (measured by Bloomberg average industry ESG disclosure score) as IV variables as used in chapter one. A firm's CSR disclosure score is closely related to its industry average CSR disclosure score. The average industry ESG disclosure score (AvgIndESG) comes from Bloomberg. Two-stage SLS regression is performed with IV for the six cultural dimensions. The results hold even after controlling for potential endogeneity. The parsimonious results of the 2SLS regression are given in Table 3.13.

<Insert Table 3.13 >

3.4.4 Post Estimation Test (Testing the Strength of the Instrument)

A post-estimation test is performed to test the strength of the instrument. The R-squared and the adjusted R-squared values from the first stage 2SLS regression are 0.5491 and 0.5380 (see Table 3.14), showing that the instrument chosen is moderately correlated with the regressor. The robust F-test value in the first stage regression summary statistics is 1281.69, which is larger than any of the critical values of the LIML estimator, showing that the IV is strong and correlated with the endogenous variable (ESG). The minimum eigenvalue statistic is 1281.69 is greater than the nominal 5% Wald test values showing that my instrument is not weak. Table 3.14 shows the results.

<Insert Table 3.14>

3.5 Conclusion

Lately, the research on CSR and CSR disclosure has incorporated informal institutional factors to shed light on the differences in CSR practices among different countries. The standard four cultural dimensions put forward by Hofstede (1986) are among the factors that have been analysed the most, with only a few studies utilizing the fifth and sixth dimensions: long-term orientation and uncertainty avoidance. This research's novelty lies in investigating the impact of six cultural dimensions on the association between CSR disclosure and information asymmetry, a topic on which nothing has been published.

This chapter investigates the extent of association between CSR disclosure and information asymmetry for a firm depending upon the country's culture. The chapter incorporates Hofstede's six cultural dimensions to proxy for the culture of a country. The analysis is carried out for 989 firms operating in 27 European countries. Bloomberg disclosure score is used to measure the CSR disclosure score. Relative daily spreads, Amihud illiquidity measure and proportion of zero daily stock returns are the proxies used for information asymmetry. I use panel data regression with fixed effects to explore each cultural dimension's impact on the association between CSR disclosure and information asymmetry.

The results show that Hofstede's cultural dimensions do not systemically impact the association between CSR disclosure and IA apart from indulgence. The managers operating in countries with high indulgence scores are more flexible in terms of reporting. Indulgent societies are characterised by optimism, freedom of speech, and quality of life. Such societies encourage information sharing to better the lives of individuals. The CSR disclosure in such countries is informative since this cultural dimension pushes the managers to be more transparent. As a result, the CSR disclosures that trickle down from such pressure are really informative. Such quality CSR disclosures ultimately result in lower information asymmetry between the management and the stakeholders.

I did not find significantly strong evidence on the impact of power distance, individualism, masculinity, uncertainty avoidance, and long-term orientation on the association between CSR disclosure and information asymmetry. The results obtained are robust even after controlling for potential endogeneity. The study is not free of limitations. The models used in this study incorporate only the countries' cultural variables, but various internal and external economic factors influence CSR disclosure. Those have not been considered in my analysis. I have used Bloomberg disclosure scores in my analysis, and therefore, my results maybe not applicable to other sustainability measures or indexes.

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Table 3.1: Sample breakdown by country

Country	n	Country	n	Country	n	Country	n
Austria	19	Germany	97	Poland	15	Switzerland	59
Belgium	24	Ireland	22	Portugal	12	Turkey	27
Denmark	27	Italy	40	Russia	41	UK	241
Finland	40	Netherlands	40	Spain	36	Others	29
France	113	Norway	47	Sweden	60		
Total							**989**

Table 3.2: Sample breakdown by industry

GICS Industry	n	%	GICS Industry	n	%
Automobiles & Components	25	2.5	Pharmaceuticals, Biotechnology & Life Sciences	56	5.6
Capital Goods	170	17.0			
Commercial & Professional Services	40	4.0	Real Estate	61	6.1
Consumer Durables & Apparel	49	4.9	Retailing	40	4.0
Consumer Services	28	2.8	Semiconductors & Semiconductor	16	1.6
Energy	78	7.8	Equipment		
Food & Staples Retailing	22	2.2	Software & Services	30	3.0
Food, Beverage & Tobacco	*53*	5.3	Technology Hardware &	24	2.4
Health Care Equipment & Services	20	2.0	Equipment		
Household & Personal Products	9	0.9	Telecommunication Services	29	2.9
Materials	100	10.1	Transportation	45	4.5
Media & Entertainment	43	4.3	Utilities	51	5.1
Total					**989**

Table 3.3: Hofstede's six dimensions scores

Country	PD	IND	MAS	UA	LTO	INDUL
Austria	11	55	79	70	60	63
Belgium	65	75	54	94	82	57
Bulgaria	70	30	40	85	69	16
Croatia	73	33	40	80	58	33
Denmark	18	74	16	23	35	70
Estonia	40	60	30	60	82	16
Finland	33	63	26	59	38	57
France	68	71	43	86	63	48
Germany	35	67	66	65	83	40
Greece	60	35	57	100	45	50
Ireland	28	70	68	35	24	65
Italy	50	76	70	75	61	30
Latvia	44	70	9	63	69	13
Luxembourg	40	60	50	70	64	56
Malta	56	59	47	96	47	66
Netherlands	38	80	14	53	67	68
Norway	31	69	8	50	35	55
Poland	68	60	64	93	38	29
Portugal	63	27	31	99	28	33
Russia	93	39	36	95	81	20
Slovenia	71	27	19	88	49	48
Spain	57	51	42	86	48	44
Sweden	31	71	5	29	53	78
Switzerland	34	68	70	58	74	66
Turkey	66	37	45	85	46	49
Ukraine	92	25	27	95	86	14
United Kingdom	35	89	66	35	51	69

Table 3.4: Mean ESG disclosure score of Hofstede 6 cultural dimensions (low vs. high)

Variables	Obs	Mean ESG	Std. Err	Std. Dev	Minimum	Maximum
Low PD	2238	34.62637	0.36462	17.2496	1.23969	80.57849
High PD	5172	31.00314	0.20540	14.7722	0.13697	77.40582
Difference		3.623237	0.39374			
T-statistics = 9.20 (0.0000)						
Low IND	590	26.63321	0.65447	15.8970	0.82369	69.83470
High IND	6820	32.57015	0.18816	15.5391	1.23969	80.57849
Difference		-5.93694	0.66806			
T-statistics = -8.88 (0.0000)						
Low MAS	4066	30.50597	0.23614	15.05785	0.82369	80.57849
High MAS	3344	34.03253	0.27897	16.13233	1.23969	76.03009
Difference		-3.52655	0.36305			
T-statistics = -9.71 (0.0000)						
Low UA	4616	32.71697	0.25485	17.31495	3.30579	68.46469
High UA	2794	31.07391	0.23370	12.35334	0.82369	80.57849
Difference		1.643055	0.37465			
T-statistics = 4.38 (0.0000)						
Low LTO	1651	30.40199	0.43977	17.8692	1.65289	80.57849
High LTO	5759	32.58350	0.19659	14.9188	2.89261	76.03009
Difference		-2.18150	0.43617			
T-statistics = -5.00 (0.0000)						

Low INDUL	4565	31.32069	0.20908	14.12701	0.82369	77.72769
High INDUL	2845	33.34379	0.33286	17.75472	1.23969	80.57849
Difference		-2.02309	0.37309			

T-statistics = -5.42 (0.0000)

Table 3.5: Summary statistics for the variables under study.

Variables	Obs	Mean	Std. Dev	Min	Max
Dependent Variables					
RSPRD	8893	0.00235	0.000296	0.0000212	0.005136
Amihud	8895	0.00145	0.000030	0.0000731	0.004630
Zeros	8901	0.07484	0.057016	0.0229885	0.241379
Variable of interest					
ESG	7410	32.09744	15.64959	0.8264	80.5785
Control Variables					
Size	8901	7.87612	1.783965	4.698296	11.23216
Risk	8897	32.952	12.35897	17.26112	63.64154
RIC	8869	0.0724572	0.0619781	-0.0441532	0.2097349
StockPrice	8897	3.930505	1.703228	1.092631	7.188906
TRADVOLU	8898	-0.5362	1.5630	-1.9810	-0.2136

The sample consists of all firm-year observations with control variable data available in Datastream. RSPRD: relative spreads computed by dividing daily closing bid-ask spreads by the mean daily midpoints followed by calculating the mean of relative spreads for the year by dividing the sum of daily relative spreads by the number of trading days in a year. Amihud: Amihud illiquidity measure is determined by scaling the absolute value of daily stock returns by trading volume in euro. This metric is averaged on a yearly basis by dividing the sum of daily relative price responses by the number of trading days in a year. Zeros: day with zero stock return is measured by dividing the number of days with zero returns by the total number of trading days in a year. ESG: Overall CSR disclosure score. ESG disclosure scores come from Bloomberg. Size: Size of the firm measured by the log of the market value of the equity. Risk: Measured by the stock return volatility calculated by taking the standard deviation of the firm's daily stock returns. RIC: Return on firm's invested capital measured by operating profit scaled by total assets. StockPrice: Log of the daily closing stock price of a firm. TRADVOLU: Daily trading volume measured by the log of the average daily trading volume (number of stocks traded) scaled by the number of shares outstanding.

Table 3.6: Correlation matrix and VIF Scores

Panel A: Correlation matrix

	RSPRD	Amihud	Zeros
RSPRD	1		
Amihud	0.628***	1	
Zeros	0.679***	0.364***	1

	Size	RISK	RIC	Stock price	TRADVOLU
Size	1				
Risk	-0.347***	1			
RIC	0.284***	-0.278***	1		
StockPrice	0.246***	-0.277***	0.360***	1	
TRADVOLU	0.661***	-0.0978***	0.165***	0.131***	1

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Panel B: VIF Scores

Variables	VIF	1/VIF
PDxESG	6.21	0.160974
PD	5.50	0.181972
ESG	1.96	0.509258
Risk	1.29	0.777454
TRADVOLU	1.94	0.515291
StockPrice	1.40	0.713611
RIC	1.24	0.804234

Table 3.7: Regression results for the impact of PD on the association between CSR disclosure and IA

VARIABLES	(1) RSPRD	(2) Amihud	(3) Zeros
ESG	**-0.009***	**-0.007***	**-0.009***
	(0.003)	**(0.003)**	**(0.001)**
PDxESG	**0.005**	**-0.008***	**0.003**
	(0.003)	**(0.004)**	**(0.003)**
PD	-0.184	-0.572	-0.086*
	(0.175)	(0.327)	(0.048)
Size	-0.232***	-0.190***	-0.237***
	(0.053)	(0.045)	(0.008)
RISK	0.008***	-0.000	-0.006***
	(0.003)	(0.003)	(0.001)
RIC	-0.835	-0.062	-1.073***
	(0.526)	(0.548)	(0.170)
StockPrice	-0.047	-0.080	-0.024***
	(0.037)	(0.052)	(0.007)
TRADVOLU	0.000	0.065	0.149***
	(0.000)	(0.088)	(0.012)
Constant	1.992***	2.140***	2.522***
	(0.576)	(0.314)	(0.083)
Year effects	Yes	Yes	Yes
Country effects	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes
Observations	7,379	7,381	7,381
R-squared	0.336	0.206	0.230

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3.8: Regression results for the impact of IND on the association between CSR disclosure and IA

