The global impact of mandatory ESG disclosure on the cost of capital: a comparative analysis across legal regimes

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THE GLOBAL IMPACT OF MANDATORY ESG DISCLOSURE ON THE COST OF CAPITAL: A COMPARATIVE ANALYSIS ACROSS LEGAL REGIMES

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Abstract

Over the past few decades, the landscape of mandatory ESG reporting has undergone significant changes and developments. Various governments and regulatory entities, such as stock exchanges, have mandated ESG performance disclosure reporting for firms. This evolving landscape has increasingly brought more firms under the scope of mandatory ESG reporting.

This thesis investigates the impact of local mandatory ESG reporting regulations on the cost of equity capital for firms. Utilizing a staggered difference-in-difference methodology, the study analyses data from 10 countries over the period spanning from 1998 to 2018. The findings reveal an average increase in the cost of equity for firms following the introduction of mandatory ESG reporting. However, when subjected to various robustness tests, these findings do not provide conclusive evidence on the relationship between mandatory ESG reporting and the cost of capital.

Additionally, the thesis conducts a comparative analysis to examine the differential reactions based on the legal regimes of countries, specifically common law and civil law. The results indicate that mandatory ESG disclosure has varying impacts: in common law countries, it leads to a decrease in the cost of equity capital, while in civil law countries, findings show significant and robust evidence suggesting an increase in the cost of equity capital for firms.

Keywords: Mandatory ESG reporting – Cost of capital – Legal regimes – CAPM – Corporate Social Responsibility

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List of abbreviations

BCAC	Belgian Companies and Associations Code
CAPM	Capital Asset Pricing Model
CEO	Chief Executive Officer
COE	Cost of Equity
CSRD	Corporate Sustainability Reporting Directive
CSR	Corporate Social Responsibility
ECMH	Efficient Capital Markets Hypothesis
ESG	Environmental, Social, and Governance
ESRS	European Sustainability Reporting Standards
GRI	Global Reporting Initiative
GDP	Gross Domestic Product
ISSB	International Sustainability Standards Board
KLD	Kinder, Lydenberg & Domini
LLSV	La Porta, Lopez-de-Silanes, Shleifer, and Vishny
MSCI	Morgan Stanley Capital International
NFRD	Non-Financial Reporting Directive
NGO	Non-Governmental Organization
ROE	Return on Equity
R&D	Research and Development
SASB	Sustainability Accounting Standards Board
SEC	Securities and Exchange Commission
SRI	Socially Responsible Investments
TMT	Traditional Management Teaching

Introduction

The importance of environmental, social, and governance (ESG) disclosure has grown significantly over the past decades, driven by societal, environmental, and corporate governance challenges. Incidents such as the Lehman Brothers scandal and the Cambridge Analytica data misuse have underscored the need for greater transparency and accountability within corporations. The Business Roundtable, an influential association of chief executive officers (CEOs) from leading U.S. companies, issued a statement in 2019 that further highlighted the shift towards stakeholder-centric corporate governance, emphasizing the importance of ESG factors in business operations.

"*Each of our stakeholders is essential. We commit to deliver value to all of them, for the future success of our companies, our communities and our country*." (Business Roundtable, 2019)

The concept of Corporate Social Responsibility (CSR) has been the focus of extensive scientific research, which aims to identify its benefits and potential disadvantages. CSR is defined as "*corporate social actions whose purpose is to satisfy social needs*" (Angelidis and Ibrahim, 1993). Alternatively, CSR can be described *as "the managerial consideration of non-market forces or social aspects of corporate activity outside a market or regulatory framework, including employee welfare, community programs, charitable donations, and environmental protection*" (Carter et al., 2000).

The primary stream of literature aims to determine whether CSR can enhance or diminish firm performance. A review of existing research reveals that several studies suggest CSR can positively impact a firm's performance (McGuire et al., 1988; Wokutch and Spencer, 1987). Conversely, some research has found a negative link between CSR and firm performance (Alexander and Buchholz, 1978). For example, Fisher-Vanden and Thorburn (2011), using an event study, observed negative or insignificant stock price reactions to announcements of voluntary corporate green initiatives. Other studies present a more nuanced view, such as Servaes and Tamayo (2013), who found that CSR and firm performance are positively related in contexts of high customer awareness, proxied by advertising expenditure. Ferrell, Liang, and Renneboog (2016) argue that the impact of CSR on firm value depends on management's incentives. Their research indicates that firms with good corporate governance engage more in CSR, which in turn enhances firm value.

However, CSR reporting also raises challenges. The lack of standardized metrics and harmonized reporting procedures can make it difficult for stakeholders to compare firms' ESG performance effectively. Additionally, the voluntary nature of many current ESG reports raises concerns about the reliability and completeness of the disclosed information (Berg et al., 2022). In response to these challenges, governments, organizations, and local authorities worldwide have increasingly adopted standardized ESG disclosure reporting methods. Mandatory ESG disclosure, while still evolving, generally refers to legal requirements set by governments or stock exchanges for firms to disclose non-financial information according to pre-defined standards on their ESG practices, risks and strategies. This disclosure aims to increase transparency, enhance the quality and consistency of non-financial reports, and encourage firms to engage in sustainable practices (Christensen et al., 2021; Ioannou & Serafeim, 2011; Janicka et Sajnóg, 2022).

The impact of mandatory ESG reporting on various aspects of corporate performance has been a topic of extensive research and debate. Krueger et al. (2021) in their study highlight that, on average, the introduction of mandatory ESG disclosure reports is associated with higher stock liquidity. This finding suggests a potential benefit in terms of market transparency and investor confidence. Moreover, Martinez and Vazquez (2023) examine the impact of mandatory ESG disclosure reporting on firm performance, measured by return on assets (ROA), in the case of private Swedish firms. Their findings indicate that mandatory ESG reporting enhances firm performance. This result aligns with the notion that increased transparency and accountability can lead to better management practices and operational efficiencies.

Fiechter et al. (2022) in their research on the European Union's CSR Directive (Directive 2014/95) found that firms increased their CSR activities following the directive, especially those with previously low levels of CSR engagement. This regulation also had a positive effect in reducing greenwashing. However, the study noted that these increased CSR activities were associated with negative impacts on certain financial performance metrics, such as ROA and Tobin's Q ratio. Therefore, contrastingly, there are arguments suggesting that ESG reporting might be detrimental to shareholder value. The study from Grewal et al. (2021) for instance reports a negative market reaction, with a -0.79% decline, following the introduction of mandatory ESG disclosure reporting. This indicates that the market might initially view such regulations unfavourably, potentially due to the perceived costs and increased scrutiny. The relationship between the two variables is therefore not obvious ex ante, and prior research shows mixed findings.

Additionally, several scholars highlighted the consideration country-specific factors when investigating the impact of mandatory ESG reporting (Ioannou et Serafeim, 2011), notably, the state of market development (Chen et al., 2024; Janicka & Sajnóg, 2022). Therefore, drawing on the extensive literature on "Law and Finance" by La Porta et al. (1997, 1998), which highlights the variations in investor protections across legal regimes, this thesis also examines how these legal differences influence the relationship between mandatory ESG disclosure and the cost of equity. The findings from Renneboog and Liang (2017), and Castillo-Merino & Rodríguez-Pérez (2021) suggest that common law countries, with their weaker stakeholder protections, might benefit more from mandatory ESG disclosure, while civil law countries, with their already high levels of CSR performance, might face increased costs due to compliance and disclosure of sensitive information.

The mixed findings on the impact of mandatory ESG reporting underscore the complexity and the need for more comprehensive research. This thesis aims to contribute to the existing literature by specifically studying the implications of mandatory ESG disclosure on the cost of equity—an important measure in the corporate finance world. Additionally, by considering the legal framework and macroeconomic historical backgrounds of the countries in which firms operate, shaped by legal regimes – common law and civil law - this research seeks to provide a deeper understanding of the relationship between mandatory ESG reporting and firm’s cost of equity.

The following sections of this thesis are structured as follows. A literature review will outline the theoretical framework and hypotheses for this thesis. It provides an in-depth review of existing literature related to mandatory ESG reporting, Corporate Social Responsibility (CSR), and the cost of capital, and the ongoing debates in this area. It also establishes the basis for the hypotheses tested in this study. Then, a detailed explanation of the data and methodology will be presented. This section offers a detailed explanation of the data collection process and the methodology used. It describes the

sample selection, variables, and econometric techniques applied to analyse the impact of mandatory ESG reporting on the cost of capital. The next section presents an analysis of the empirical results. It details the findings from the empirical analyses and evaluates whether our hypotheses are confirmed or refuted based on those results. Then, a discussion of the findings, that addresses the implications for policymakers, firms, and investors, as well as the limitations and suggestions for future research. Finally, the conclusion summarizes the key findings of the study.

Literature review and hypotheses development

This literature review incorporates multiple studies conducted by prior researchers to outline the proposition of the research question of this thesis and the hypotheses that follow. This section begins with an exploration of the literature regarding mandatory ESG (Environmental, Social, and Governance) disclosure as a preamble to the subsequent analysis. The ensuing segment delves into the outcomes of prior research elucidating the correlation between ESG initiatives of firms and their cost of capital. Consequently, it becomes pertinent to establish the relationship between mandatory ESG disclosure and the cost of capital. Furthermore, existing literature highlights variations in the response of investors and the broader market contingent upon legal frameworks. In light of this, an extension of the preceding investigation involves assessing the impact of mandatory ESG disclosure across two main legal regimes: common law and civil law. To accomplish this, the primary source of reference is drawn from the literature on Law and Finance by La Porta et al. (1996; 1997).

1. Mandatory ESG Disclosure

For several years now, the topic of ESG has been quite extensively explored and investigated. This growing interest takes its origins in multiple societal and environmental changes that occurred these past decades. The occurrence of environmental incidents, the cases of governance scandals in large US and European corporations are primary components of the demand from shareholders of more transparency and corporate governance within companies. We could cite for example the scandal of "Lehman Brothers" in the finance sector, sending an electric shock through capital markets, and spreading distrust in financial institutions. The events of data collection and their misuse with the scandal of "Cambridge Analytica" can also be taken as an example, only creating waves of distrust and pushing economic actors to rethink the behaviours of companies towards society. In 2019, the Business Roundtable made this ethical shift even clearer when it issued a statement marking the importance of the stakeholders view in corporations core businesses.

In the next sections, the concept of mandatory ESG reporting will be explained in more depth. First, the definition of mandatory ESG reporting will be explored. Then, the theories that have laid the groundwork for ESG efforts will be outlined and presented. Following this theoretical background, the efforts made by governments and institutions to promote and enforce ESG disclosure reporting for firms will be examined.

1.1 ESG mandatory reporting definition

The topic of ESG mandatory disclosure is difficult to define with precision and exact terms as it is still rather in its experimental and "infancy" phase. It is a concept in constant development. However, it is commonly agreed that mandatory ESG disclosure is a legal requirement established from either

governmental institutions or stock exchanges for firms, usually of a certain size, to disclose, according to pre-defined reporting standards and metrics, non-financial information pertaining to environmental, social and governmental activities, risks and policies (Christensen et al., 2021; Ioannou & Serafeim, 2011; Janicka et Sajnóg, 2022).

ESG mandatory disclosure can take many forms according to the area firms are operating in, but it follows two main goals. Firstly, to push firms to disclose more information on their ESG practices, using the double materiality concept, as well as increasing the quality and harmony in non-financial reports. Secondly, the aim is to encourage firms to engage in more organizational ESG practices. Christensen et al. (2021b) discuss about these goals and separate them in two different approaches in terms of underlying purpose and double materiality standards: the narrow approach and the broad approach. The narrow approach focuses on information investors need and aims to "give investors what they want." The key criterion here is whether the information is material to investors when they make decisions, and hence whether ESG issues could have financial consequences for the firm. In contrast, the broad approach addresses a broad audience, in principle all stakeholders or society, as it aims to "drive change" with sustainability reporting. The underlying idea is that reporting, and the resulting transparency are change agents, incentivizing desirable behaviours and discouraging undesirable ones. The broad approach applies double materiality as the key criterion; that is, a firm not only reports how it is affected by ESG issues but also the impacts of the firm on the environment and society, including the externalities it causes.

1.2 ESG theories

Environmental, social and governmental preoccupations regarding companies take their origins in multiple theories that have evolved over time. The main proposition by Friedman, the Traditional Management Teaching (TMT), on the sole purpose of companies being shareholder value creation that was held true for decades slowly made place to new ways of thinking (Friedman, 2007). There are nowadays three main theoretical discourses regarding ESG, namely CSR (Corporate Social Responsibility), Sustainable Development, and Shared Value. All three diverge on certain aspects but rejoin in the same idea that firms do not only respond to shareholders to increase their own wealth. The different theories are described in detail in the following paragraph.

The conventional perspective on corporate ethics, famously characterized by Milton Friedman has gradually given way to a more inclusive approach. Companies are now embracing a broader range of stakeholders, including consumers, suppliers, and employees, among others. This leads to the first discourse of business ethics, namely the Corporate Social Responsibility discourse. This theory argues that companies have a moral responsibility towards society and so, a broader range of stakeholders, to act in their interests as well as the ones of the shareholders. This discourse is about ensuring the survival of the organization, not only from a financial point of view but also from a moral point of view. The companies must identify their stakeholders, listen to their needs and act on the latter (Freeman, 2010). The second theory, Sustainable development, is close in concept to ESG for example, as the discourse basis itself on three main pillars: social progress, economic development, and environment. It states the idea that current needs of developed countries, their current standard of living and lifestyles are not sustainable in the long term. Economic actors should rethink their ways of consuming

and producing in order to achieve sustainable growth that will not deplete natural resources. Finally, the third discourse, namely the "Shared Value", is close to the initial Traditional Management Teaching (TMT) from Friedman but with a subtle twist. Companies do not see social issues as such, but rather as possible business opportunities on which these firms could capitalize. The theory tries to reinstall and restore capitalism at the centre of actions of companies. ESG efforts would then be seen more as business opportunities or reputational leverages (Porter, 2023; Xhauflair, 2023).

1.3 Evolution of the landscape of ESG mandatory reporting

The demand for sustainable initiatives and reports is driven by the increasing awareness of investors and other stakeholders of the environmental challenges and emergence of new and more sustainable lifestyles. The increase, for instance, of Socially Responsible Investments (SRIs) shows this growing desire from investors to invest more sustainably (EUROSIF 2018). Different techniques for SRI emerged, the most common one being an exclusion list or "blacklist" of what are then called "sin stocks". Responsible investment portfolios exclude stocks relating to certain industries like petrol, tobacco, weapons, alcohol, and many more. "Doing good while doing well" is the new motto of many investors and investment funds nowadays. For the United States only, SRIs grew from 2016 to 2018 by 42%, a similar growth can be observed in Europe, Canada, Australia, and Japan (GSIA 2018, Global Sustainable Investment Review). From Riedl and Smeets (2017), we know that socially responsible investors are willing to pay higher management fees and earn less return to invest in more sustainable stocks. Another reason for the particular attention to ESG reports from companies regards the audience it reaches. Unlike financial and more quantitative reports, ESG reports give information, which is accessible and more understandable to anyone, including consumers who are not used to regularly uncover financial disclosures (Christensen et al., 2021). Firms who disclose such sustainable information can reach and engage with a wider audience and benefit from reputation and brand-image effects.

ESG reporting also offers numerous benefits for companies. According to a presentation on tax and sustainability jointly made by EY and Robert Half, (EY & Robert Half, 2024) these benefits include enhanced transparency, improved stakeholder trust, and better risk management. By disclosing ESG metrics, companies can attract socially responsible investors, reduce the cost of capital, and improve their long-term financial performance. ESG reporting also promotes operational efficiency by identifying areas for cost savings and innovation, while supporting compliance with regulatory requirements. Moreover, it helps companies build a positive reputation, foster customer loyalty, and enhance employee engagement, ultimately leading to sustainable growth and competitive advantage.

Given the growing sensitivity of stakeholders to the ESG performance of firms, as well as the firms themselves, the latter have increasingly adjusted their reporting practices to include more non-financial and sustainability performance data. Nonetheless, despite the positive impact, the influx of these additional non-financial reports has given rise to a challenge for stakeholders. Specifically, it raises the question of how to effectively compare companies using these relatively novel ESG metrics. The increasing interest on ESG performance metrics has given rise to multiple systems and methods, by the firms themselves or external dedicated organizations, assessing the level of ESG of firms through scores and rankings. However, among those analyses made by dedicated firms like Morgan Stanley

Capital International (MSCI), Kinder, Lydenberg & Domini (KLD), Asset4, to name a few, a lack of harmony can be found in the rankings and scores attributed to similar firms. In their paper, Berg et al. (2022) examine the sources of divergence in ESG ratings and divide them into 3 categories: the scope, the measurement, and the weight. Differences in measurement explain 53% of the total differences, while in scope explain 44% and, differences in weight explain 3%. Furthermore, the information shared by companies about their initiatives and Corporate Social Responsibility (CSR) policies stays mostly published on a voluntary basis only, which raises concerns about the reliability and relevance of the information provided to stakeholders. Some companies may manipulate their data to highlight positive aspects while concealing negative ones. This further exacerbates the challenge of comparing and evaluating companies based on ESG performance, potentially misleading stakeholders in their decision-making.

To address the growing demand from stakeholders for more reliable non-financial information and concerns regarding the lack of harmony between reporting procedures, governments, organizations, and local authorities around the world have progressively introduced harmonized ESG disclosure reporting methods. The 1970s and 1980s marked the start of the ESG reporting requirements with only a few countries, like Sweden and, the United States with the U.S. Securities and Exchange Commission's (SEC) CSR directive encouraging companies to include social and governmental aspects in their annual reports. However, the compliance to the directive was on a voluntary basis. Other organizations started to enter the game, like the Sustainability Accounting Standards Board (SASB) with industry-specific standards for economic, social, and environmental matters for SEC filings, or the Global Reporting Initiative (GRI), which provide, frameworks for voluntary ESG reporting. In the mid-2010s, further efforts in the sustainability area are given. In particular, the European Union (EU) with the European Union Directive on non-financial and diversity information adopted in 2014 and, later, with the Sustainable Finance Action Plan and Non-Financial Reporting Directive (NFRD), strengthening ESG reporting standards. We also see the entry from other players like stock exchanges emitting various ESG requirements for listed companies. More recently, in Europe, several changes pertaining to ESG regulation have been agreed. In 2020, the EU's Sustainable Finance Action Plan introduced the EU Taxonomy to define environmentally sustainable economic activities by establishing a classification system. Later, in 2021, the European Commission proposed the Corporate Sustainability Reporting Directive (CSRD) to replace the NFRD, with the aim to enhance the quality and consistency of the ESG reporting. Among other things, the CSRD focuses also on the concept of double materiality, meaning that the companies must report on how sustainability matters affect their business but also, report on their impacts on people and environment. The CSRD proposes European Sustainability Reporting Standards (ESRS) classified in 4 categories of sustainable topics: Environment (E), Social (S), governance (G) and a cross-cutting category (ESRS 1 and 2). At the same time, in the United States, the U.S. SEC announced it would propose more disclosure requirements focusing on the climate challenges ahead. The IFRS Foundation also announced in 2021 the creation of the International Sustainability Standards Board (ISSB), a new initiative to provide high-quality ESG reporting standards around the world to improve comparability and accountability for companies (Christensen et al., 2021; Ioannou & Serafeim, 2011b).

In addition to these global standards and frameworks proposed, local authorities have also started to introduce their own requirements regarding the ESG challenges. It was France that introduced first mandatory non-financial reporting in 2001. Indeed, Parliament introduced in May 2001 the "New Economic Regulations Act" (Nouvelles regulations économiques), requiring publicly listed companies to issue non-financial information in their annual reports. Soon after, other countries and local stock

exchanges followed the movement. In the case of Belgium for example, the Belgian Companies and Associations Code ("BCAC") was introduced in 2009 and, rules the mandatory non-financial information to include in the annual reports of Belgian companies.