	(1)	(2)	(3)
VARIABLES	RSPRD	Amihud	Zeros
ESG	**-0.004**	**-0.001**	**0.005**
	(0.006)	**(0.004)**	**(0.007)**
INDxESG	**-0.002**	**-0.006**	**0.006**
	(0.006)	**(0.006)**	**(0.005)**
IND	-0.130	-0.207	-1.525
	(0.259)	(0.332)	(0.271)
Size	-0.243***	-0.208***	-0.056*
	(0.050)	(0.044)	(0.032)
RISK	0.008***	0.001	-0.010***
	(0.003)	(0.002)	(0.002)
RIC	-0.898*	-0.108	-0.284
	(0.515)	(0.513)	(0.239)
StockPrice	-0.042	-0.049	-0.328***
	(0.038)	(0.041)	(0.069)
TRADVOLU	0.064	0.075	-0.009
	(0.084)	(0.093)	(0.050)
Constant	2.138***	1.777***	3.123***
	(0.640)	(0.425)	(0.520)
Year effects	Yes	Yes	Yes
Country effects	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes
Observations	7,379	7,381	7,381
R-squared	0.337	0.184	0.852

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3.9: Regression results for the impact of MAS on the association between CSR disclosure and IA

	(1)	(2)	(3)
VARIABLES	RSPRD	Amihud	Zeros
ESG	**0.007**	**-0.002**	**0.017**
	(0.002)	**(0.001)**	**(0.003)**
MASxESG	**-0.001**	**-0.006***	**-0.013***
	(0.004)	**(0.003)**	**(0.006)**
MAS	-0.004	-0.443**	-0.803*
	(0.179)	(0.045)	(0.348)
Size	-0.238***	-0.191***	-0.282***
	(0.055)	(0.009)	(0.061)
RISK	0.008***	0.001	-0.006**
	(0.003)	(0.001)	(0.002)
RIC	-0.867	-0.127	-1.014*
	(0.529)	(0.174)	(0.517)
StockPrice	-0.042	-0.074***	0.035
	(0.035)	(0.007)	(0.030)
TRADVOLU	0.064	0.087***	0.141
	(0.079)	(0.013)	(0.083)
Constant	1.988***	1.682***	3.055***
	(0.594)	(0.091)	(0.679)
Year effects	Yes	Yes	Yes
Country effects	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes
Observations	7,379	7,381	7,381
R-squared	0.334	0.202	0.268

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3.10: Regression results for the impact of UA on the association between CSR disclosure and IA

VARIABLES	(1) RSPRD	(2) Amihud	(3) Zeros
ESG	**-0.015****	**-0.004****	**-0.011****
	(0.004)	**(0.001)**	**(0.003)**
UAxESG	**-0.009**	**-0.003***	**-0.013***
	(0.004)	**(0.001)**	**(0.003)**
UA	-0.237*	-0.036	-0.365*
	(0.130)	(0.087)	(0.078)
Size	-0.238***	-0.300***	-0.274***
	(0.050)	(0.009)	(0.051)
RISK	0.008***	-0.000	-0.009***
	(0.003)	(0.001)	(0.002)
RIC	-0.860	0.160	-0.989*
	(0.530)	(0.153)	(0.530)
StockPrice	-0.034	-0.013	-0.066**
	(0.033)	(0.008)	(0.024)
TRADVOLU	0.076	0.212***	0.014
	(0.078)	(0.012)	(0.073)
Constant	2.150***	2.409***	2.792***
	(0.598)	(0.099)	(0.457)
Year effects	Yes	Yes	Yes
Country effects	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes
Observations	7,379	7,381	7,381
R-squared	0.339	0.414	0.519

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3.11: Regression results for the impact of LTO on the association between CSR disclosure and IA

VARIABLES	(1) RSPRD	(2) Amihud	(3) Zeros
ESG	**-0.007**	**-0.001**	**-0.004**
	(0.004)	**(0.002)**	**(0.002)**
LTOxESG	**-0.001***	**-0.007**	**-0.005***
	(0.004)	**(0.004)**	**(0.004)**
LTO	-0.107	-0.472	-1.317
	(0.155)	(0.288)	(0.071)
Size	-0.238***	-0.202***	-0.280**
	(0.055)	(0.038)	(0.060)
RISK	0.008***	0.001	-0.010**
	(0.003)	(0.002)	(0.002)
RIC	-0.885*	-0.105	-1.052**
	(0.514)	(0.514)	(0.424)
StockPrice	-0.039	-0.063	-0.076**
	(0.037)	(0.049)	(0.031)
TRADVOLU	0.066	0.074	0.006
	(0.084)	(0.088)	(0.085)
Constant	2.061***	1.617***	4.006**
	(0.607)	(0.318)	(0.653)
Year effects	Yes	Yes	Yes
Country effects	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes
Observations	7,379	7,381	7,381
R-squared	0.336	0.199	0.486

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3.12: Regression results for the impact of INDU on the association between CSR disclosure and IA

VARIABLES	(1) RSPRD	(2) Amihud	(3) Zeros
ESG	**-0.002**	**-0.002**	**-0.009**
	(0.001)	**(0.003)**	**(0.001)**
INDUxESG	**-0.007*** **	**-0.001** **	**-0.004*** **
	(0.001)	**(0.004)**	**(0.001)**
INDU	-2.236*	-0.423	-0.438
	(0.306)	(0.163)	(0.044)
Size	-0.333***	-0.293***	-0.215***
	(0.008)	(0.051)	(0.008)
RISK	0.004***	0.002	-0.007***
	(0.001)	(0.002)	(0.001)
RIC	-0.570***	0.184	-1.072***
	(0.145)	(0.642)	(0.169)
StockPrice	-0.040***	-0.003	-0.045***
	(0.008)	(0.026)	(0.007)
TRADVOLU	0.100***	0.219***	0.121***
	(0.011)	(0.058)	(0.012)
Constant	4.776***	1.572***	2.170***
	(0.308)	(0.499)	(0.085)
Year effects	Yes	Yes	Yes
Country effects	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes
Observations	7,379	7,381	7,381
R-squared	0.438	0.444	0.244

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

Table 3.13: Test for Endogeneity

Results of 2 stage SLS regression with PD

VARIABLES	(1) RSPRD	(2) Amihud	(3) Zeros
ESG	**-0.051***	**-0.061***	**-0.007***
	(0.004)	**(0.002)**	**(0.003)**
PDxESG	**-0.004***	**-0.006***	**-0.005**
	(0.008)	**(0.001)**	**(0.000)**
PD	-0.218	-0.463*	-0.536*
	(0.263)	(0.081)	(0.049)
Controls	Yes	Yes	Yes
Year effects	Yes	Yes	Yes
Country effects	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes
Observations	7,269	7,301	7,301
R-squared	0.316	0.306	0.303

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Results of 2 stage SLS regression with IND

VARIABLES	(1) RSPRD	(2) Amihud	(3) Zeros
ESG	**-0.014***	**-0.003**	**-0.031**
	(0.026)	**(0.006)**	**(0.003)**
INDxESG	**0.005**	**-0.003***	**-0.036**
	(0.009)	**(0.058)**	**(0.035)**
IND	-0.212	-0.315	-0.989
	(0.513)	(0.412)	(0.133)
Controls	Yes	Yes	Yes
Year effects	Yes	Yes	Yes
Country effects	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes
Observations	7,269	7,301	7,301
R-squared	0.353	0.201	0.789

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Results of 2 stage SLS regression with MAS

	(1)	(2)	(3)
VARIABLES	RSPRD	Amihud	Zeros
ESG	**-0.053**	**-0.013**	**-0.020**
	(0.010)	**(0.003)**	**(0.001)**
MASxESG	**-0.018**	**0.016**	**-0.009***
	(0.005)	**(0.054)**	**(0.101)**
MAS	-0.018*	-0.099*	-0.784**
	(0.018)	(0.050)	(0.084)
Controls	Yes	Yes	Yes
Year effects	Yes	Yes	Yes
Country effects	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes
Observations	7,269	7,301	7,301
R-squared	0.463	0.313	0.201

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Results of 2 stage SLS regression with UA

	(1)	(2)	(3)
VARIABLES	RSPRD	Amihud	Zeros
ESG	**-0.006***	**-0.013****	**-0.009***
	(0.001)	**(0.004)**	**(0.001)**
UAxESG	**0.006**	**-0.053**	**-0.045***
	(0.002)	**(0.009)**	**(0.008)**
UA	-0.316*	-0.029*	-0.516*
	(0.231)	(0.761)	(0.088)
Controls	Yes	Yes	Yes
Year effects	Yes	Yes	Yes
Country effects	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes
Observations	7,269	7,301	7,301
R-squared	0.444	0.503	0.499

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Results of 2 stage SLS regression with LTO

VARIABLES	(1) RSPRD	(2) Amihud	(3) Zeros
ESG	**-0.018**	**-0.053***	**0.005**
	(0.001)	**(0.003)**	**(0.008)**
LTOxESG	**-0.005***	**-0.006**	**-0.003***
	(0.013)	**(0.038)**	**(0.008)**
LTO	-0.023	-0.562	-1.199
	(0.144)	(0.005)	(0.004)
Controls	Yes	Yes	Yes
Year effects	Yes	Yes	Yes
Country effects	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes
Observations	7,269	7,301	7,301
R-squared	0.298	0.250	0.515

Robust standard errors in parentheses,
*** p<0.01, ** p<0.05, * p<0.1

Results of 2 stage SLS regression with INDU

VARIABLES	(1) RSPRD	(2) Amihud	(3) Zeros
ESG	**-0.019**	**0.008**	**-0.005**
	(0.005)	**(0.001)**	**(0.001)**
INDUxESG	**-0.008*** **	**-0.003*** **	**-0.008** **
	(0.010)	**(0.053)**	**(0.005)**
INDU	-3.236*	-0.313	-0.368
	(0.256)	(0.169)	(0.051)
Controls	Yes	Yes	Yes
Year effects	Yes	Yes	Yes
Country effects	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes
Observations	7,269	7,301	7,301
R-squared	0.356	0.533	0.356

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

Table 3.14: Results for the strength of the instrument

First stage regression summary statistics

Variable	R—sq.	Adjusted R—sq.	Partial R—sq.	Robust F(1,8950)	Prob > F
ESG Score	0.5491	0.5380	0.4010	1281.69	0.0000

Minimum eigenvalue statistic = 1281.69

Critical Values # of endogenous regressors: 1

Ho: Instruments are weak # of excluded instruments: 1

2SLS relative bias	5%	10% (not available)	20%	30%
	10%	15%	20%	25%
2SLS Size of nominal 5% Wald test	*15.38*	9.86	5.99	4.58
LIML Size of nominal 5% Wald test	*15.38*	9.86	5.99	4.58

Chapter 4: Does Good Quality Disclosure Need Good Quality Regulation? The Case of 2014/95/ EU Directive

ABSTRACT

Adopted recently in the European Union (EU), the Non-Financial Reporting Directive (NFRD) requires companies with more than 500 employees to disclose the information they consider relevant to their business relating to environmental matters, social aspects, anti-corruption, and human rights issues, diversity on board of directors, etc. This study investigates the consequences of the directive adoption by exploring its impact on both corporate social responsibility (CSR) disclosure and information asymmetry (IA). The sample consists of 832 publicly listed companies in the EU for the period 2015-2018. The Bloomberg ESG disclosure score is used as a proxy for CSR disclosure. Relative bid-ask spreads, the Amihud illiquidity metric, and the proportion of zero daily stock returns are used as proxies for IA. Based on a difference-in-differences estimation, the results show that the NFRD adoption positively impacted CSR disclosure as a whole and environmental, social, and governance disclosure considered individually. The results also show that increased CSR disclosure due to the NFRD adoption is associated with decreased information asymmetry. This suggests that the NFRD adoption was truly beneficial to market participants. Additional investigations show that countries with more stringent disclosure requirements than the NFRD requirements exhibit higher growth in CSR disclosures. Lastly, the NFRD adoption's impact is stronger for firms that used to disclose less non-financial information before NFRD adoption than high disclosing firms prior to the adoption. The results further reveal that high disclosing firms before the NFRD adoption lowered their environmental and governance disclosure after adopting NFRD to match the directive requirements.

Keywords: Information asymmetry, Corporate social responsibility disclosure, Mandatory disclosure, Bid-Ask spreads, Amihud, Zeros, Environmental disclosure, Social disclosure, Governance disclosure, Bloomberg disclosure Score, NFRD, Non-financial reporting directive.