2. Cost of capital and CSR

There is a vast and extensive stream of literature that focuses on the link between corporate social responsibility (CSR) initiatives from firms and their performance. This topic has sparked an ongoing debate among scholars and researchers, as they seek to determine whether CSR initiatives are beneficial or detrimental to companies. The exploration of this link began with Spicer's (1978) seminal paper, which examined the impact of pollution control disclosure on the investment value of companies' shares. The findings of this study were positive and significant, indicating a positive relationship between CSR initiatives and firm performance. However, it is important to note that there has been considerable criticism regarding the methodology employed in this research.

Contrary to Spicer's findings, Vance (1975) presented a different perspective, suggesting that CSR represents a net cost to the firm. This negative link between CSR and firm performance has been a subject of discussion and further investigation. Subsequent studies by McGuire et al. (1988) and, Wokutch and Spencer (1987) found a positive correlation between CSR initiatives and firm performance, providing evidence to support the argument that CSR can have a beneficial impact. On the other hand, Alexander and Buchholz (1978) found no significant relationship between CSR and firm performance. This led to further exploration of the link between the two variables, resulting in mixed results across different studies (Jiao, 2010). It is worth mentioning that several other papers have also faced scrutiny regarding the accuracy and reliability of their methodologies and findings.

Within the literature, two main sources of difficulty in determining the link between CSR and performance are frequently discussed. Firstly, there is the issue of endogeneity, as highlighted by McGuire et al. (1988) in their paper. They found that past performance has a stronger positive link with the current level of CSR than future performance. This suggests that companies with good performance have more resources to engage in CSR compared to firms with lower past performance. Consequently, it becomes challenging to determine whether the firm performs better because of its efforts in CSR or if the firm can afford to engage in CSR initiatives because it already has the necessary resources and capabilities. Secondly, researchers face difficulties in determining appropriate measures to study the link between CSR and firm performance. The methods used to explore this relationship can be subjective and may yield results that are open to interpretation. For instance, Sharfman and Fernando (2008) used the Capital Asset Pricing Model (CAPM) method to estimate the cost of capital for firms. However, Ghoul et al. (2011) favoured an ex-ante cost of capital approach based on analysts' forecasts and stock prices. Depending on the researcher's perspective, one method may be judged as more appropriate or superior to another, leading to subjective outcomes.

In addition to the broad literature on CSR and firm performance, a more specific stream of research focuses on the link between CSR and the cost of capital of firms. The cost of capital is an interesting variable for the companies to study for 2 main reasons. Firstly, the cost of capital helps and guides the companies to choose their corporate finance decisions. The cost of equity influences financial policies of a company, such as dividend payouts and capital structure decisions. A precise estimation helps businesses determine the optimal mix of debt and equity financing to minimize the cost of capital and maximize shareholder value. If debt financing is cheaper and so more attractive for firms, they will ask less their shareholders to chip or limit the possibilities to buy shares. A sound balance between debt

and equity financing is necessary and desired (Berk & DeMarzo, 2019). Secondly, the cost of capital plays a role in determining the value of a firm or a designated investment project by serving as the discount rate for future cash flows. According to Modigliani Miller (1958), the value of a firm is determined by its ability to generate future cash flows, which are then discounted back to their present value using the firm's cost of capital. A lower cost of capital reduces the discount rate, thereby increasing the present value of future cash flows and, consequently, the overall value of the firm or project. Conversely, a higher cost of capital raises the discount rate, which decreases the present value of future cash flows and lowers the firm's value or project. This relationship underscores the importance of managing the cost of capital effectively to enhance shareholder value.

From the literature, the findings would suggest that CSR can have a positive influence on the cost of capital of a company. Ghoul et al. (2011) found that firms with higher CSR scores tend to have a lower cost of equity. Additionally, Sharfman and Fernando (2006) demonstrated that effective environmental risk management can lead to a lower cost of capital for firms. From the existing literature, there are several compelling arguments supporting the positive impact of Corporate Social Responsibility (CSR) on a firm's cost of capital. In the following sections, the theoretical underpinnings that support the expectation that high CSR firms should enjoy a lower cost of equity capital compared to their low CSR counterparts will be delved into.

2.1 Increasing investors base

One prominent argument is that investing in CSR initiatives can attract a broader base of investors to companies. Indeed, the legitimacy theory states that CSR acts on the stakeholders view of a company, its reputation and brand image. From the literature, we know that firms with a smaller pool of investors often face a higher cost of equity capital. Indeed, for example research by Heinkel et al. (2001) and Mackey et al. (2007) suggests that smaller pool of investors often face a higher cost of equity capital because of the lower opportunities for risk diversification. Similarly, Merton's capital equilibrium model shows that increasing the relative size of a firm's investor base leads to a lower cost of capital and higher market value. From the growing trend of socially responsible investing (SRI), it cannot be denied that there is an increasing demand for socially responsible investment options. To further support this observation, Kempf and Osthoff (2007) note that SRI is experiencing steady growth in today's market. Moreover, Hong and Kacperczyk (2009) further contribute to this argument by demonstrating that norm-constrained institutions, such as pension plans, are less likely to hold publicly traded companies involved in the production of alcohol, tobacco, and gaming, commonly referred to as "sin stocks." Additionally, Riedl and Smeets (2017) highlight that investors are willing to prioritize their social preferences over financial performance. In their study, they find that investors are willing to forego higher return in order in invest responsibly. Collectively, these studies support the notion that there is a growing pool of investors who seek socially responsible investment options and make investment decisions based on their preferences.

Furthermore, corporate socially responsible firms are reported to have lower information asymmetry, which also contributes to attracting more investors. Ghoul et al. (2011) in their paper mention that CSR through higher disclosure standards, improves information asymmetry and reduces agency costs between managers and shareholders. This increases the perception by investors of the positive image of a firm and so, the firms with higher CSR attract more investors than firms with low CSR. In addition to that, Kempf and Osthoff (2007) prove in their article the attractiveness of firms who are perceived to be socially responsible, through their

CSR ratings to investors. CSR initiatives help mitigate information challenges within the firm and between the firm and its investors, as socially responsible firms tend to disclose more information. Conversely, firms with low CSR face more severe information challenges and may have a smaller investor base.

2.2 Risk mitigation view: decrease of the perceived risk

Another relevant argument, widely acknowledged and discussed, revolves around the perceived riskiness of firms. Firstly, CSR can serve as a shield for firms, reducing the likelihood of litigation and potential complications. For instance, a firm that actively reduces its pollution emissions can protect itself from potential litigations with governments, non-governmental organizations (NGOs) or investors. By avoiding potential lawsuit fines, the firm can redirect saved resources towards maximizing shareholder value. Consequently, the market may perceive the company as carrying a lower risk, both in terms of equity and debt costs. Hong and Kacperczyk's findings (2009) support this argument by revealing that "sin" firms face higher litigation risks. If the company is reported to have a high level of CSR, the perceived riskiness by the stakeholders of the firm will be reduced.

Secondly, we can use the lens of signalling theory to explain this positive link between cost of capital and CSR. CSR increases the superior use of resources, the quality, and the legitimacy of the firm. Firms that engage in CSR practices may demonstrate their capabilities to go beyond narrow economic and legal requirements, which can enhance their reputation and legitimacy in the eyes of stakeholders. Barnett (2007) argues that engaging in CSR shows that a firm is willing to allocate reasonable resources to maintain a sustainable relationship with stakeholders. By doing so, it decreases its idiosyncratic risk, leading to a lower beta[1] (from CAPM formula) and then, a lower cost of equity. Indeed, investing in CSR initiatives enables companies to signal transparency and superior capacity to their stakeholders. According to signalling theory, risk management leads to improved financial performance by reducing systematic risk. This argument is based on the investor's trade-off between risk and return. When a firm demonstrates effective management of environmental risks, it is expected to achieve higher future performance, rendering it more attractive to investors. As the market gains confidence in the firm's ability to provide returns or mitigate systematic risk, investors become more willing to reward the company by asking a lower return, so a lower cost of equity. (Hu et al. (2018); Verrecchia 2001; Sharfman and Fernando (2008b); Goss and Roberts (2011)).

However, these theories depend on the way the CSR initiatives are handled by the management in reality. Indeed, when managers over-invest in CSR to gain private benefits, like reputation, it is at the expense of other stakeholders like shareholders. Moreover, excessive spending on CSR initiatives can lead to a decrease in profitability, which in turn can negatively impact the cost of capital. Indeed, a decrease in profitability can impact the cost of capital of a firm because it affects the perceived financial health and stability of the company. When the profitability of a company decreases, it indicates that the company is not generating enough profits to cover its costs and provide returns to its investors. This can make the company appear riskier to investors, who may then demand a higher return on their investment to compensate for the increased risk. As a result, the cost of capital, which is the rate of return required by investors to invest in a company, can increase. Additionally, if the CSR activities

[1] $ri=rf+\beta i(ERm-rf)$

carried out are not aligned with its core business objectives, it may be seen as a distraction by investors and result in a higher cost of capital. Finally, the lack of transparency and accountability in CSR reporting can also raise concerns among investors and increase the perceived risk of investing in the firm, leading to a higher cost of capital. (Sharfman et Fernando (2008b); Goss et Roberts (2011)). Thus, CSR investing can be beneficial but also detrimental to a firm's performance and cost of equity.

3. Cost of equity capital and mandatory ESG disclosure

In this section, the relationship between mandatory Environmental, Social, and Governance (ESG) disclosure reporting and the cost of capital will be examined. While no prior study has specifically examined the potential impact of implementing mandatory ESG disclosure regulations on cost of equity capital of firms, these two domains are not unfamiliar. One noteworthy investigation pertinent to this discourse is the research conducted by Krueger et al. (2021), which delved into the repercussions of mandatory ESG disclosure on stock liquidity. Their findings unveiled a significant and positive impact of ESG disclosure mandates on firm-level stock liquidity. Notably, they observed an 8.4% decrease in the bid-ask spread metric subsequent to the implementation of local mandatory ESG regulations. The research also points out that firms with weaker information environments benefit the most from such regulations. This conclusion is based on the premise that reducing information asymmetry has a more significant impact when the initial level of information asymmetry is higher. Therefore, the effects of ESG disclosure mandates are expected to be more pronounced for firms that do not provide voluntary disclosures to financial markets. The results of the study support this hypothesis, showing that stock liquidity improves more strongly after the introduction of mandatory ESG disclosure for firms that do not issue earnings guidance or provide voluntary disclosures.

Another noteworthy contribution to this area is the study by Grewal et al. (2019), where the authors scrutinized the market reaction following introduction of the European Union (EU) of a directive pertaining to mandatory ESG reporting. The research revealed that the introduction of such regulation evoked, on average, a negative market reaction of –0.79%. Nevertheless, the authors attenuated these findings by demonstrating that this adverse reaction was prevalent among firms with previously inadequate ESG performance and disclosure. Conversely, firms exhibiting strong ESG performance and higher levels of ESG disclosure benefited from positive market reaction.

Recently, Chen et al. 2024 looked into the impact of the introduction of mandatory ESG disclosure reporting on the dividend policies of companies. The study encompasses 73 countries and found that, on average, firms decrease their dividend payout ratio after the introduction of mandatory ESG reporting. This reaction is explained by the anticipation that firms will need to engage in new sustainable investments to address future scrutiny and stakeholder pressures. Firms may expect increased ESG investments to align with the reporting requirements, leading them to finance these projects by reducing dividend payments and increasing retained earnings. Moreover, they go deeper in their analysis and capitalize on the large sample of countries to test multiple cross-sectional characteristics of countries.

Building on the findings and arguments presented in previous sections, and according to the literature on mandatory ESG reporting, the relationship between the introduction of mandatory ESG reporting and the cost of capital is not obvious ex ante. By considering the existing literature on mandatory ESG disclosure, the relationship between corporate social responsibility (CSR) and the cost of equity capital, we can outline arguments that explain how mandatory ESG disclosure may affect the cost of capital for

compliant companies. Before delving in this section, it is important to mention that in this thesis, it is assumed that firms will increase their ESG disclosure level following the introduction of ESG disclosure regulations. This has been proven by Ioannou and Serafeim (2011b). Indeed, the authors found significant evidence supporting the fact that disclosure practices of firms increased after the introduction of mandatory ESG disclosure regulations.

3.1 Negative relationship

For this section, the arguments in favour of expecting a negative relationship between mandatory ESG disclosure and the cost of capital will be presented. These theories and the accompanying arguments rely on three main factors that influence the cost of equity for firms: (i) the efficiency of the capital market and its liquidity, (ii) the perceived risk of the firm, and (iii) the size of the investor base.

Agency theory and information asymmetry

First, arguments in favour of a negative relationship between the introduction of mandatory ESG reporting rely on the agency theory. The agency theory exposes the concept of the agent-principal problem and the issue of information asymmetry. Indeed, within a firm, the management which takes all the day-to-day decisions possess a larger share of information compared the shareholders. The latter can only rely on the belief that the management is acting in their interests. This problem of information asymmetry can be mitigated by the introduction of mandatory disclosure reporting.

Mandatory ESG disclosure is expected to lead to more reliable information being available for stakeholders, particularly investors, thus reducing the principal-agent problem. The increased access to information would be further enhanced by additional coverage from analysts for firms engaging in more sustainable activities or disclosing their already existing CSR efforts, as highlighted in Hong and Kacperczyk's paper. "Sin stocks" receive less coverage from analysts compared to other stocks. The increase in information level and its level of quality would lead to a better-informed market, thus expanding the investor base (Hong and Kacperczyk, 2009). Additionally, Diamond and Verrecchia (1991) demonstrated that disclosing more public information to address information asymmetry problems lowers the cost of capital of firms by attracting more demand from investors due to increased liquidity of its securities. When a company decides to share more information with the public, it helps level the playing field between investors who might have different amounts of knowledge about the company. Investors are thus more confident in their decisions and more likely to invest. (Krueger et al. (2021) ; Christensen et al. (2021b), Ioannou et Serafeim (2011)).

Moreover, the introduction of mandatory ESG disclosure is expected to bring harmony in non-financial reporting practices and provide more comparable information across companies. In their paper, El-Hage (2021) mention the Efficient Capital Markets Hypothesis (ECMH) which states that capital markets are efficient in processing and incorporating new information into stock prices. This efficiency is divided into two components: informational efficiency and allocative efficiency. Informational efficiency refers to the ability of market mechanisms to quickly process new information and distribute it broadly. This means that information relevant to the value of securities is reflected accurately and promptly in their prices. Allocative efficiency on the other hand refers to the ability of capital markets to allocate

resources to their most productive uses at the lowest cost and risk. Therefore, to enhance market efficiency, the market requires reliable and complete information to make informed investment decisions. The authors suggest that current self-regulated, voluntary ESG ratings systems may not provide reliable signals for market participants to allocate capital efficiently, especially regarding climate change risks and opportunities. Thus, mandatory ESG disclosure could lead to clearer standards and more consistent reporting, thereby improving the reliability and comparability of ESG information for investors.

Additionally, the introduction of mandatory ESG disclosure regulations would have a significant impact on the risk profile of companies. As mentioned earlier, these regulations would provide additional information to the market, which in turn would have several positive effects. Notably, the increased availability of information would mitigate the risk of adverse selection for investors thanks again to better informed investment decisions (Li, 2010). Consequently, the perceived risk of investing in a company would decrease, leading to a lower cost of equity for investors. (Christensen et al. (2021b); Krueger et al. (2021)).

On top that, the implementation of mandatory ESG disclosure regulations would enhance the ability of external parties to monitor the management team of companies. This increased oversight and monitoring power from investors would help reduce the risk of shareholder expropriation within the company. Shareholders would have a clearer understanding of the practices of the company and be better equipped to hold the management accountable. Furthermore, Christensen et al. (2021b) in their paper, add that mandatory disclosure of ESG information would facilitate the estimation of future cash flows. With access to more comprehensive data, investors would be able to make more accurate projections about the financial performance of a company. This would result in a lower perceived risk associated with the investment and, consequently, a lower cost demanded from investors.

In sum, the introduction of such regulation would mitigate the information asymmetry issue which would have two main effects: (i) a more efficient and liquid capital market and (ii) a lower perceived risk by investors.

Legitimacy theory and reputation effect

The legitimacy theory states that firms have a social contract with society and must behave according to society norms and values. Corporations seek the recognition of society and often do so by engaging in CSR efforts (Castillo-Merino et Rodríguez-Pérez (2021b)). By doing so, firms benefit from reputation effect, and thus increase their attractiveness towards investors, and decrease their perceived risk simultaneously. One of the goals of mandatory ESG disclosure would be to incentivize firms to engage in more sustainable practices. We refer here to the “broad approach” to ESG mandatory disclosure. Fiechter et al. (2022), in their paper, investigated the real impacts of the introduction of the CSRD regulation on the CSR activities of companies. They found significant and positive results, indicating that introducing mandatory ESG reporting framework increase the CSR practices of companies. This positive relationship is even greater for firms with prior low levels of ESG disclosure and performance. Since we know that preferences of investors show in their investment decisions, given the undeniably growing preference for SRI, we predict that having higher ESG performance will increase the demand from investors. Moreover, the introduction of such regulations could heighten market interest in ESG practices, creating even more attractiveness towards SRI (Ioannou and Serafeim, 2011b).

In conclusion, the reputation effect that is expected to stem from the introduction of mandatory ESG disclosure reporting is believed to have two main effects regarding the cost of capital: (i) a lower perceived risk of the firm and (ii) greater attractiveness of investors increasing the investors pool.

Free cash flow theory and shareholder expropriation

Finally, it is important to note that adopting more sustainable organizational practices supports the concept of free cash flow theory. The free cash flow theory sates that by reducing the cash flow at disposal of management by distributing dividends or investing in new projects for example, the shareholders limit and reduce the power held by the managers (Jensen, 1999). From Ioannou and Serafeim (2011b), it is known that disclosure practices of firms increased after the introduction of mandatory ESG disclosure regulations. Thus, by implementing ESG practices, companies can effectively prevent the misuse of corporate assets and minimize the potential expropriation of shareholders and debtors by management. This is achieved by imposing limitations on management's ability to derive personal benefits through private avenues. Therefore, applying the concept of free cash flow theory, the introduction of mandatory ESG disclosure reporting is expected to reduce potential risk of any shareholder expropriation and thus reduce the perceived risk of firms.

3.2 Positive relationship

There are however potential limitations of the hypothesis that mandatory ESG disclosure would reduce the cost of capital for firms. While it is generally believed that increased transparency through ESG disclosure can lower the cost of capital by reducing information asymmetry and enhancing investor confidence, this assumption may not always hold true in practice.

Disclosure costs and assimilation costs

One potential limitation is the presence of compliance costs associated with implementing mandatory ESG disclosure. These costs can include expenses related to data collection, reporting, and ensuring compliance with regulations. Such costs might impact the profitability of companies, as they would need to allocate resources towards meeting these requirements. This could lead investors and debtors to view these costs as a potential misuse of firm assets, which may result in them demanding higher costs of capital to compensate for the perceived risk (El-Hage, 2021).

Additionally, while mandatory ESG disclosure would lead to more information available to the market, all market participants might not be able to properly understand this information. Indeed, non-financial information might be too complex to uncover for uninformed participants. Moreover, companies might capitalize on the lack of guidance on reporting metrics to only disclose the minimum required of the information. Thus, missing the point of increasing valuable information content with stakeholders (Krueger et al., 2021).