4.1 Introduction

The financial crises, along with a growing concern relating to the environmental and social consequences of firms' operations, have resulted in an increased pressure on firms to operate not only in an environmentally and socially friendly way but to be more transparent and accountable to their stakeholders (De Villiers, Hsiao, & Maroun, 2017). Succumbing to this pressure, various regulations and guidelines have been proposed to govern CSR disclosure. One such regulation, known as the Non-Financial Reporting Directive (NFRD) 2014/95/EU, came into force in the European Union (EU) after 6 December 2016.

I empirically investigate whether the NFRD adoption resulted in higher CSR disclosure. My motivation for focusing on this regulation stems from the fact that what was once voluntary is now mandatory. This offers a plausible setting to investigate whether changes in disclosure requirements from voluntary to mandatory affects the magnitude of disclosure. NFRD adoption is useful if it results in more non-financial disclosures and, more importantly, if the supplementary disclosures are associated with lower information asymmetry (IA). To determine whether mandatory NFRD adoption led to increased CSR disclosure, resulting in decreased information asymmetry, I analyse the impact of the NFRD adoption on the quantity of disclosed information and information asymmetry of CSR disclosing firms.

To provide a great accountability and transparency level, the reporting system that prevailed in the EU prior to the NFRD adoption, based mainly on retrospective financial data, was insufficient to satisfy stakeholders' information needs. Firms' stakeholders are increasingly sensitive towards the social and environmental impacts of the operations of businesses. Companies have social responsibilities towards society and the environment as their operations affect society's well-being at large. A recent survey (Cone Communcations, 2017) shows that 92% of American consumers have a more positive image and higher trust in companies that support social or environmental issues. 80% of the surveyed consumers even believe that companies take steps to resolve the issues that are not related to their day-to-day operations. This suggests that stakeholders require specific information regarding how the company affects the environment and society it operates in. The European Commission (EC) realized that current reporting practices were not enough to meet the

non-financial needs of EU firms' stakeholders. It came forward with NFRD to make disclosure of non-financial information mandatory for certain large undertakings and public interest entities.

Under NFRD, companies must disclose non-financial information if they:

- ✓ Meet 2 out of 3 of the following criteria for two consecutive accounting periods:
  - o a balance sheet total of €20 million, or
  - o a net turnover of €40 million, or
  - o an average number of 250 employees.
- ✓ Are a Public interest entity (PIEs). An institution is termed as PIE if
  - o it has tradeable securities on regulated markets of any EU member state, or
  - o it is an insurance company, or
  - o it is a credit institution, or
  - o it is nominated by a member state as a PIE.
- ✓ Have an average number of 500 employees during the financial year.

NFRD mandates companies to disclose a summary of their business model and non-financial key performance indicators (CSR Europe, 2017). The directive requires that companies provide the minimum information on environmental, social, and employee matters, human rights, and information about anti-corruption and bribery-related issues (CSR Europe, 2017). As stated clearly by EC, the main aim of the NFRD adoption is to achieve transparency and harmony related to non-financial information among EU member states. All member states are given complete flexibility in terms of NFRD transposition into their respective national laws.

As the transposition of NFRD is a recent phenomenon, the investigation of its capital market consequences and its usefulness to market participants is still limited. To the best of my knowledge, this study is the first one to examine the consequences of NFRD adoption at the EU level. This study contributes to almost non-existent literature on NFRD adoption and how it can help investors make informed decisions by enhancing non-financial information disclosure, resulting in lower information asymmetry.

I adopt the following process. First, I determine the effective NFRD adoption date in each EU member state since EU countries transposed the directive into their respective national laws at different dates. Second, I select a control sample to match the EU treatment firms having to comply

with the NFRD with control firms not subject to the EU directive. The use of a control sample allows a difference-in-differences estimation. It enables to control for other simultaneous factors that may affect disclosure and IA but are not related to the NFRD adoption. The control sample consists of US companies from the S&P 1500. The control firms are matched with the treatment firms based on their industry and size (the I/S method). For each treatment firm, I select the US-listed firm with the closest market capitalization and the same 4-digit GICS code. Third, I disaggregate its overall CSR disclosure score into its three components to assess the NFRD adoption's impact on each component. The three components are the environmental disclosure score (ENV), the social disclosure score (SOC), the governance disclosure score (GOV). Fourth, I split my sample countries into two groups depending on the strength of the applied NFRD provisions' requirements.

The directive gave flexibility to the member states by setting minimum disclosure requirements. While several member states transposed NFRD at the minimum, others raised the minimum limit and made the disclosure requirements more stringent. Therefore, I split my sample into high requirement countries and low requirement countries to investigate the impact of the NFRD adoption for both subsamples. Lastly, I examine the impact of the NFRD adoption on non-financial disclosure for low disclosing firms (firms that disclose less non-financial information before the NFRD adoption) and high disclosing firms (firms that disclose more non-financial information before the directive adoption). The Bloomberg ESG disclosure scores, collected from the Bloomberg database, are used as proxies for CSR disclosure. The rest of the data is collected from Datastream from 2015 to 2018. In addition, since more CSR disclosure does not systematically mean less information asymmetry, I investigate the impact of the directive adoption of the information asymmetry of adopting firms using means relative spreads, the Amihud metric, and the proportion of zero stock returns as proxies for information asymmetry.

The results provide evidence of lowered IA following the adoption of NFRD with and without a control sample along at least two of the three IA proxies. The results also show that NFRD adoption resulted in increased CSR (ENV, SOC, and GOV) disclosure for the EU sample. The increased CSR disclosure (measured by ESG) and its ENV and GOV dimension are associated with decreased IA for two of the three IA proxies. The results provide additional evidence showing that the countries with disclosure requirements higher than the minimum NFRD requirements

experienced significantly stronger CSR disclosure growth along with ENV, SOC, and GOV dimensions considered separately. EU firms that used to disclose less before the NFRD adoption experienced a higher increase in CSR, ENV, and GOV disclosure after the NFRD adoption than high disclosing firms. In contrast, high disclosing firms before the NFRD adoption lowered their ENV and GOV disclosure after adopting NFRD to match the directive's requirements. The directive adoption had an impact of the same magnitude for both low and high disclosing firms when it comes to SOC disclosure.

The rest of the chapter is organized as follows. Section II reviews the literature, theoretical framework, and hypotheses. Section III describes the sample and research design. Section IV presents and discusses the empirical findings. Section V concludes the chapter.

4.2 Theoretical Framework and Hypotheses Development

With ever-growing environmental and social concerns, there has been a sharp increase in demand for CSR disclosure. The European Commission published a green paper in 2001, intending to start a debate on CSR. It defined CSR as a "concept whereby companies integrate social and environmental concerns in their business activities and their interaction with their stakeholders voluntarily" (Commission of the European Communities, 2019). It marked the beginning of the EU CSR policy. About thirteen years later, in 2014, NFRD 2014/95/EU was adopted, amending Directive 2013/34/EU. The new directive, which applies to the 28 member states, had to be transposed by EU countries into their national laws by December 6, 2016. The directive requires disclosures of non-financial information on environmental, social, and employee matters, respect for human rights, anti-corruption, and bribery matters.

With NFRD, what was once voluntary has become mandatory. It is still unclear whether CSR disclosure should be voluntary or obligatory. This has been a hot debate for more than ten years ago. At the start, firms supported voluntary disclosure, while NGOs and other interested stakeholders favoured mandatory reporting. Nowadays, both investors and companies favour regulation to supervise CSR reporting (KPMG, 2019). Governments consider CSR disclosure regulations an effective way to respond to the ever-increasing demand for accountability from stakeholders (Cohen, Holder-Webb, & Zamora, 2015).

This inclination towards accepting mandatory CSR reporting is mainly due to two reasons. The first one is the lack of transparency in CSR issues. The second one is the limited usefulness of voluntary disclosure that is often irrelevant and incomplete to most stakeholders (Doane, 2002). However, any regulation about environmental and social information disclosure is useful only if it is associated with strong enforcement and clear guidelines. Senn & Giordano-Spring (2020) recently conducted a study on the insider perspectives on environmental accounting disclosures using insights from key managers. They concluded that the lack of strong definition and proper guidance for CSR reporting elicit interpretative responses from corporate management, explaining the limitation in disclosing environmental accounting information.

The shift from mainly voluntary to mandatory CSR disclosure leads to re-examine the theoretical foundations behind sustainability reporting. The legitimacy theory follows that the firm's existence depends upon the fact that its values must agree with society's values because oof an implicit social contract between the firm and the society (Magness, 2006). This theory is broadly recognized as a socio-political theoretical framework to justify voluntary CSR disclosure (Archel, Husillos, Larrinaga, & Spence, 2009; Cho, Freedman, & Patten, 2012). Legitimization can occur through both mandatory and voluntary disclosures (Magness, 2006; Lightstone & Driscoll, 2008). Companies voluntarily disclose environmental and social information to influence institutional or private stakeholders (Cormier & Gordon, 2001) and gain or uphold organizational legitimacy (Deegan, 2002).

Voluntary disclosure of CSR information responds to stakeholders' demands and expectations to make the firm more legitimate. Any activity or practice collectively perceived by the society as legitimate becomes an informal norm (Bebbington, Kirk, & Larrinaga, 2012). Mimetic isomorphism, which encourages institutions to implement standard practices considered best practices, may lead companies to undertake voluntary CSR disclosure to gain legitimacy since other companies do the same (Dumay, Frost, & Beck, 2015). In the context of mandatory reporting, this is the coercive force of the law that maintains legitimacy.

A significant stream of research supports the necessity of regulating non-financial disclosure, especially CSR disclosure. According to Deegan, CSR disclosure's quantity and quality can only be improved by mandatory regulations (Deegan, 2002). He argues that social accounting was a hot issue in the 70s, with many organisations and governments interested. Nonetheless, it disappeared

from the scene over a decade. Despite the resurgence of global interest in social and environmental reporting over the last decades, CSR reporting may disappear again without a precise and constraining regulation (Deegan, 2002). Boyer-Allirol (2013) argues that it is only by mandating the information to be released that CSR information will be relevant and reliable enough to arouse the firm's stakeholders' interest, notably investors' decision-making process.

The quality of disclosure is lower in countries with less regulative pressure, such as the U.S., compared to countries with more stringent regulations, such as France (Crawford & Williams, 2010). Several studies show that regulations aimed at supervising corporate disclosure influence the firm's market value. Wang & Li (2016) investigate the impact of CSR disclosure on Chinese companies and conclude that mandatory CSR disclosure positively impacts their market value. Ioannou and Serafeim (2017) find that the extent of disclosure is greater once regulatory measures are adopted for a sample of companies from Malaysia, China, South Africa, and Denmark. They also determine that the increase in CSR disclosure due to mandatory regulations is associated with higher firm value.

Based on 1830 standalone CSR reports disclosed by Chinese-listed companies during 2009-2012, Wang et al. (2017) observe the impact of mandatory regulation on CSR reporting quality. Their results suggest that mandatory regulations lead to an overall improvement in CSR reporting quality. Wang et al. (2017) further notice that the positive impact is more significant for large-sized firms. More recently, Jackson et al. (2020) conduct a study also aimed at investigating the influence of mandatory regulation on CSR disclosure. With a sample of firms operating in the 24 OECD countries and using the Asset4 database, they show that firms operating in countries with stringent CSR disclosure regulations undertake more CSR activities. Following the theoretical justification supported by this stream of research, I hypothesize:

H1: NFRD adoption resulted in increased CSR disclosure

NFRD allowed the EU member states considerable flexibility in the directive's transposition. There is no clear standard concerning the guidelines and frameworks to use when implementing the directive (European Commission, 2019). According to the Federation of European Accountants, nine international frameworks are suitable for complying with NFRD: Global Reporting Initiative (GRI), AccountAbility (AA), International Integrated Reporting Council (IIRC), United Nations Global Compact (UNGC), Sustainability Accounting Standards Board (SASB), Organization for

Economic Co-operation and Development (OECD), International Standards Organization (ISO) and European Federation of Financial Analysts Societies (EFFAS). The wide discretion in selecting any of these frameworks could be a significant obstacle in realizing the primary purpose of NFRD adoption, i.e., comparability. While some member states opted to transpose the directive into their national legal system in a passive way, others went through active transposition by making the disclosure requirements of the directive more stringent. Several member states such as UK, Belgium, Spain, Greece, France have set disclosure requirements that surpass the NFRD minimum requirements. As EU companies must comply with the NFRD provisions implemented in the member state where they are domiciled, I hypothesize:

H2: Higher mandatory disclosure requirements result in a greater increase in CSR disclosure following the NFRD adoption.