Proprietary and political costs

Additional adverse effects are identified in the literature, arguing that the market might penalize firms following the introduction of mandatory ESG reporting. Grewal et al. (2019) delineate the concepts of "proprietary" and "political" costs. Proprietary costs denote the expenses incurred by a firm due to the disclosure of information that may tarnish its reputation and reduce competitiveness. It is acknowledged that expecting solely positive outcomes from firms divulging ESG performance information may be overly idealistic, given the existence of firms that do not prioritize ESG goals or engage in practices such as greenwashing. Unveiling such "unfavourable" firms could have detrimental consequences for them (Martinez & Vazquez, 2023). Furthermore, El-Hage (2021) contends that mandatory non-financial disclosure could heighten litigation risks for companies. Increased disclosure entails a greater potential for inaccuracies in the reports, thereby exposing firms to higher litigation risks. On the other hand, political costs refer to the expenses a company incurs when governmental institutions and other stakeholders possess more information that can be used to exert pressure on them. As the paper elucidates, this pressure may compel firms to undertake projects with negative returns. Investors may view this as shareholder expropriation and penalize the company by demanding a higher rate of return.

Mitigation effect from prior ESG initiatives and reporting

Another potential limitation is the possibility that the market has already incorporated the information provided by voluntary ESG disclosure. If a company has been voluntarily disclosing ESG information prior to the introduction of mandatory regulations, the additional disclosure may not have a significant impact on its cost of capital. From Krueger et al. (2021), we know that firms operating within weaker information environments benefit most of mandatory ESG disclosure regarding the stock liquidity. On another hand, findings from Grewal et al. (2019) indicate an average negative market reaction – on the abnormal returns - to the implementation of mandatory non-financial disclosure. However, the authors note a positive reaction for firms with already high levels of ESG disclosure and strong prior ESG performance. The market perceives mandatory ESG disclosure as an added cost burden for companies with low ESG performance and disclosure levels, while already high-performing companies appear to reap benefits. The inconclusive nature of these findings underscores the need for further research to reconcile the disparate results. Finally, it is important to note that the effectiveness of mandatory ESG disclosure in reducing the cost of capital may vary across different industries and regions, depending on factors such as market demand for ESG information and the level of regulatory enforcement (Christensen et al., 2021b).

4. Differences across legal regimes

In the current research, attention has predominantly been directed towards firm-level explanations and theories concerning mandatory ESG reporting and firm performance, such as agency theory and legitimacy theory, among others. However, an alternative perspective worthy of exploration is country-level theories, specifically institutional theories (Castillo-Merino & Rodríguez-Pérez, 2021). Numerous scholars underscore the importance of incorporating the legal context of the country in which firms operate when analysing CSR ratings and practices. Indeed, the legal framework and the extent of

investor protection provided by the legal system of a country can profoundly shape a company's approach to CSR.

4.1 Legal regimes

For this literature review, the extensive body of research on "Law and Finance" by La Porta et al. (1997, 1998) is drawn upon. The Law and Finance theory is grounded in the fundamental concept of property rights, particularly the aspect of investor protection. In their seminal article, La Porta et al. (1997, 1998) shed light on the significant variations in the legal protection provided to stockholders and creditors across different countries. This legal protection is intricately linked to the prevailing legal regime within each country. The two primary legal regimes observed worldwide are the common law system, predominantly found in countries like the United Kingdom and the United States, and the civil law system, which is prevalent in nations such as France, Germany, Latin America, Poland, Austria, Hungary, Greece, and Scandinavian countries. Common law countries generally exhibit the strongest legal protections for investors, while French-civil-law countries tend to have the weakest safeguards. German- and Scandinavian-civil-law countries fall somewhere in between these two extremes.

The historical development of these legal systems was influenced by factors such as conquest, colonization, and cultural traditions. Common law is primarily based on the British Company Act from 1862. Common law systems spread through British imperialism and colonization, leading to the adoption of English legal principles worldwide. Civil law systems, rooted in Roman law, were adopted in continental Europe and other regions influenced by Roman legal traditions. French civil law takes its origins in the Napoleonic Code Civil (1804), based on Roman law, which was consequently exported to multiple countries like Belgium, Polland, French colonies, etc. The German civil law originated through the Bismarck code in 1896 and had considerable impact on countries such as Austria, Hungary, Greece, Japan and China. Finally, Scandinavian civil law is a mix of both French- and German- civil law systems. Understanding the historical origins and principles of common law and civil law systems helps appreciate how these legal traditions have shaped investor protections in different countries. This historical context offers valuable insights into the evolution of legal regimes and their impact on corporate finance and governance practices globally.

The differences between common law and civil law countries in terms of legal protections for corporate shareholders and creditors can be traced back to their distinct legal origins. Common law systems originated in England and were developed through judicial decisions and precedents. The English legal system evolved over centuries based on case law and the decisions of judges, emphasizing judicial interpretation and the application of precedent in resolving legal disputes. This approach prioritizes flexibility and adaptability, with judges playing a significant role in shaping the law through their rulings. Consequently, common law countries tend to provide robust legal protections for investors, including shareholders and creditors, due to the emphasis on individual rights, property rights, and contract enforcement. In contrast, civil law systems trace their origins to Roman law and the codification of laws. Countries with civil law systems, such as those in continental Europe like France for example, base their legal frameworks on comprehensive codes and statutes that systematically outline rights and obligations. Civil law prioritizes codification and the written law, focusing on clarity and precision in legal rules. This results in detailed statutory provisions regulating various aspects of law, including commercial transactions. However, civil law countries may offer more limited legal protections for investors compared to common law jurisdictions. The emphasis on statutory law and strict adherence to codified rules can lead to less flexibility and adaptability in addressing complex legal issues related to corporate governance and finance.

The LLSV index, developed by La Porta, Lopez-de-Silanes, Shleifer, and Vishny in their seminal 1996 paper "Law and Finance," evaluates the legal environment of countries concerning investor protections. This index assesses the legal rules that safeguard corporate shareholders and creditors, the origin of these rules, and the quality of their enforcement in various countries. For instance, the shareholder protection index comprises variables such as the 'one-share-one-vote' mechanism and the ability to vote by proxy. According to the findings, stronger stockholder protection correlates with, among other variables, lower ownership concentration, larger equity markets and easier access outside financing. Therefore, a key implication is the reduced dependence on internal financing for growth. This phenomenon indicates that a firm's investment opportunities are less constrained by its internal funds, which is a desirable characteristic for efficient corporate finance. When a firm encounters promising investment opportunities, it should be able to easily secure additional external funding rather than relying solely on its internal financial resources. This ease of raising capital ensures that firms can swiftly capitalize on beneficial investment opportunities, thereby fostering growth and enhancing shareholder value. (La Porta et al., 1997,1998).

Therefore, according to La Porta et al. (1997, 1998), countries with robust investor protection tend to exhibit a higher degree of ownership dispersion among companies. This increased ownership dispersion results in enhanced liquidity of shares, leading to a reduction in the cost of capital and the hurdle rate required for investment returns. Consequently, companies with stronger investor protection are presented with a wider pool of investment opportunities, enabling them to explore and pursue growth prospects. Following this logic, common law countries, which typically offer stronger investor protection, are expected to have better-developed markets. As a result, these countries generally have a lower cost of equity capital compared to civil law countries (Hail & Leuz, 2006).

4.2 Legal regimes and CSR

In another study, Renneboog and Liang (2017) conducted research to explore the relationship between the Corporate Social Responsibility (CSR) rating of a firm and the legal family of its country of origin. The authors discovered a significant correlation between the legal family of a country and the CSR ratings of firms. Specifically, they found that companies from common law countries tend to have lower CSR ratings, while firms from civil law countries exhibit higher CSR ratings. The research confirms the hypothesis that there is a greater demand for Environmental, Social, and Governance (ESG) initiatives and CSR in civil law countries than in common law countries. This observation finds its origins in the stakeholder theory, which is more prominent in civil law countries. Indeed, in these countries, there is a higher expectation and demand for CSR activities due to a greater sensitivity towards stakeholder protection. While common law countries are known for having the strongest level of investor and shareholder protection, civil law countries are reported to provide the highest level of protection for stakeholders, such as consumers and workers. For instance, civil law countries are reported to have more unions, stricter rules in place regarding employee dismissal, and consumer protection. The findings from Renneboog and Liang (2017) confirm the stakeholder theory and are consistent with the observations from La Porta et al. (1997, 1998). Common law countries prioritize investor protection, whereas civil law countries emphasize stakeholder protection, thus explaining the higher prevalence of CSR activities in civil law countries.

Castillo-Merino & Rodríguez-Pérez (2021) found similar results with their research. The researchers conducted a study to analyse the impact of legal origin and corporate governance on the sustainability performance of financial firms. The results indicated that financial firms based in civil law countries, characterized by stakeholder-oriented legal systems, demonstrated higher ESG scores compared to companies in common law countries. Moreover, the study found that well-governed financial firms

were more likely to engage in ESG activities, with corporate governance structures serving as a compensatory mechanism to balance shareholder and stakeholder interests, particularly in common law countries.

From these two main studies on the subject of CSR and legal regimes, we can make connections with what has been said before in this thesis. Indeed, common law countries show higher levels of investor protection, favouring the shareholder view, similar to the Traditional Management Teaching (TMT) from Friedman mentioned earlier in this work. On the other hand, civil law countries show better and higher levels of stakeholder protection, and favour a stakeholder view, which is a similar concept to CSR discourse mentioned earlier as well.

4.3 Legal regimes, Mandatory ESG reporting and cost of equity capital

The findings from Renneboog and Liang (2017) suggest that markets perceive the introduction of mandatory ESG disclosure reporting as a substitute for low stakeholder protection rights, similar to corporate governance. Common law countries, which exhibit weaker stakeholder protection than civil law countries, tend to have lower levels of CSR performance and disclosure. Therefore, countries from this legal family could benefit from such regulation, as it could bridge the gap in stakeholder protection and be rewarded by the market (Renneboog and Liang, 2017; Castillo-Merino & Rodríguez-Pérez, 2021).

Moreover, it is expected that common law countries would benefit more from such regulation and the additional information provided by mandatory ESG reporting, due to their previously weaker information environment. Since common law countries demonstrate less disclosure compared to civil law countries, building on the findings from Krueger et al. (2021) on the impact of mandatory ESG reporting for firms operating in weaker information environments, the impact of mandatory ESG disclosure is anticipated to be negative for common law countries compared to civil law countries.