The European Union has 28 member states with different stakeholder orientations. Some member states have stringent stakeholder-oriented regulations, while others have just limited requirements. Some EU countries such as Denmark, Sweden, Spain, France, UK implemented various mandatory regulations for CSR disclosure before the NFRD transposition deadline date (Venturelli, Caputo, Cosma, Leopizzi, & Pizzi, 2017). The CSR disclosure requirements in several member states (including The Netherlands, UK, Sweden, Denmark, and France) were higher than others. Some made disclosure of non-financial information mandatory, while others followed the “comply or explain” approach. The scope of the requirements also differed from country to country. Several states made non-financial disclosures compulsory for publicly listed companies or state-owned companies only. Others made it mandatory for all large undertakings. Some countries required companies to refer to the GRI standards, while others formulated their own reporting guidelines. Furthermore, companies keen to win legitimacy may have abided by certain disclosure norms stricter than the guidelines or regulations. Therefore, prior to the NFRD adoption, some EU companies disclosed more than others, voluntarily or because of higher and stricter requirements. Therefore, the NFRD mandate's impact should be stronger for low disclosing firms compared to high disclosing firms prior to the directive adoption. I thus hypothesize:

H3: The impact of the NFRD adoption on CSR disclosure is stronger for low disclosing firms prior to the NFRD adoption.

The usefulness of disclosure regulations cannot be measured only in terms of their impacts on the quantity or quality of disclosures without considering their impacts on information asymmetry. Making disclosures compulsory is useful only if the mandatory disclosures improve the firm's stakeholders' information and result in lower information asymmetry. However, this is not systematically the case. This might not be the case if the disclosures that became mandatory were voluntarily communicated by firms before the regulation adoption. This may not be the case if the information to be mandatorily disclosed is not clearly specified or if the enforcement is low. NFRD requires large undertakings to disclose non-financial information. Companies that did not disclose such information before the directive adoption must disclose it since the NFRD adoption. EU companies should therefore benefit from lower information asymmetry resulting from the new legal requirements. However, for all the reasons listed above, this deserves to be verified.

De George et al. (2016) performed a comprehensive review of the literature on the International Financial Reporting Standards (IFRS) adoption impacts. Most of the studies observed IFRS adoption to be associated with increased transparency, better comparability, lower information asymmetry, increased analysts following, and lower cost of capital. In contrast, Leuz & Wysocki (2016) performed a detailed review of the empirical US and international studies on disclosure and financial reporting regulations' economic consequences. They observed a general lack of evidence on market-wide effects because of externalities from such regulations.

Bernardi & Stark (2016) determine that the production of integrated reports on a mandatory basis reinforced the association between CSR disclosure and analyst forecast accuracy for a sample of South African firms. This suggests that greater transparency trickles down from regulation, which reduces IA, resulting in greater market efficiency and lower cost of capital (Dhaliwal, Li, Tsang, & Yang, 2011; Goss & Roberts, 2011). Wang et al. (2016) investigated the effects of mandatory CSR disclosure on information asymmetry in a quasi-natural experiment in China. They observe significant favorable impacts of mandatory CSR disclosure on asymmetric information. These impacts are more noticeable for firms operating in poorer information environments, greater political and social risks, and better CSR reporting quality. In the same vein, Hung et al. (2013) empirically conclude that CSR disclosure quality is negatively associated with information asymmetry in post-mandatory periods. Following this stream of research, I hypothesize:

H4: NFRD adoption decreased information asymmetry of adopting firms.

4.3 Sample and Research Design

4.3.1 Proxies and Determinants of Information Asymmetry

Asymmetric information has a fundamental role in matching the economic theories with the observable economic behavior (Johnson & So, 2016). Because it results in market imperfections, information asymmetry (IA) is one of the most critical concepts studied by modern economists (Johnson & So, 2016). Since corporate disclosure is closely related to IA (Yoon, Ciganek, & Zo, 2011), CSR disclosures are expected to affect IA significantly.

I use the same three proxies for IA as those used in the previous chapters (Jayaraman, 2008; Amihud, 2002; Liu, Luo, & Wang, 2017).

- Bid-ask spreads

$$\text{RSPRD}_{i,t} = \left\{ \sum \frac{\frac{SPR_{i,t}}{BID_{i,t} + ASK_{i,t}}}{2} \right\} / n$$

where $\text{RSPRD}_{i,t}$ is the relative spread on day 't' of stock 'i', $BID_{i,t}$ is the last bid price of day 't' for stock 'i', $ASK_{i,t}$ is the last ask price of day 't' for stock 'i', 'n' is the number of trading days in a year.

- Amihud illiquidity (2002) metric

$$ILLIQU_{i,t} = \frac{\sum_{1}^{n} \frac{|R_{i,t}|}{DVol_{i,t}}}{n}$$

where $R_{i,t}$ is the absolute return on day t of stock i, $\text{DV0}L_{i,t}$ is the daily euro trading volume on day t of stock i; n represents the number of trading days in a year.

- Zero daily stock returns

The proportion of zero daily stock returns (Zeros) is calculated by dividing the number of days with zero returns by the total number of trading days in a year. A lower value of Zeros shows higher liquidity (Liu, Luo, & Wang, 2017).

A significant body of literature reveals that the three metrics under study are affected by numerous variables other than disclosures. Higher trading volume results in lower spreads and higher liquidity (Yoon, Ciganek, & Zo, 2011). Firm size is negatively related to spreads, positively to liquidity (Chia-Wu & Ting-Shu, 2015; Michaels & Grüning, 2017). As represented by stock return volatility, risk widens bid-ask spreads and lowers liquidity (Cho, Lee, & Pfeiffer Jr, 2013). Further, Chia-Wu & Ting-Shu (2015) observe that firm profitability is negatively related to spreads and positively to liquidity; stock prices are negatively related to liquidity and positively to spreads.

4.3.2 Metrics and Determinants of CSR Disclosure

Following several past studies, I utilize the Bloomberg ESG disclosure score as a proxy for CSR disclosure (Utz & Wimmer, 2014; Arayssi, Dah, & Jizi, 2016; Nollet, Filis, & Mitrokostas, 2016; Qiu, Shaukat, & Tharyan, 2016; Tamimi & Sebastianelli, 2017). Bloomberg ESG disclosure assigns scores to companies based on both quantitative and ESG policy-related data. The Bloomberg ESG metrics are preferred over other similar indices because of both the scores' quantitative and qualitative nature.

Research on CSR disclosure, including social and environmental disclosure, can be traced back to the early 1980s. The factors determining CSR disclosure have been the subject of numerous studies both in developing and developed countries. It provides relatively consistent results. CSR disclosure studies in developing countries mainly focus on North America, North-Western Europe, and Australia (Ali, Frynas, & Mahmood, 2017). Chiu & Wang (2014) find company size positively associated with CSR disclosure's social dimension for a sample of Taiwanese firms. For a sample of Indian companies, Kansal et al. (2014) also show that CSR disclosure is positively associated with firm size.

The research in developed countries comes up with similar results. Gamerschlag et al. (2011) find a positive association between voluntary CSR disclosure and the size of German firms. Bouten et

al. (2011) have similar findings for a sample of Belgian firms. More recently, Waluyo (2017) shows that the size of real estate companies in Indonesia has a significantly positive impact on CSR disclosure. The firm's financial performance has also been proved to impact CSR disclosure, but the direction of the relationship between CSR disclosure and financial performance has conflicting results. For a sample of Jordanian firms, Nawaiseh (2015) shows that operating performance measured by return on assets has a positive association with CSR disclosure's environmental and employee dimensions. Beck et al. (2018) conclude that financial performance positively impacts CSR disclosure for a sample of Australian firms.

On the other side of the spectrum, Saleh et al. (2010) do not find any significant relationship between financial performance and CSR disclosure for listed Malaysian companies. Similar results are observed by Chih et al. (2010) for a global sample of firms from 34 countries in the financial industry. Leverage is another factor expected to impact CSR disclosure. Hamrouni et al. (2019) observe a positive association between different leverage ratios and CSR disclosure for a sample of French listed firms on the Euronext Paris stock exchange. In contrast, Dyduch & Krasodomska (2017) find a negative association between leverage and CSR disclosure for a sample of Polish listed companies.

4.3.3 Baseline Models

To test H1, I use the following model.

$$\mathrm{DISC_{i,t}} = \beta_0 + \beta_1 \mathrm{POST} + \beta_2 \mathrm{NFRD} + \beta_3 \mathrm{POST} * \mathrm{NFRD} + \sum_k \gamma_k \mathrm{CONTROL_{k,i,t}} + \text{Fixed effects} + \mathrm{e_{i,t}} \quad \text{Eq-1}$$

$\mathrm{DISC_{i,t}}$, the Bloomberg corporate disclosure score stands for the disclosure. It is represented by $\mathrm{ESG_{i,t}}, \mathrm{ENV_{i,t}}, \mathrm{SOC_{i,t}}, \mathrm{GOV_{i,t}}$ $\mathrm{ESG_{i,t}}$. $\mathrm{ENV_{i,t}}$ is the Bloomberg environmental disclosure score. $\mathrm{SOC_{i,t}}$ is the Bloomberg social disclosure score. $\mathrm{GOV_{i,t}}$ is the Bloomberg governance disclosure score. POST takes the value 1 for years after the NFRD adoption date and 0 otherwise. NFRD takes the value 1 if the firm belongs to the treatment sample of EU firms that had to comply with NFRD, and 0 if it belongs to the control sample of US firms not affected by the EU directive. $\mathrm{Controls}_{i,t}$ are the control variables. They include $\mathrm{Size}_{i,t}$ (firm size measured by the log of the market value of the firm equity), $\mathrm{RIC}_{i,t}$ (return on the firm's invested capital measured by operating profit scaled

by total assets), $\mathrm{LTD}_{i,t}$ (leverage measured by long-term debt scaled by total assets). The variable of interest is POST*NFRD. According to H1, its coefficient is expected to have a positive sign, showing a significantly higher CSR disclosure for treatment firms than for control firms after the NFRD adoption date.

The following model is used to test H2.

$$\mathrm{DISC_{i,t}} = \beta_0 + \beta_1 \mathrm{POST} + \beta_2 \mathrm{RQRT} + \beta_3 \mathrm{POST} * \mathrm{RQRT} + \sum_k \gamma_k \mathrm{CONTROL_{k,i,t}} + \mathrm{FE} + \in$$

Eq-2

POST takes the value 1 for years after the NFRD adoption date and 0 otherwise. RQRT takes the value 1 for firms domiciled in countries with CSR disclosure requirements higher than those of the directive. RQRT equals 0 otherwise. According to H2, the variable of interest $\mathrm{POST} * \mathrm{RQRT}$ is expected to have a positive sign indicating that disclosure requirements higher than those of the directive result in a higher CSR disclosure increase. The other variables are the same as in Eq-1.

The following model tests H3.

$$\mathrm{DISC_{i,t}} = \beta_0 + \beta_1 \mathrm{POST} + \beta_2 \mathrm{LOW} + \beta_3 \mathrm{POST} * \mathrm{LOW} + \sum_k \gamma_k \mathrm{CONTROL_{k,i,t}} + \mathrm{FE} + \in$$

Eq-3

POST is defined as previously. The variable LOW takes the value 1 if a firm was a low disclosing firm before the NFRD adoption, and 0 otherwise. Low (high) disclosing firms are those with a disclosure score below (above) the mean disclosure score before the NFRD adoption. According to H3, the variable of interest is $\mathrm{POST} * \mathrm{LOW}$. It is expected to have a positive sign showing that the NFRD adoption's impact is stronger for firms that disclosed less before the directive adoption. The control variables are the same as above.

To test H4, I use the following model.

$$\mathrm{IA_{i,t}} = \beta_0 + \beta_1 \mathrm{Post} + \beta_2 \mathrm{NFRD} + \beta_3 \mathrm{Post} * \mathrm{NFRD} + \sum_k \gamma_k \mathrm{CONTROL_{k,i,t}} + \text{Fixed effects} + \mathrm{e_{i,t}}$$

Eq-4

IA stands for information asymmetry and is represented by the three proxies described above: relative spreads ($\mathrm{RSPRD}_{i,t}$), Amihud and Zeros ($\mathrm{Zeros_{i,t}}$). Post is the time variable. It equals 1 for 2017 and 2018, i.e., years after the NFRD adoption date. Post equals 0 for the years before the

directive adoption. NFRD takes the value 1 for firms in the treatment sample that had to comply with NFRD. The dummy equals 0 for firms in the control sample that were not affected by the directive. The variable of interest $\mathrm{Post} * \mathrm{NFRD}$ shows the impact of the NFRD adoption on IA for the treatment group. According to H4, β_3 is expected to be negative since firms compelled to comply with the EU directive are expected to exhibit a higher decrease in information asymmetry than control firms after the NFRD adoption date. $\mathrm{CONTROL}_{k,i,t}$ are the control variables. They include $\mathrm{Size}_{i,t}$ (firm size measured by the log of firm equity market value), $\mathrm{StockPrice}_{i,t}$ (log of daily closing stock prices), $\mathrm{Risk}_{i,t}$ (standard deviation of daily stock returns), $\mathrm{RIC}_{i,t}$ (return on the firm's invested capital measured by operating profit scaled by total assets).

4.3.4 Sample

The initial treatment sample consisted of 1458 publicly quoted European companies included in the Bloomberg ESG universe. 168 firms were dropped due to lack of availability of data. 458 firms were dropped as they did not belong to the EU. Therefore, the final treatment sample consists of 832 publicly listed EU companies (24 industries and 28 countries) with 3328 firm-year observations from 2015 to 2018. The breakdown of the sample by country and industry is given in Table 4.1 and Table 4.2. The companies are categorized into industries using GICS industry codes. ESG data is obtained from the Bloomberg database. The data on all other variables is obtained from Datastream. The daily observations are winsorised at the 0.01 level to alleviate the effect of extreme values (see the summary statistics to know the extremity of the values).

<Insert Table 4.1>

<Insert Table 4.2>

The control sample consists of US companies from the S&P 1500 index. The control firms are selected by matching industry and size (the I/S method) with the treatment firms. For each treatment firm, a matching firm is selected with the same 4-digit GICS code and the closest market capitalization.

A content analysis of official gazettes notification determines the effective NFRD adoption date in each country. The official NFRD adoption date published by every EU member state is given in Table 4.3. It ranges from June 1, 2015, for Denmark to November 25, 2017, for Spain.

<Insert Table 4.3>

Since NFRD gave the EU member states significant flexibility to adopt the directive, some countries raised the bar and opted for national requirements stricter than the NFRD requirements. A content analysis of the official adoption notice published by each member state differentiates the countries with national requirements higher than those of the directive from countries where national requirements are the same as the directive. The disclosure requirements include the definition of a large undertaking, the definition of a public interest entity, the report topics and contents, and the non-compliance penalties. Some EU countries made the disclosure requirements more stringent such as setting the balance sheet requirement lower than €20m to include more companies, eventually leading to more mandated disclosure. Such countries are termed as high requirement countries as opposed to the countries that implemented the NFRD at the minimum. My sample consists of 513 companies operating in high requirement (RQRT) countries and 319 companies in low requirement (RQRT) countries.

Before the NFRD adoption, non-financial disclosure was undertaken voluntarily. It was up to the companies' discretion to disclose non-financial information. Some companies were disclosing more than others depending upon various factors. The mean ESG, ENV, SOC, GOV scores before the NFRD adoption for my sample are 36.45, 30.19, 41.69, and 52.49, respectively. Firms with disclosure scores lesser than the mean value before the directive adoption are characterised as low disclosing firms. Firms with an average disclosure score higher than the mean score are termed as high disclosing firms.

4.4 Empirical Results

4.4.1 Univariate Results

The summary statistics of the main variables are shown in Table 4.4. CSR disclosure's GOV dimension has a mean value of 53.64, which is the highest among the three dimensions of CSR disclosure. ENV dimension has the lowest mean value of 31.035. The minimum and maximum values of ESG are 3.3 and 78.5, respectively, showing a heterogeneous sample. The values of ENV, SOC, and GOV follow the same pattern.

<Insert Table 4.4>

Table 4.5 shows the descriptive statistics and T-tests for RSPRD, Amihud, and Zeros before and after the adoption of NFRD. The p-values are given in parenthesis. The results show that the difference in mean values for RSPRD, Amihud, and Zeros before and after NFRD is statistically significant at 5 percent level. However, the proportion of Zeros increased from 0.05014 to 0.05565 after the directive adoption, which is contrary to what was expected.

<Insert Table 4.5>

Table 4.6 details the descriptive statistics of ESG, ENV, SOC, and GOV before and after the adoption of NFRD. The mean values increase in overall CSR, ENV, SOC, and GOV disclosure after the NFRD adoption. This result supports my hypothesis that NFRD adoption increases overall CSR disclosure and its environmental, social, and governance disclosure component. T-tests from table 4.6 show that the difference in mean values for ESG, ENV, SOC, and GOV is significant at least at 5 percent level.

<Insert Table 4.6>

Panels A and panel B of Table 4.7 compare the difference in mean values of ESG, SOC, ENV, and GOV disclosure before and after NFRD adoption for low RQRT countries and high RQRT countries. Results from panel A and panel B of Table 4.7 show that high RQRT countries exhibit greater overall CSR, environmental, social, and governance disclosure than low RQRT countries from before adopting NFRD after its adoption. The mean difference is statistically significant for high requirement countries at 1 percent level. In contrast, for low requirement countries, the mean difference is significant at 5 percent only, as indicated by the T-test score and p-values given in parenthesis. This provides evidence that high RQRT countries show stronger CSR, environmental, social, and governance disclosure than low RQRT countries after NFRD adoption.

<Insert Table 4.7>

Panels A and panel B of Table 4.8 compare the ESG, ENV, SOC, and GOV scores of low disclosing firms and high disclosing firms from before to after the adoption of NFRD. Comparing the mean overall CSR, environmental, and governance scores for low disclosing and high disclosing firms indicate that low disclosing firms before the NFRD adoption show a statistically

significant increase in disclosure after adopting NFRD. High disclosing firms also experience a growth in the disclosure, but this difference is not significant compared to low disclosing firms. This supports my hypothesis that low disclosing firms before adopting NFRD exhibit a significant increase in ESG, ENV, and GOV disclosure after the NFRD adoption compared to high disclosing firms. The T-test scores and respective p-values show that the only mean difference in social disclosure is statistically insignificant from before to after adopting NFRD for both low disclosing and high disclosing firms.

<Insert Table 4.8>

Table 4.9 shows the correlation coefficients for the explanatory variables of regression models. The variables are not correlated to the extent that they might alter the association's strength and direction between the dependent variables and interest variables.

<Insert Table 4.9>

In the same vein, the variance inflation factor (VIF) test is done to rule out the effect of multi-collinearity between the variables involved in the regressions. Table 4.10 panel A, B, C, and D show the VIF scores for eq-1, eq-2, eq-3, and eq-4, respectively. The scores confirm that there are no significant issues of multicollinearity in the models.

<Insert Table 4.10>

4.4.2 Multivariate results

Table 4.11 shows the regression results of Eq-1. ESG and its three dimensions (ENV, SOC, and GOV) are regressed separately, yielding four fixed-effect models. As expected, the coefficients of POST*NFRD are all positive and significant at the one percent level. Therefore, the NFRD adoption resulted in higher CSR disclosure in general. It also resulted in higher environmental, social, and governance disclosure. This confirms the non-financial reporting directive's favorable impact on CSR disclosure as a whole, and environmental disclosure, social disclosure, and governance disclosure considered individually.

<Insert Table 4.11>

The non-financial reporting directive gave EU member states flexibility to transpose the directive at the minimum required level or go beyond the minimum level. This led several countries to adopt more stringent requirements than the directive. These different disclosure requirements may affect the change in CSR disclosure differently. Table 4.12 gives the regression results aimed at testing H2. They show that firms in countries with stricter disclosure constraints increased more their CSR disclosure following the directive adoption than those in countries that transposed the directive at its minimum level. The variable of interest POST*RQRT has a positive and significant coefficient at the one percent level for the overall disclosure score (ESG) and for each of its three components (ENV, SOC, GOV). This suggests that disclosure requirements stronger than those of the directive resulted in a higher increase in CSR disclosure, regardless of the disclosure dimension under consideration.

Interestingly, the coefficients associated with the variable 'Post' are also significant at one percent level for environmental disclosure, social disclosure, and governance disclosure. This clearly suggests that the NFRD adoption was beneficial in terms of disclosure to all firms, even firms domiciled in countries having transposed the directive with its minimum requirements. However, the beneficial impacts were stronger for firms in countries that opted for more stringent requirements.

<Insert Table 4.12>

All firms do not disclose non-financial information at the same level. Some disclose more than others. Certain favour environmental information. Others emphasize governance or social disclosure. Firms that disclosed less prior to the NFRD adoption may evidently benefit the most from the directive adoption. In contrast, the NFRD adoption benefits should be less for firms that disclosed more before the directive adoption. These firms can even be suspected of reducing their disclosure to meet the directive's requirements if they overly exceeded them before the adoption.

Table 4.13 shows the regression results of Eq-3. As predicted, the coefficients for the variables of interest POST*LOWESG, POST*LOWENV, and POST*LOWGOV are positive and strongly significant. This shows that firms with lower overall CSR disclosure, lower environmental disclosure, and lower governance disclosure before the NFRD adoption experienced a more significant increase in CSR following the directive adoption. That is not the case for firms with lower social disclosure. The coefficient for the variable POST*LOWSOC is statistically

insignificant, which means that, regarding social disclosure, the directive's impact was the same for all firms regardless of the magnitude of their social disclosure before the adoption.

The coefficients of the variable POST in Table 4.13 deserve specific interest. They must be considered together with the interaction variables' coefficients (POST*LOWESG, POST*LOWENV, POST*LOWGOV, POST*LOWSOC). For the overall disclosure score (ESG), both coefficients are positive and highly significant. Therefore, the directive adoption had a favourable impact on overall CSR disclosure for high disclosing firms prior to the directive adoption since the coefficient for the variable POST is significantly positive. Still, the adoption had a more favourable impact on overall CSR disclosure for the low disclosing firms since the coefficient for the variable POST*LOWESG is also significantly positive. As already mentioned, social disclosures offer a different perspective. The directive adoption had a favourable impact of the same magnitude for low disclosing and high disclosing firms. The coefficient of 'POST' is positive, but the coefficient of 'POST*LOWSOC' is statistically insignificant. More interestingly, Table 4.13 suggests that the directive adoption led the firms with the highest environmental and governance disclosure before the adoption to reduce their disclosure. For both environmental disclosure and governance disclosure, the coefficients of the variable 'POST' are negative and significant at the one percent level, while the coefficients for the variables 'POST*LOWENV' and 'POST*LOWGOV' are both positive and significant at the same level. Regarding environmental disclosure and governance disclosure, it seems that high disclosing firms prior to the directive adoption align their disclosure, likely higher than the directive's prescriptions, to the directive's prescriptions to meet the directive's requirements.