Furthermore, given the already high levels of CSR performance and disclosure in civil law countries, the introduction of mandatory ESG disclosure may primarily have the result of exposing the “bad players” in those countries, i.e., those that did not engage in prior voluntary CSR disclosure. This could result in the disclosure of harmful or sensitive information, which might be detrimental to these firms due to compliance, political, and proprietary costs discussed in the previous section. Therefore, it is expected that such regulation could have a positive impact on the cost of capital in civil law countries (Grewal et al., 2019; Krueger et al., 2021; El-Hage, 2021).

Additionally, hypotheses can be drawn from recent research by Chen et al. (2024), which studied the impact of mandatory ESG reporting on the dividend policies of firms. Notably, in subsequent testing, they found significance for the variable of interest—capturing the introduction of mandatory ESG reporting—only in the context of less developed markets. This indicates that firms in such markets, facing lower quality domestic capital markets and higher financial constraint risks, are more likely to reduce dividend payments in response to the additional costs of mandatory ESG reporting. This underscores the importance of considering market development factors when analysing the impact of mandatory ESG reporting. Building on these findings and the literature on legal regimes, civil law

countries, which on average have less developed markets and access to outside financing than common law countries, may perceive mandatory ESG reporting more as an additional cost.

However, opposite results could also be expected. According to Grewal et al. (2019), a negative market reaction was attributed to poorly performing firms but rewarded already well-performing firms in terms of ESG. Thus, firms in civil law countries, which are already performing well, are expected to be rewarded by the market, while those in common law countries are on the contrary expected to be penalized by the market.

5 Hypotheses development

Mandatory ESG disclosure and cost of equity

Mandatory ESG disclosure reporting can have varying impacts on the cost of equity. On the one hand, it can potentially lower the cost of equity by enhancing transparency and reducing information asymmetry, thus increasing investor confidence. Improved disclosure can lead to better market liquidity and attract a broader investor base and lower the perceived risk and cost of equity for firms (Krueger et al., 2021; Christensen et al., 2021b; Ioannou & Serafeim, 2011). Additionally, mandatory ESG disclosure can improve corporate reputation and legitimacy, further lowering the perceived risk and cost of capital (Castillo-Merino & Rodríguez-Pérez, 2021b; Fiechter et al., 2022).

Conversely, mandatory ESG disclosure can increase the cost of equity due to compliance costs, assimilation costs, and potential proprietary and political costs. Compliance costs, such as those associated with data collection and reporting, can negatively impact profitability, leading to higher perceived risk and cost of equity. Additionally, the complexity of non-financial information may result in inadequate understanding by market participants, potentially leading to misinterpretations and higher risk premiums (Krueger et al., 2021). Moreover, disclosing sensitive or harmful information can expose firms to higher litigation risks and political pressures, which can increase the cost of capital (El-Hage, 2021; Grewal et al., 2019).

Based on this review, we hypothesize that the introduction of mandatory ESG disclosure will increase the cost of capital, therefore the following hypothesis is proposed:

***H1**: The introduction of mandatory ESG disclosure increases the cost of equity capital for firms.*

Difference across legal regimes

The impact of mandatory ESG disclosure is expected to differ between civil law and common law countries due to variations in legal frameworks and existing levels of CSR performance and disclosure. Civil law countries generally have stronger stakeholder protection and higher levels of CSR performance and disclosure. In these countries, the introduction of mandatory ESG disclosure may primarily impact firms that did not previously engage in voluntary CSR disclosure, potentially revealing harmful information, known as political and proprietary costs. Additionally, firms that have not previously engaged in ESG disclosure will incur compliance costs by hiring specific personnel to manage the new requirements. These impacts could increase the cost of capital due to perceived risks associated with the newly disclosed information (Grewal et al., 2019; Krueger et al., 2021; El-Hage, 2021). Furthermore, since capital markets in civil law countries are reportedly less developed, thereby limiting firms' access to financing, the introduction of ESG disclosure could be perceived as an additional cost, further increasing the cost of equity (Chen et al., 2024). Therefore, the following hypothesis is proposed:

***H2**: The introduction of mandatory ESG disclosure increases the cost of equity capital of firms in civil law countries.*

On the other hand, common law countries generally have weaker stakeholder protection, weaker information environments and lower levels of CSR performance and disclosure. These countries could benefit more from mandatory ESG disclosure as it addresses the gap in stakeholder protection and improves market transparency. Consequently, the expected increase in market liquidity and investor confidence could lead to a reduction in the cost of equity (Renneboog & Liang, 2017; Castillo-Merino & Rodríguez-Pérez, 2021). Therefore, the following hypothesis is proposed:

***H3**: The introduction of mandatory ESG disclosure decreases the cost of equity capital of firms in common law countries.*

In summary, while mandatory ESG disclosure is expected to increase the cost of capital in general due to compliance and proprietary costs, its impact will vary across different legal regimes. It is anticipated to increase the cost of equity in civil law countries due to the exposure of negative information, and the additional costs it will generate whereas in common law countries, it is expected to reduce the cost of equity by improving transparency and investor confidence.

Data and methodology

In the subsequent sections, the sample employed for the study within this thesis will be detailed, as well as the screening procedure implemented to refine this sample, and the final dataset of observations will be presented. Following this, the empirical model utilized for this thesis will be presented. Subsequently, the dependent variable, alongside the variable of interest and the control variables, will be outlined and explained.

1. Data Sample

To ensure the robustness of this study, data collection was facilitated across 10 countries, obtained from DataStream. The sample was predicated on the selection and listing of countries conducted by Krueger et al. (2021), which initially encompassed 65 countries. From these 65 countries, those which could not be associated with one of the legal regimes of origins (common law or civil law countries) were eliminated. This left 19 countries for the treatment group and 6 countries for the control group. Within the sample, countries with no more than 100 headquartered publicly listed firms were excluded, as the sample size would be insufficient to ensure representativeness. Moreover, following previous research, the observations with less than 100 million USD as total assets are removed from the sample. For the control group, from the six countries present, three were retained: Brazil, Japan, and the United States.

The sample primarily focuses on active companies, limiting its scope to major and primary markets, thereby ensuring a comprehensive representation of relevant equities. The chosen time frame for this analysis spans from 1998 to 2018, approximately three years preceding the initial introduction of mandatory ESG regulation in 2001, in France, and concluding approximately two years after the final introductions of such regulations in 2016. This timeframe also excludes the year 2019 from the study, thus mitigating the impact of the Covid-19 pandemic years on the outcomes of this study, which could lead to inaccurate information due to the exceptional circumstances during the Covid period. Data retrieval was conducted per country. Only firms headquartered in the respective country and listed on the local major stock exchange(s) were retained for this sample. Panel C from Table 3 provides an overview of mandatory ESG reporting regulations across various countries, detailing the year of introduction, the issuing institutions, and the major stock markets for each country.

The sample was also constrained by the availability of the chosen control variables on DataStream, which are detailed in the next section. To maintain an adequate sample size while ensuring that missing data for certain variables did not compromise the integrity of the sample, any firm with more than five missing values for any variable was excluded from the analysis. Despite efforts to clean the dataset, some missing values for the variables size (SIZE), book-to-market ratio (BTM), leverage (LEV), and return on equity (ROE) persist. Table 5 provides a summary of these missing values for each country.

A total of 4,205 firms with 84,298 observations were included in the final dataset.

2. Empirical Model

For the methodology, a quantitative-empirical approach was employed. It represents a deductive approach utilized in this thesis, wherein hypotheses are formulated based on existing literature and subsequently tested. The research strategy adopted is a staggered difference-in-difference methodology, incorporating both cross-sectional and longitudinal analyses. This means that companies within each country studied were identified, and their data was collected both before and after the introduction of mandatory ESG regulations to discern any significant differences. Concurrently, inter-firm disparities within countries were also investigated. The distinct groups are as follows:

- Treatment Group = Countries that have implemented mandatory ESG disclosure regulations.
- Control Group = Countries that did not implement mandatory ESG disclosure regulations.

This methodology allows for a comprehensive assessment of the impact of mandatory ESG disclosure by comparing the changes within firms over time and the differences between firms in countries with and without such regulations.

The following empirical model is used:

$$\begin{aligned} COE\ i,t = \propto\ &+ \beta 1 * MAND\ c * POST\ c,t + \beta 2 * SIZE\ i,t + \beta 3 * BTM\ i,t + \beta 4 * ROEi,t \\ &+ \beta 5 * LEVi,t + \beta 6 * RETVARi,t + \beta 7 * RULE\_OF\_LAWc,t + \beta 8 \\ &* GDP\_PER\_CAPITAc,t + \beta 9 * GDP\_GROWTHc,t + \delta i + \delta c + \delta t + \varepsilon \end{aligned} \quad (1)$$

This model is established for firm *i* in country *c* and year *t*. The model features the cost of equity capital (COE) of the firm as the dependent variable, with the introduction of mandatory ESG disclosure regulations serving as an independent and explanatory variable. Control variables, as well as firm-, year-, and country-fixed effects, were included. These variables are elaborated upon further in this section. Standard errors are clustered at the firm level, following the methodology of previous studies such as Krueger et al. (2021)[2] and Li (2010)[3]. These studies present similar settings to the one tested here, justifying the use of this approach. Clustering standard errors at the firm level accounts for the possibility that observations within the same firm may be more similar to each other than to those from different firms. This adjustment helps to mitigate potential biases or dependencies within firms arising from unobserved firm-specific characteristics. The variable of interest, "MAND *c* * POST *c,t*", comprises two components: the first component – Mandatory ESG Disclosure - equals 1 if a country adopted mandatory ESG disclosure during the sample timeframe, and 0 otherwise; the second component – POST - equals 1 for the year of introduction and adoption of mandatory ESG reporting regulations and the subsequent years, and 0 otherwise. The country fixed effects (δc) eliminate the effect of the variable "Mandatory ESG Disclosure", thereby leaving only the second variable "POST" in the model (1). This variable of interest captures the impact of the introduction of mandatory ESG reporting on the cost of equity capital of firms. A negative and significant coefficient (β1) would signify that the introduction of mandatory ESG disclosure reporting decreases the cost of equity capital of firms.