<Insert Table 4.13>

Table 4.14 panel A shows the difference-in-differences fixed effects regression results of Eq-4 using a control sample. The three proxies of information asymmetry are regressed separately, which results in three diff-in-diff regression models. As expected, the coefficient of the variable of interest Post*NFRD is negative and significant for RSPRD and Zeros. The same coefficient is negative but insignificant for the Amihud metric.

Table 4.14 panel B shows the regression results aimed at testing H4 without the control sample. The variable of interest is 'Post.' It takes the value '1' for years after the adoption date and '0' otherwise. The sign of the variable 'Post' coefficient is systematically negative, regardless of the

proxy used to capture IA, showing that information asymmetry in the post-NFRD adoption period is less than information asymmetry in the pre-adoption period.

<Insert Table 4.14>

Results in table 4.14 have practical implications. They indicate that the NFRD adoption was beneficial to adopting firms in terms of information asymmetry. The directive resulted in a higher decline in information asymmetry for EU adopting firms than for US non adopting firms around the directive adoption date. Therefore, the directive adoption was not only beneficial in terms of greater disclosure. It was also beneficial in terms of information available to market participants and all firms' stakeholders.

4.5 Conclusion

The growing need for social and environmental sustainability along with CSR forced the inception of many regulations regarding non-financial information disclosure. The issuance of NFRD trickled down from the need to mandate certain large European undertakings and public interest entities to provide adequate information on environmental, social, and employees, respect for human rights, and anti-corruption and bribery matters. The directive's primary aim is to harmonize the process of disclosure of non-financial information just as IFRS governs the provision of financial information. Traditionally, CSR disclosure has been voluntary, but after adopting NFRD, it has become mandatory for the PIEs to disclose non-financial information.

Bearing in mind the European context and following legitimacy theory for a sample of 832 publicly listed companies operating in the EU covering the period from 2015-2018, this study empirically evaluates the capital market consequences of NFRD adoption and its effectiveness. The study answers the question 'Does good quality disclosure need good quality regulation?'. Bloomberg ESG disclosure scores are used as a proxy for CSR disclosure, while relative bid-ask spreads, Amihud illiquidity measure & proportion of zero stock returns are used as a proxy for information asymmetry.

The study results show that NFRD adoption led to a decrease in IA for a difference in differences technique. The results hold along the two IA proxies. I find significant evidence that NFRD

adoption leads to increased disclosure. The NFRD adoption results in an increased CSR disclosure as well as environmental, social, and governance dimensions considered independently. CSR disclosure and its environmental and governance dimension are associated with decreased IA along two proxies for IA post-NFRD adoption. I also find significant empirical evidence that the higher the mandatory non-financial disclosure requirements, the higher the disclosure. It is true for CSR as a whole alongside its three components considered separately.

NFRD adoption was favourable regarding CSR, environmental, social, and governance disclosure for all the firms, including the firms domiciled in countries that transposed the directive at the minimum. However, this impact is stronger for firms in countries that opted for more stringent requirements than NFRD. Lastly, this study shows that the impact of NFRD adoption on non-financial disclosure is stronger for firms disclosing less before the adoption. The results further reveal that high disclosing firms before the NFRD adoption lowered their environmental and governance disclosure after adopting NFRD to match the directive requirement. The directive adoption had an impact of the same magnitude for both low and high disclosing firms regarding social disclosure. Overall, the study shows good quality regulation results in good quality disclosure, making the capital market more efficient by reducing information asymmetry.

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Table 4.1: Sample breakdown by country

Country	n	Country	n	Country	n	Country	n
Austria	19	Germany	88	Poland	22	Others	34
Belgium	25	Greece	14	Portugal	10		
Denmark	30	Ireland	21	Spain	39		
Finland	39	Italy	49	Sweden	57		
France	110	Netherlands	43	UK	232		
Total							**832**

Table 4.2: Sample breakdown by industry

GICS Industry	n	%	GICS Industry	n	%
Automobiles & Components	22	2.6	Insurance	24	2.8
Banks	47	5.6	Materials	73	8.7
Capital Goods	135	16.2	Media & Entertainment	37	4.4
Commercial & Professional Services	38	4.5	Pharmaceuticals, Biotechnology & Life Sciences	33	3.9
Consumer Durables & Apparel	40	4.8	Real Estate	20	2.4
Consumer Services	28	3.3	Retailing	35	4.2
Diversified Financials	19	2.2	Semiconductors & Semiconductor Equipment	11	1.3
Energy	45	5.4	Software & Services	25	3
Food & Staples Retailing	18	2.1	Technology Hardware & Equip	17	2
Food, Beverage & Tobacco	36	4.3	Telecommunication Services	26	3.1
Health Care Equipment & Services	18	2.1	Transportation	38	4.5
Household & Personal Products	8	1	Utilities	39	4.6
Total				**832**	

Table 4.3: Effective NFRD adoption date in EU member states

EU Member state	NFRD effective adoption date
Austria	17/01/2017
Belgium	03/09/2017
Bulgaria	03/06/2016
Croatia	01/01/2017
Cyprus	02/06/2017
Czech Republic	30/12/2016
Denmark	01/06/2015
Estonia	31/12/2015
Finland	29/12/2016
France	11/08/2017
Germany	18/04/2017
Greece	07/07/2016
Hungary	15/06/2016
Ireland	18/04/2017
Italy	25/01/2017
Latvia	29/12/2016
Lithuania	23/12/2016
Luxembourg	04/08/2016
Malta	02/12/2016
Netherlands	23/03/2017
Poland	11/01/2017
Portugal	28/07/2017
Romania	27/07/2017
Slovakia	11/06/2015
Slovenia	31/03/2017
Spain	25/11/2017
Sweden	01/12/2016
UK	26/12/2016

Table 4.4: Summary statistics for the variables under study

Variables	Obs	Mean	Std. Dev	Min	Max
Variables of interest					
RSPRD	3328	0.00310	0.000621	0.000019	0.003172
Amihud	3236	0.00267	0.000965	0	0.004310
Zeros	3328	0.05289	0.092031	0	0.968750
ESG	3159	37.81105	14.20639	3.3058	78.5124
ENV	2972	31.035	16.20404	1.5504	78.5714
SOC	3060	42.53221	15.40502	3.3333	92.9825
GOV	3159	53.64039	11.03204	14.2857	78.5714
Control Variables					
Size	3328	8.161696	1.737382	0.1133287	13.51864
Risk	3328	1.930596	1.34464	0.2199116	39.52883
RIC	3312	0.0692083	0.0819849	-1.193168	0.7328861
StockPrice	3328	4.209512	1.952209	5.003816	15.66568
LTD	3192	13.80962	2.584806	0.4054651	22.3906

The sample consists of all firm-year observations with control variable data available in Datastream. RSPRD: relative spreads computed by dividing daily closing bid-ask spreads by the mean daily midpoints followed by calculating the mean of relative spreads for the year by dividing the sum of daily relative spreads by the number of trading days in a year. Amihud: Amihud illiquidity measure is determined by scaling the absolute value of daily stock returns by trading volume in euro. This metric is averaged on a yearly basis by dividing the sum of daily relative price responses by the number of trading days in a year. Zeros: day with zero stock return is measured by dividing the number of days with zero returns by the total number of trading days in a year. ESG: Overall CSR disclosure score, ENV: Environmental disclosure score, SOC: Social disclosure score, GOV: Governance disclosure score. ESG, ENV, SOC, and GOV disclosure scores come from Bloomberg. Size: Size of the firm measured by the log of the market value of the equity. Risk: Measured by the stock return volatility calculated by taking the standard deviation of the firm's daily stock returns. RIC: Return on firm's invested capital measured by operating profit scaled by total assets. StockPrice: Log of the daily closing stock price of a firm. LTD: Leverage measured by long term debt scaled by total assets.

Table 4.5: Summary statistics for IA's proxies from before to after the adoption of NFRD

RSPRD						
	Obs	***Mean***	***Std. Err.***	***Std. Dev.***	***Minimum***	***Maximum***
Before NFRD	1664	0.00364	0.000210	0.00856	0.000023	0.003172
After NFRD	1664	0.00150	0.000140	0.00571	0.000019	0.003150
Difference		0.00214	0.000100			
T-Statistics = 2.14 (0.0324)						
Amihud						
Before NFRD	1660	0.00458	0.000268	0.01091	0	0.004310
After NFRD	1576	0.00379	0.000152	0.00603	0.000025	0.003203
Difference		0.00079	0.000304			
T-Statistics = 2.63 (0.0221)						
Zeros						
Before NFRD	1664	0.05014	0.002220	0.090597	0	0.96875
After NFRD	1664	0.05565	0.002289	0.093389	0.04351	0.86571
Difference		-0.00551	0.002189			
T-Statistics = -2.51 (0.0121)						

*p-values in parentheses

Table 4.6: Summary statistics for disclosure from before to after the adoption of NFRD

	Obs	Mean	Std. Err.	Std. Dev.	Minimum	Maximum
ESG						
Before NFRD	1657	36.45484	0.360996	14.69482	3.3058	78.5124
After NFRD	1664	39.30721	0.348204	13.49488	4.5678	75.2351
Difference		-2.852371	0.503658			
T-Statistics = -5.66 (0.0000)						
ENV						
Before NFRD	1525	30.19466	0.420162	16.40788	1.5504	78.5714
After NFRD	1447	31.92064	0.419148	15.94417	5.2851	73.6782
Difference		-1.725973	0.593929			
T-Statistics = -2.90 (0.0037)						
SOC						
Before NFRD	1581	41.6593	0.399869	15.8995	4.5612	78.5714
After NFRD	1479	43.4653	0.385014	14.8068	3.3333	92.9852
Difference		-1.805996	0.556413			
T-Statistics = -3.24 (0.0012)						
GOV						
Before NFRD	1657	52.4905	0.283938	11.5580	14.8257	78.5714
After NFRD	1502	54.9089	0.265161	10.2765	10.5160	75.8561
Difference		-2.41841	0.390736			
T-Statistics = -6.18 (0.0000)						

*p-values in parentheses

Table 4.7

Panel A: Summary statistics from before to after the adoption of NFRD for low RQRT countries

	Obs	Mean	Std. Err.	Std. Dev.	Minimum	Maximum
ESG						
Before NFRD	633	34.17254	0.677887	17.05530	3.3058	78.0702
After NFRD	563	36.56437	0.637199	15.11922	4.8246	69.8347
Difference		-2.391829	0.936909			
T-Statistics = -2.55 (0.0110)						
ENV						
Before NFRD	550	31.18793	0.793910	18.61885	4.5440	69.0083
After NFRD	533	33.23257	0.749426	17.30184	16.9420	65.9752
Difference		-2.044641	1.001251			
T-Statistics = -2.04(0.0412)						
SOC						
Before NFRD	580	39.89129	0.742159	17.87356	3.3333	82.4561
After NFRD	549	42.40347	0.701820	16.44419	5.8912	77.1930
Difference		-2.512186	1.023784			
T-Statistics = -2.45(0.0143)						
GOV						
Before NFRD	633	47.58520	0.543083	13.66371	14.2857	76.6213
After NFRD	563	49.66519	0.514143	12.19939	19.6429	75.2481
Difference		-2.069990	0.752813			
T-Statistics = -2.74(0.0063)						

*p-values in parentheses

Panel B: Summary statistics from before to after the adoption of NFRD for high RQRT countries

	Obs	Mean	Std. Err.	Std. Dev.	Minimum	Maximum
ESG						
Before NFRD	1024	37.86567	0.400966	12.83092	7.0248	78.5124
After NFRD	939	40.75260	0.404880	12.40679	9.0909	75.0943
Difference		-2.886923	0.570656			
T-Statistics = -5.05(0.0000)						
ENV						
Before NFRD	975	34.78921	0.480354	14.99907	4.6512	78.2946
After NFRD	914	37.15558	0.497920	15.05334	5.3571	75.8621
Difference		-2.366370	0.691775			
T-Statistics = -3.42(0.0006)						
SOC						
Before NFRD	1001	42.68373	0.459750	17.87356	3.5088	91.4510
After NFRD	930	45.09213	0.449890	16.44419	5.2632	92.9825
Difference		-2.408400	0.644634			
T-Statistics = -3.73(0.0002)						
GOV						
Before NFRD	1024	55.52281	0.273893	8.764586	23.1430	78.5714
After NFRD	939	57.85380	0.272492	8.350010	25	73.2143
Difference		-2.330990	0.387165			
T-Statistics = -6.02(0.0001)						

*p-values in parentheses

Table 4.8

Panel A: Summary statistics from before to after the adoption of NFRD for low disclosing firms

			ESG			
	Obs	***Mean***	***Std. Err.***	***Std. Dev.***	***Minimum***	***Maximum***
Before NFRD	1106	34.57268	0.296035	9.845116	15.6379	78.5124
After NFRD	939	35.94024	0.302356	9.670670	14.0496	75.0943
Difference		-1.367569	0.423445			
T-Statistics = -3.22(0.0013)						
			ENV			
Before NFRD	830	29.52028	0.374303	10.78357	13.1783	78.2946
After NFRD	782	31.13413	0.392766	10.98341	11.6279	75.8621
Difference		-1.613850	0.542260			
T-Statistics = -2.97(0.0030)						
			SOC			
Before NFRD	1061	40.04685	0.346641	11.29115	3.3333	82.44561
After NFRD	988	40.68498	0.349135	10.97419	5.1756	78.19380
Difference		-0.638133	0.492491			
T-Statistics = -1.29(0.1952)						
			GOV			
Before NFRD	906	50.53692	0.184755	5.561119	15.5861	77.5176
After NFRD	850	51.58693	0.195611	5.702995	18.6232	75.6410
Difference		-1.05001	0.268853			
T-Statistics = -3.90(0.0001)						

*p-values in parentheses

Panel B: Summary statistics from before to after the adoption of NFRD for high disclosing firms

	Obs	Mean	Std. Err.	Std. Dev.	Minimum	Maximum
ESG						
Before NFRD	551	45.26810	0.321409	7.544573	10.1254	78.5124
After NFRD	479	46.24024	0.400009	8.754626	13.0496	75.0943
Difference		-0.97214	0.507863			
T-Statistics = -1.91(0.0559)						
ENV						
Before NFRD	695	46.43424	0.277738	7.32199	15.2830	78.5714
After NFRD	665	45.47486	0.366833	9.45975	12.8711	76.5610
Difference		0.95938	0.553420			
T-Statistics = 1.73(0.0839)						
SOC						
Before NFRD	520	52.20150	0.371937	8.481477	5.1756	92.98251
After NFRD	491	53.01498	0.456091	10.10631	3.3333	88.19384
Difference		-0.81348	0.585596			
T-Statistics = -1.38(0.1679)						
GOV						
Before NFRD	751	61.18693	0.336591	9.224090	15.5861	77.5176
After NFRD	652	60.23560	0.355773	9.084417	18.6232	78.5714
Difference		0.95133	0.490291			
T-Statistics = 1.94(0.0526)						

*p-values in parentheses

Table 4.9: Correlation matrix

	RSPRD	Amihud	Zeros
RSPRD	1		
Amihud	-0.00828	1	
Zeros	0.573***	-0.0131***	1

	ESG	ENV	SOC	GOV
ESG	1			
ENV	0.961***	1		
SOC	0.846***	0.718***	1	
GOV	0.662***	0.508***	0.482***	1

	Size	StockPrice	Risk	RIC	LTD
Size	1				
StockPrice	0.197***	1			
Risk	-0.379***	-0.206***	1		
RIC	0.144***	0.304***	-0.174***	1	
LTD	0.565***	0.0408*	-0.173***	-0.0957***	1

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4.10: VIF Scores

Panel A: VIF scores for eq-1

Variables	VIF	1/VIF
Size	1.53	0.654074
POST	1.04	0.963413
NFRD	1.06	0.943369
RIC	1.06	0.942099
LEV	1.50	0.664905
POST*NFRD	5.06	5.36375
Mean VIF	**1.875**	

Panel B: VIF scores for eq-2

Variables	VIF	1/VIF
Size	1.56	0.641844
Post	5.84	0.171298
RQRT	9.58	0.104384
RIC	1.07	0.933826
LEV	1.51	0.661291
POST*RQRT	10.56	0.094696
Mean VIF	**5.02**	

Panel C: VIF scores for eq-3

Variables	VIF	1/VIF
Size	1.63	0.613312
Post	1.72	0.581273
LOWESG	6.49	0.154140
RIC	1.06	0.940663
LEV	1.51	0.660751
POST*LOWESG	6.62	0.151153
Mean VIF	**3.17**	

Panel D: VIF scores for eq-4

Variables	VIF	1/VIF
Size	1.24	0.809058
Post	1.03	0.967764
NFRD	7.08	0.141242
RIC	1.13	0.883116
StockPrice	1.13	0.885777
POST*NFRD	8.62	0.116009
Mean VIF	**3.37**	

Table 4.11: Regression results testing H1

	(1)	(2)	(3)	(4)
VARIABLES	**ESG**	**ENV**	**SOC**	**GOV**
POST	19.57*	21.56	18.41	16.39*
	(0.512)	(0.856)	(0.169)	(0.222)
NFRD	11.99	22.23*	19.39	15.73
	(0.666)	(0.752)	(0.289)	(0.359)
POST*NFRD	**23.57*** **	**26.70*** **	**24.89*** **	**10.50*** **
	(0.903)	**(0.978)**	**(1.972)**	**(0.811)**
Size	3.703***	4.412***	2.888***	2.156***
	(0.215)	(0.165)	(0.201)	(0.0999)
RIC	-10.87***	-23.62***	-6.584	-0.309
	(1.276)	(3.267)	(3.777)	(0.582)
LEV	0.670***	0.568***	0.641***	0.479***
	(0.0270)	(0.0362)	(0.0350)	(0.0160)
Constant	-27.62***	-40.87***	-16.09**	14.08***
	(3.670)	(2.732)	(4.044)	(1.637)
Observations	6,035	6,035	6,123	6,435
R-squared	0.471	0.423	0.333	0.519
Country FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Number of years	4	4	4	4

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4.12: Regression results testing H2

	(1)	(2)	(3)	(4)
VARIABLES	**ESG**	**ENV**	**SOC**	**GOV**
RQRT	26.05*	37.67*	7.828*	7.355*
	(5.819)	(3.184)	(1.227)	(2.529)
POST * RQRT	**14.25****	**14.87*****	**19.83*****	**4.089****
	(4.813)	**(2.345)**	**(1.826)**	**(1.646)**
Post	9.312	11.83***	5.058***	6.411***
	(5.301)	(1.283)	(1.210)	(0.692)
LEV	0.670***	0.568**	0.641***	0.479***
	(0.0270)	(0.205)	(0.231)	(0.0918)
RIC	-10.87***	-23.62***	-6.584	-0.309
	(1.276)	(6.907)	(5.646)	(3.505)
Size	3.703***	4.412***	2.888***	2.156***
	(0.215)	(0.387)	(0.226)	(0.283)
Constant	-13.36	-26.01***	3.744	18.17***
	(7.030)	(4.973)	(6.196)	(3.852)
Observations	3,035	2,868	2,944	3,035
R-squared	0.471	0.423	0.333	0.519
Country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Number of years	4	4	4	4

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4.13: Regression results testing H3

	(1)	(2)	(3)	(4)
VARIABLES	**ESG**	**ENV**	**SOC**	**GOV**
LOWESG	18.36*			
	(1.118)			
POST * LOWESG	**1.405*** **			
	(0.351)			
LOWENV		31.29*		
		(2.427)		
POST * LOWENV		**9.768*** **		
		(3.429)		
LOWSOC			20.85	
			(1.629)	
POST * LOWSOC			**0.957**	
			(0.433)	
LOWGOV				15.42**
				(1.546)
POST * LOWGOV				**9.255*** **
				(1.402)
POST	9.726**	-4.648***	4.343**	-6.759***
	(2.365)	(0.960)	(1.136)	(1.503)
LEV	0.427***	0.327	0.193**	-0.0659
	(0.0368)	(0.375)	(0.0364)	(0.212)
Size	2.083***	-0.291	1.571***	-0.329
	(0.0394)	(0.339)	(0.0861)	(0.268)
RIC	-7.102***	-4.259	-4.544	4.167
	(1.090)	(7.304)	(1.989)	(4.045)
Constant	8.650**	35.03***	27.33***	61.12***
	(1.708)	(5.516)	(1.065)	(3.298)
Observations	3,035	2,868	2,944	3,035
R-squared	0.694	0.932	0.614	0.908
Country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Number of years	4	4	4	4

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4.14: Difference in Differences regressions

Panel A: Regression results to test H4 (with Control sample)

	(1)	(2)	(3)
VARIABLES	**RSPRD**	**Amihud**	**Zeros**
Post	0.0055**	-0.00433	-0.00662***
	(0.00017)	(0.00027)	(0.00066)
NFRD	-0.00531	-0.00119	-0.00787***
	(0.00029)	(0.00081)	(0.00029)
Post * NFRD	**-0.00134*** **	**-0.0061**	**-0.00319*** **
	(0.00040)	**(0.00033)**	**(0.00075)**
Size	-0.00358***	0.00862	-0.00575***
	(0.00061)	(0.00068)	(0.00033)
StockPrice	-0.00455**	-0.00665	-0.00270***
	(0.00092)	(0.00088)	(0.00046)
Risk	0.00199	0.00864	-0.00281***
	(0.00087)	(0.00043)	(0.00059)
RIC	-0.00210*	-0.00387	-0.0135***
	(0.00085)	(0.00078)	(0.00483)
Constant	0.00258***	0.00488	0.104***
	(0.00035)	(0.00068)	(0.00344)
Observations	6,634	6,497	6,634
R-squared	0.611	0.035	0.556
Country FE	YES	YES	YES
Year FE	YES	YES	YES
Industry FE	YES	YES	YES
Number of years	4	4	4

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Panel B: Regression results to test H4 (without Control sample)

	(1)	(2)	(3)
VARIABLES	**RSPRD**	**Amihud**	**Zeros**
Post	**-0.0071****	**-0.00185*****	**-0.0578****
	(0.00020)	**(0.00058)**	**(0.01160)**
Size	-0.00812***	0.00301**	-0.0252***
	(0.00063)	(0.00015)	(0.00096)
StockPrice	-0.00189	-0.00410***	0.00408***
	(0.00068)	(0.00025)	(0.00033)
Risk	0.00812**	0.00455***	-0.00886*
	(0.00085)	(0.00019)	(0.00336)
RIC	-0.00359**	0.00310	-0.0528**
	(0.00021)	(0.00020)	(0.00973)
Constant	0.00712***	0.00199***	0.308***
	(0.00089)	(0.00063)	(0.00647)
Observations	3,312	3,223	3,312
R-squared	0.356	0.108	0.225
Country FE	YES	YES	YES
Industry FE	YES	YES	YES
Year FE	YES	YES	YES
Number of years	4	4	4

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Chapter 5: Conclusion of the Study

In this final chapter, the research findings are summarised and discussed, conclusions are drawn, and limitations are recognised. Section 5.1 highlights and discusses major findings. Section 5.2 draws the conclusion from the research findings. Section 5.3 considers the limitations and makes suggestions for future related research.

5.1 Discussion of Findings

Over the last two decades, firms have started to issue an increasing amount of corporate social responsibility (CSR) reports that have driven a significant number of academic researchers in examining the benefits companies gain from compiling and publishing CSR information. The research on CSR disclosure consequences focuses mainly on the determinants of CSR voluntary disclosure, the value-relevance of such disclosure, and its impact on firm value. One of the most debated issues in capital market microstructure is the problem of information asymmetry. Surprisingly, only few studies focus on the impact of CSR disclosure on information asymmetry. Further, most of these papers explore the association between CSR disclosure and information asymmetry for a sample of U.S. companies, without considering each of the various and complementary dimensions of CSR engagement and disclosure.