[2] Krueger et al. (2021) explore the impact of mandatory ESG disclosure on stock liquidity and employ a staggered difference-in-difference methodology.

[3] Li (2010) analyses the impact of International Financial Reporting Standards (IFRS) on the cost of equity capital of firms using a difference-in-differences design.

3. Data for the Cost of Equity Capital

The method employed to calculate the dependent variable, the cost of equity, is the Capital Asset Pricing Model (CAPM), a well-established formula widely utilized in financial research and literature. Numerous proxies and models exist in the literature for measuring the cost of equity of firms. The decision to employ the CAPM framework was driven by its demonstrated efficacy and broad acceptance within both academic and practical realms of financial analysis. The CAPM calculation is as follows:

$$COE=rf+\beta*(E[Mkt]-rf)$$

Where:

- COE = cost of equity;
- rf = risk-free rate;
- β = beta, or idiosyncratic risk of a stock;
- E[Mkt] = the expected return of the market.

The risk-free rate is estimated based on the yields of German Treasury bonds with maturities of ten years. The expected return of the market is estimated using the returns of the widely used global index "MSCI World". The choice of this index is aligned with the international scope of the study in this thesis. The MSCI World index is thus deemed suitable for the chosen sample. Beta is calculated as the coefficient – slope - of the linear regression between monthly returns of company *i* over the study's timeframe and the monthly returns of the MSCI World index during the same period.

4. Control Variables

In this study, control variables are employed to isolate the effect of the introduction of mandatory ESG disclosure regulation on the cost of equity capital. These variables are known in the existing literature to have an impact on the cost of equity capital of firms (Hail & Leuz, 2006; Ghoul et al. 2011). First, the size of firms (SIZE) is controlled for, calculated as the natural logarithm of the total assets of a firm. Secondly, the book-to-market (BTM) ratio is controlled for as it has been proven in the literature to have a positive and significant relationship with the cost of capital of firms (Ghoul et al., 2011). The book-to-market ratio compares the book value of a company to its market value, providing insight into whether a stock of a firm is overvalued or undervalued relative to its accounting value. A higher book-to-market ratio suggests that the market values the company less than its net worth, while a lower ratio indicates the opposite. Thirdly, the level of leverage of the firms (LEV) is also controlled for. The leverage is represented by the ratio of total debt to total capital, where total capital is the sum of total debt (total liabilities) and equity. From the literature, it is known that when a company increases its amount of debt, the risk is higher as the part that the companies owe grows closer to the part the company owns, which is the equity. This increase in the risk shall be reflected in the return rate required by investors for taking their money as a financing means. The return variability of the market index used to measure the dependent variable "COE," meaning the standard deviation of monthly stock returns at year-end of the MSCI World index (RETVAR) is also controlled for (Li, 2010). These different control variables are retrieved from DataStream.

Moreover, Krueger et al. (2021), in their paper, also look at the importance of the enforcement of the ESG disclosure regulations by institutions in the country. In countries where formal institutions are more stringent, meaning they have better legal systems, stricter adherence to laws, or more effective governance, when new disclosure rules are introduced, there is a more significant enhancements in how information is shared and managed within that environment. Thus, they find stronger effect of the mandatory ESG disclosure on stock liquidity in those countries with stronger enforcement. Therefore, the model also controls for the "Rule of Law", which represents a proxy for the capacity of enforcement of institutional organization. Moreover, Hail & Leuz (2006), countries with stronger "Rule of law" tend to have lower cost of capital for firms.

Other, country-level, control variables included in the analysis are GDP per capita and GDP growth. Indeed, higher GDP per capita typically indicates a wealthier population and a more developed, stable economy, which can enhance investor confidence and reduce the perceived risk of investing in firms within such countries, thereby lowering the cost of equity. Additionally, wealthier economies often have better infrastructure and regulatory environments, further decreasing the cost of equity. On the other hand, high GDP growth suggests economic expansion, leading to increased business opportunities and higher future cash flows for firms, which can also make firms more attractive to investors and lower the cost of equity. However, high GDP growth might also introduce economic volatility and inflationary pressures, potentially increasing perceived risk. By controlling for these variables, the analysis ensures that the observed effects on the cost of equity accurately reflect the impact of the specific factors under study without being confounded by broader economic conditions.

All the variables are further explained and defined in Table 6.

Empirical results

Here are the empirical results of the study. Firstly, descriptive statistics will be presented to provide an overview of our data sample. Subsequently, a correlation analysis of the variables used in our regression will be presented. Finally, the regression results will be analysed to determine whether our hypotheses are confirmed or refuted. Additionally, several robustness tests will be conducted to ensure the reliability of our findings.

1. Descriptive statistics analysis

A choice was made to winsorize variables at the 5th and 95th percentiles in order to mitigate the impact of extreme values. The winsorization of values is particularly relevant because it helps reduce the influence of outliers, which can skew the results and lead to misleading conclusions. By winsorizing, we ensure a more robust and reliable analysis, as it limits the distortion caused by anomalously high or low values, allowing for a clearer understanding of the underlying patterns and relationships within the data.

One key assumption in linear regression analysis is that the residuals (error terms) of the regression model should follow a normal distribution. This assumption is often validated by examining whether the observations of the variables and the residuals exhibit a *normal* curve. Figures 1, 2, 3, and 4 illustrate the distribution of the dependent variable, and control variables specific to firms, excluding size. These variables include cost of equity (COE), book-to-market ratio (BTM), leverage (LEV), and return on equity (ROE). Each figure is presented alongside a normal density curve to facilitate interpretation and comparison with the theoretical normal distribution. The COE closely follows the bell shape of the normal curve, indicating a relatively normal distribution. The BTM and LEV are slightly skewed to the left, while ROE is slightly skewed to the right. These distributional characteristics should be kept in mind when interpreting the results, as deviations from normality can impact the robustness of statistical inferences.

Table 1 presents a summary of the descriptive statistics for the variables included in our empirical model. The cost of equity has a mean of 0.013, with a standard deviation of 0.022. Thus, on average, firms have a cost of equity of 1.3%, which is quite small. The value of COE is likely underestimated due to the use of the CAPM formula, which is known for underestimating the cost of equity (Dragotă, 2013). Our variable of interest MANDPOST shows a mean of 0.166, meaning that 16,6% of the firms in our sample introduced a regulation for mandatory ESG disclosure.

The average entity size is $89.7 million, indicating that the firms in the dataset are generally large and possess substantial assets. It is important to note that firms with assets less than $100,000 were excluded from the analysis to maintain representativeness. The mean book-to-market ratio is 1.017, suggesting that, on average, the book value of these firms is slightly higher than their market value. This could indicate that the firms are undervalued by the market. The average leverage ratio is 0.27, meaning that, on average, firms have 27% of their total resources financed through debt. This reflects a moderate use of debt in their capital structure, balancing the benefits of debt with the risk of over-leverage. The return on equity variable shows a mean of 0.066, indicating that, on average, firms generate a 6.6% return on shareholders' equity. This suggests modest profitability and efficiency in

generating returns from equity investments. The mean return variability is 4.202, showing that the market index experiences significant fluctuations in the returns.

The industry-level analysis presented in Table 2 indicates that the “Industrial” sector constitutes the majority of the sample (80.99%) with a mean COE of 1.243%. The “Utility”, “Transportation”, and various financial sectors make up smaller portions of the sample, each with varying mean COEs.

The country-level analysis in Table 3 distinguishes between common law and civil law countries, with the latter group representing a larger portion of the sample. For common law countries, the table includes data from Canada, the United States, Australia, and the United Kingdom. These common law countries represent 31.58% of the total sample, with the United States having the highest number of observations compared to the other countries in the subsample. Within this subsample, we have three treatment countries and one control country, which is the United States.

For civil law countries, the data includes Germany, Italy, Sweden, France, Brazil, and Japan. The subsample for civil law countries constitutes the majority of the main sample, accounting for 68.41% of the total sample. This predominance is mainly due to the significant representation of Japan in the subsample, which comprises most of the observations. Within this subsample, we have four treatment countries and two control countries, namely Brazil and Japan.

In summary, common law countries exhibit a lower cost of equity (0.00398) compared to civil law countries (0.00862). This observation aligns with our literature review, which indicates that common law countries have more developed markets than civil law countries, leading to heightened access to capital and, on average, a lower cost of equity capital. Common law countries also have smaller firm sizes than civil law countries, a disparity accentuated by the large presence of Japan in the civil law subsample, which has an average firm size of 153 million dollars in assets. Firms in common law countries show lower book-to-market ratios and lower levels of leverage than those in civil law countries. The rule of law is higher in common law countries, suggesting that the enforcement of regulations is stronger for this legal regime. Additionally, Brazil is the only country to show a negative score for the rule of law. GDP per capita is higher in civil law countries, with Sweden having the highest value, but GDP growth is higher in common law countries, with Australia having the highest growth rate.

Overall, common law countries exhibit lower COE and higher rule of law scores, reflecting stronger financial markets and legal systems. In contrast, civil law countries have higher COE and more variability in rule of law scores, indicating diverse economic and legal environments. GDP per capita and GDP growth rates also show differences, with common law countries generally performing better in terms of economic indicators.

Table 4 shows summary statistics per year. The data shows that the mean cost of equity (COE) reaches its lowest value in 2008, with a negative value of -0.01895. This is the only year in the dataset where the mean COE is negative, reflecting the financial turmoil during the global financial crisis, namely the subprime mortgage crisis. The aftermath of the crisis is evident in 2009, where the mean COE peaks at 0.03217, indicating the highest average cost of equity observed during the timeframe of the study. This increase in 2009 can be attributed to the economic recovery efforts following the crisis. The fluctuation in the mean COE during these years underscores the relevance to control for year-fixed effects.

2. Correlation analysis

The provided correlations in Table 7 depict the Pearson correlation matrix. The Pearson correlation matrix is a statistical tool used to examine relationships between variables pairwise, in our case the variables used in the empirical model (1). This matrix analyses the strength and direction of the linear relationship between two variables. The coefficients range from -1 to 1; +1 indicates a perfect positive linear relationship, -1 indicates a perfect negative linear relationship and, 0 indicates no linear relationship. Each pair of variables is looked at independently, without considering other variables.