Keeping in view the cultural and institutional differences that impact companies' financial and non-financial reporting practices, it is imperative to study whether the results obtained from studies on US firms are valid for companies operating in European countries. In this context, this thesis answered the following questions:

Q1 Is CSR disclosure associated with lower information asymmetry? Is the association between CSR disclosure and information asymmetry impacted by the firm’s exposure to environmental, social, and governance issues?

Q2 Does national culture influence the association between CSR disclosure and information asymmetry, and therefore the informativeness of CSR disclosure?

Q3 Is regulation effective in enhancing CSR disclosure quality and informativeness?

The research was carried out in three main chapters addressing each one the previous research question for a sample of companies operating in Europe, therefore countries with diverse cultural and institutional environments. Chapter two investigated the association between CSR disclosure along with environmental, social, governance disclosure, and information asymmetry. It explored how CSR disclosure and its three dimensions (environmental, social, and governance disclosure) are associated with information asymmetry for a sample of 1000 publicly listed European companies from 2009 to 2017. It also assessed this association for firms most exposed to environmental, social, and governance issues.

Chapter three further explored Chapter two's research question by investigating the impact of national culture proxied by the Geert Hofstede's six cultural dimensions 1) power distance, 2) individualism versus collectivism, 3) masculinity versus femininity, 4) uncertainty avoidance, 5) long-term versus short-term orientation 6) indulgence versus restraint on the informativeness of CSR disclosure for a sample of 989 companies operating in 27 European countries from 2009 to 2017.

Chapter four investigated the consequences of the non-financial regulation directive (NFRD). It investigated the impact of the directive adoption on the magnitude of CSR disclosure and its three components, environmental, social, and governance disclosure. It also investigated the directive's impact on information asymmetry for a sample of 832 listed firms in the European Union (EU) from 2015-2018.

All studies were conducted with the Bloomberg ESG disclosure score as a proxy for CSR disclosure. Relative bid-ask spreads, the Amihud illiquidity measure, and the proportion of zero daily stock returns were used as proxies for information asymmetry. Following are the key research findings of the thesis.

There exists a negative association between CSR disclosure and information asymmetry. Environmental, social and governance disclosure reduces information asymmetry along the three proxies. The association between CSR disclosure and information asymmetry is stronger for firms that are more sensitive to environmental and governance issues. The reasoning supporting this finding is that firms, to thrive, must focus on their stakeholders' needs (following the stakeholder theory). One way of achieving this is to avoid being perceived as a 'lemon' firm. If a firm is a good CSR performer, it must disclose CSR performance in a useful way. CSR performing firms take

steps to be responsible not only towards their shareholders but also towards their various stakeholders. The inclination to showcase itself as a good performer will be intensified if a firm is exposed to environmental, social, and governance issues. To reduce the uncertainty related to this risk, firms strongly exposed to CSR issues tend to disclose more, all things being equal (i.e., for a given level of CSR performance). Social sensitivity failed to mediate the association between CSR disclosure and information asymmetry as well as social disclosure and information asymmetry.

The cultural dimensions, as defined by Hofstede, do not systematically impact the association between CSR disclosure and information asymmetry. CSR disclosure reduces information asymmetry only for companies operating in countries with a high level of indulgence, which suggests that CSR disclosure of companies operating in high indulgent countries drives the results of chapter 2. The level of power distance, individualism, masculinity, uncertainty avoidance, and long-term orientation do not systematically impact the association between CSR disclosure and information asymmetry.

The NFRD adoption resulted in increased CSR and environmental, social, and governance disclosure for EU companies that had to comply the directive. Further, increased CSR disclosure is associated with decreased information asymmetry following NFRD adoption, at least for two of the three IA proxies. The directive adoption had a favourable impact for both low and high disclosing firms regarding social disclosure. Countries with disclosure requirements higher than the minimum NFRD requirements experienced significantly stronger CSR disclosure growth along with environmental, social, and governance dimensions considered separately. Surprisingly, high disclosing firms before the NFRD adoption decreased their environmental and governance disclosure after the NFRD adoption to match the directive requirements. The directive had a favorable impact on the disclosure of both low and high disclosing firms. However, this impact is stronger for low disclosing than high disclosing firms.

Finally, the association between CSR disclosure and information asymmetry holds after controlling for potential endogeneity. Indeed, CSR disclosure is not an exogenous random variable. Endogeneity can be caused by omitted variables and reverse causality. Fixed effects help control for the endogeneity caused by omitted variables. To control for endogeneity caused by reverse causality, this thesis used the average industry CSR disclosure score as an instrumental variable.

5.2 Conclusion from Findings

This thesis examined the capital market consequences of CSR disclosure along with its environmental, social, and governance disclosure dimension by exploring their association with information asymmetry between the management and stakeholders (shareholder and debtholders in this case). This study also explained how the association between CSR disclosure (and its three constituents considered individually) and information asymmetry is impacted by the extent a firm is exposed to environmental, social, and governance issues. The impact of national culture on the association between CSR disclosure and information asymmetry was also explored. After the adoption of the 2014/95/ EU non-financial regulation directive (NFRD), certain companies must produce non-financial reports. This study investigated the effectiveness of this regulation by exploring its impact on CSR disclosure and information asymmetry.

This thesis used the three proxies to measure information asymmetry relative bid-ask spreads, the Amihud illiquidity measure, and the proportion of zero daily stock returns. The Bloomberg ESG disclosure score is a proxy for CSR disclosure and environmental, social and governance disclosure. The sample consisted of publicly listed companies in the European region. Geert Hofstede's six cultural dimensions were used to capture the impact of various national culture dimensions on the association between CSR disclosure and information asymmetry.

I find significant evidence that CSR disclosure and environmental, social, and governance disclosure considered separately reduce information asymmetry along all the three information asymmetry measures. I also find conclusive evidence that the extent of association between CSR disclosure, environmental disclosure, governance disclosure, and information asymmetry is consistent and significant for firms that are the most exposed to environmental and governance disclosure regardless of the proxies used to capture IA. I find no significant evidence that social sensitivity mediates the association between CSR disclosure alongside social disclosure and information asymmetry. Following the stakeholder's theory, managers of the companies operating in European countries can benefits from a decrease in asymmetric information by making more CSR, environmental, social, and governance disclosure. The companies can benefit more from increased non-financial disclosure if they are more exposed to environmental and governance issues.

I find significant evidence that CSR disclosure reduces information asymmetry for companies operating in countries with a high level of indulgence (e.g., Netherlands, Switzerland, Finland). The association between CSR disclosure and information asymmetry not only depends on the magnitude of such disclosure. It also depends on how cultural norms and values push the management to make informative disclosure and not cheap talk. The results further indicate that power distance, individualism, masculinity, uncertainty avoidance, and long-term orientation in a country have no systematic impact on the association between CSR disclosure and information asymmetry.

Increased demand for social and environmental disclosure along with CSR forced many regulations on the disclosure of non-financial information. The adoption of NFRD results from that pressure and demand to make it mandatory for certain large European undertakings and public interest entities to provide adequate information on environmental, social, and employees, respect for human rights, and anti-corruption and bribery matters. Traditionally CSR disclosure has been voluntary, but after the adoption of NFRD, it has become mandatory for certain large companies to disclose non-financial information. Considering the European context and following legitimacy theory, the latter part of this thesis empirically evaluated this regulation's effectiveness.

I find significant evidence that NFRD adoption leads to a decrease in information asymmetry. The results hold along the three IA proxies. The NFRD adoption results in an increased CSR disclosure as well as environmental, social, and governance disclosure considered independently. After the adoption of NFRD, CSR disclosure and its environmental and governance dimension are found to be associated with reduced information asymmetry. I also find significant empirical evidence that the higher the mandatory non-financial disclosure requirements, the more is the disclosure. This result holds for CSR disclosure as a whole alongside its three dimensions considered separately.

I conclude from the findings that the impact of NFRD adoption on non-financial disclosure is stronger for low disclosing firms. The high disclosing firms before the NFRD adoption lowered their environmental and governance disclosure after the adoption of NFRD to match the directive’s requirements. The results further reveal that NFRD adoption is beneficial in terms of disclosure to all firms, even firms domiciled in countries having transposed the directive with its minimum requirements. Though, the beneficial impacts are stronger for firms in countries that opted for more stringent requirements. Contrary to the common criticism that mandatory CSR disclosure lacks

reliability and is mere window dressing, mandatory CSR reporting firms experience a decrease in information asymmetry after the mandate. The negative association between CSR, environmental, social, governance disclosure, and information asymmetry hold even after controlling for the potential endogeneity caused by omitted variables and reverse causality.

5.3 Limitations and Suggestions for Future Research

There is no study without any shortcomings. This thesis is no exception and has certain limitations.

I used the Bloomberg ESG score as a proxy for CSR, environmental, social and governance disclosure. Therefore, my results rely on the ability of this score to capture CST disclosure appropriately. Future studies can use other disclosure indices such as Global Engagement Service (GES), Dow Jones Sustainability North America Index (DJSI), and KLD STAT to confirm or negate this study's finding.

I split CSR disclosure into environmental, social, and governance disclosure. However, according to Global reporting initiative (GRI) standards, CSR disclosure has six dimensions (economic, environmental, social, human rights, society, and product liability). It might be worth using these six dimensions to explore their association with information asymmetry further.

I used relative bid-ask spreads, Amihud illiquidity measure, and proportion of zero daily stock return. Other proxies such as the variance of earnings forecasts among analysts, analyst forecast accuracy, PIN measure probability of informed trading can be used in future studies to confirm my results.

RÉSUMÉ

Cette thèse s'intéresse à la relation entre asymétrie d'information et communication sociétale et environnementale. Une première étude montre que cette relation dépend des enjeux environnementaux, sociétaux, mais aussi de gouvernance, auxquels les firmes sont exposées. L'asymétrie d'information est d'autant plus faible que la communication sociétale et environnementale est intense, ce lien étant d'autant plus fort que l'entreprise est fortement exposée à des enjeux sociétaux, environnementaux ou de gouvernance. Une deuxième étude montre que les caractéristiques culturelles nationales ne sont pas sans effet sur le lien entre asymétrie d'information et communication sociétale et environnementale. La réduction de l'asymétrie d'information résultant de la communication sociétale et environnementale est d'autant plus nette que l'indulgence, la capacité des individus à contrôler leurs désirs et pulsions, est forte. Une troisième étude montre que la directive européenne sur la communication d'informations non financières a conduit les entreprises européennes à intensifier leur communication sociétale et environnementale et, du même coup, à réduire l'asymétrie d'information qui les caractérise. Ces relations sont toutes robustes. Elles résistent au contrôle des effets d'une éventuelle endogénéité

MOTS CLÉS

Information d'asymétrie, Communication environnementale et sociétale, Divulgations environnementales, Divulgations sociétales, Divulgations relative à la gouvernance, Score Bloomberg de communication RSE, Directive européenne sur la communication d'informations non financières, Culture, Dimension culturelles de Hofstede

ABSTRACT

This thesis deals with the capital market consequences of corporate social responsibility (CSR) disclosure in Europe. It investigates the association between CSR disclosure and information asymmetry (IA), and analyses how this association is impacted by exposure to environmental, social and governance issues as well as national culture. The thesis also examines the impact of the EU non-financial reporting directive (NFRD) on CSR disclosure and eventually on IA. The results show that CSR disclosure as a whole, and environmental, social and governance disclosure considered individually, reduce IA. The association between CSR disclosure and IA is stronger for firms sensitive to environmental and governance issues. In addition, CSR disclosure reduces

KEYWORDS

Information asymmetry, Corporate social responsibility disclosure, Environmental disclosure, Social disclosure, Governance disclosure, Bloomberg ESG disclosure score, NFRD, European Union non-financial reporting directive, Hofstede cultural dimensions, Culture