The results suggest a negative linear relationship between the cost of equity (COE) of firms and the introduction of mandatory ESG disclosure reporting (MANDPOST). This finding would suggest that the introduction of mandatory ESG reporting decreases the cost of capital of firms. Moreover, there seem to be positive significant associations between the cost of equity of firms and the size (SIZE), the book-to-market ratio (BTM), the level of leverage (LEV) and the return variability of the market index (RETVAR). This would indicate that larger firms tend to have a slightly higher cost of equity. Moreover, a higher book-to-market ratio, meaning when the value of the intrinsic equity of firm is higher than its market value, increases the cost of capital. An increase in the leverage, meaning in the amount of debt taken by the company compared to the total assets increases the cost of equity. The increase of the return of market index seems to increase the cost of capital of firms. These correlations are in line with what is predicted from the literature.

On the other hand, there are strong negative correlations between the cost of capital and the return on equity (ROE), the rule of law variable (RULE_OF_LAW), the GDP per capita (GDP_PER_CAPITA), and the GDP growth (GDP_GROWTH). A small but significant negative correlation indicates that higher return on equity is associated with a lower cost of equity. This finding does not come as a surprise as more profitable companies (higher ROE) typically face lower risk premiums, reducing their cost of equity. Moreover, higher GDP growth is associated with a lower cost of equity, and the same holds for the GDP per capita.

Other significant correlations are interesting to mention. A strong positive correlation (0.242) between leverage (LEV) and the size (SIZE) suggests that larger firms tend to have higher leverage. Moreover, there seem to be a strong positive correlation (0.545) between the rule of law (RULE_OF_LAW) and the GDP per capita (GDP_PER_CAPITA), which would indicate that countries with better rule of law tend to have higher GDP per capita. Additionally, there is positive correlation suggests that better rule of law is slightly associated with higher GDP growth rates. Finally, the matrix reports a strong negative correlation (-0.536) between GDP growth (GDP_GROWTH) and return variability of the market index (RETVAR) indicates that higher GDP growth is associated with lower return variability.

3. Regression analyses

The results from the pairwise correlation in Table 7 show a significant but weak negative relationship between the introduction of mandatory ESG reporting and the cost of equity capital for firms. This finding provides an initial insight into the potential interaction between these two variables. The preliminary observation is that mandatory ESG reporting is perceived as beneficial for firms, as it is associated with a lower cost of equity.

Additionally, Wald tests were conducted to evaluate the null hypothesis for the individual variables (Table 8) and for the model as a whole (Table 9). The coefficient for MANDPOST is significant at the 10% level (p-value < 0.10), this suggests a significant but weak evidence that our variable of interest has a non-zero effect on the dependent variable (COE) for our main sample. Furthermore, the results indicate that several variables, including BTM, RETVAR, RULE_OF_LAW, GDP_PER_CAPITA, and GDP_GROWTH, have significant effects on the cost of equity (COE). However, variables such as SIZE, LEV, and ROE do not show significant individual effects in this analysis. The global test shows a highly significant result (p-value < 0.01), indicating that the combination of all variables significantly explains the variation in COE.

To verify the robustness of these results, various regressions will be performed based on our empirical model (1). In the following sections, the results of the main model will be presented first. Next, differences in results across legal regimes will be examined through subsample tests for civil law and common law countries. Finally, multiple robustness tests will be conducted.

3.1 Main results

Table 10 reports the results for the regression from our empirical model (1). The regression analysis examines the determinants of the cost of equity (COE) using fixed effect models. Standard errors are clustered at the firm-level. There are three different models, each progressively including various independent variables to observe their effects. The findings support our hypothesis H1 for the three models introduced based on empirical model (1). There is highly significant and positive coefficient for our variable of interest MANDPOST, suggesting that introducing mandatory ESG reporting increases the cost of equity capital of firms.

In Model (1), the intercept is significantly negative at -0.01978, indicating that even when all other variables are zero, there is a base level of COE. Our variable of interest (MANDPOST) is positive and highly significant (0.00305), suggesting that the introduction of mandatory ESG disclosure increases the cost of equity. Firm size (SIZE) is also positively significant (0.00059), implying that larger firms incur a higher COE. Leverage (LEV) has a positive and significant coefficient (0.00214), indicating that higher debt levels increase COE. Return variability (RETVAR) is positive and highly significant (0.00338), suggesting that higher volatility in the market index incurs a higher COE. The book-to-market ratio (BTM), return on equity (ROE), and GDP growth (GDP_GROWTH) do not show significant coefficient in this model. The R-squared value for Model (1) is 0.48092, indicating that approximately 48.1% of the variation in COE is explained by the variables included in this model.

In the second model (2), we introduce the RULE_OF_LAW variable, as previous studies (e.g., Krueger et al., 2021; Chen et al., 2024) have shown that the strength of enforcement within a country impacts the effectiveness of mandatory ESG disclosure reporting. The results show that stronger enforcement from institutions has a significant negative impact on the cost of equity. In Model (2), the intercept

remains significant and positive at 0.01073. MANDPOST (0.00205) is positive and highly significant reinforcing the findings from Model (1) that mandatory ESG reporting tends to increase the cost of capital equity of firms. SIZE (0.00005) continues to be positive and highly significant, further reinforcing the findings from Model (1). BTM becomes significant and negative (-0.00032), indicating that firms with a higher book value relative to market value have a lower COE, which is opposite to what is expected from the literature. LEV (0.00151) and RETVAR (0.00335) remain positive and significant, supporting their roles in increasing COE. RULE_OF_LAW is significantly negative (-0.01386), consistent with Model (1). ROE and GDP_GROWTH are still not significant. The R-squared value for Model (2) is 0.49182, suggesting that approximately 49.2% of the variation in COE is explained by the variables in this model, showing a slight improvement over Model (1).

The third model introduces additional macroeconomic variables that can influence our dependent variable. In Model (3), the intercept remains significant and positive at 0.00458. While the positive significance of MANDPOST (0.00083) persists, the coefficient is significant at the 10% level only this time. These findings would suggest that model might suffer from multicollinearity. GDP per capita and GDP growth are likely correlated with other economic factors that MANDPOST captures, thus introducing multicollinearity. By including these variables, the model now better isolates the effect of MANDPOST, potentially showing that its standalone effect is smaller than previously estimated. The variable SIZE (0.00043) remains positive and significant. BTM (-0.00045) remains significant and negative, and LEV (0.00099) continues to be positively significant. RETVAR increases in significance (0.00417), further indicating that return variability raises COE. RULE_OF_LAW stays significantly negative (-0.01225). Additionally, GDP per capita (GDP_PER_CAPITA) becomes significant (0.00429), suggesting that higher GDP per capita is associated with a higher COE. GDP_GROWTH also turns significant and negative (-0.05023), indicating that firms in growing economies benefit from a lower COE. The R-squared value for Model (3) is 0.49688, indicating that approximately 49.7% of the variation in COE is explained by the variables included in this model, showing further improvement.

Overall, the results show that there is a small but significant positive coefficient for the variable MANDPOST. This suggests that the introduction of mandatory ESG disclosure tends to increase the cost of equity capital for firms. The model controls for year, industry, and country fixed effects. These findings support the observation made by Grewal et al. (2019) that the market perceives the introduction of such regulation as an additional cost and burden. From these findings, mandatory ESG reporting, introducing major compliance, proprietary, and political costs, seems to be penalized by the market. The R-squared values across all three models indicate that the included variables explain a substantial portion of the variation in COE, highlighting the complexity of factors influencing the cost of equity. Among the three models, Model (3) has the highest R-squared value, suggesting it is the best fitting model for the data.

Table 10: Main results

This table presents the results of analysing the effect of mandatory ESG reporting on cost of equity capital (COE) of firms. The dependent variable, COE, was calculated using the CAPM formula as detailed in point 3 form the "Data and methodology" section. The variable MANDPOST equals 1 for firms in countries that have introduced mandatory ESG reporting, starting from the year of introduction and continuing for all subsequent years, and 0 otherwise. Robust t-statistics, adjusted for firm-level clustering, are reported in parentheses. All continuous variables are winsorized at the 5% and 95% levels. Statistical significance is indicated by ***, **, and * at the 1%, 5%, and 10% levels, respectively.

VARIABLES	(1)	(2)	(3)
(*Intercept*)	-0.01978***	0.01073*	0.00458
	(0.00482)	(0.00563)	(0.00556)
MANDPOST	0.00305***	0.00205***	0.00083*
	(0.00043)	(0.00042)	(0.00043)
SIZE	0.00059**	0.00005	-0.00043
	(0.00029)	(0.00031)	(0.00031)
BTM	-0.00012	-0.00032*	-0.00045**
	(0.00019)	(0.00019)	(0.00019)
LEV	0.00214**	0.00151*	0.00099
	(0.00083)	(0.00081)	(0.00079)
ROE	-0.00041	-0.00032	0.00036
	(0.00101)	(0.00095)	(0.00095)
RETVAR	0.00383***	0.00353***	0.00417***
	(0.00010)	(0.00010)	(0.00011)
RULE_OF_LAW	-	-0.01386***	-0.01225***
		(0.00124)	(0.00115)
GDP_PER_CAPITA	-	-	0.00249***
			(0.00023)
GDP_GROWTH	-	-	-0.05023***
			(0.00685)
Observations	78,854	73,423	73,423
R-squared	0.48092	0.49182	0.49688
Number of Firms	4,205	4,201	4,201
Year FE	YES	YES	YES
Country FE	YES	YES	YES
Industry FE	YES	YES	YES

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

Source: Author's research results, using the Stata program

3.2 Subsample: Common- versus Civil-law countries

To test the second and third hypotheses (respectively H2 and H3), two subsamples were created, dividing countries into two groups based on their legal regimes: common law and civil law. This subsample analysis aims to observe the impact of mandatory ESG reporting separately on common law and civil law countries to determine if there are significant differences in the results. The impact of mandatory ESG disclosure is observed by comparing the results for common law countries with those for civil law countries. Control variables were maintained for this test. Standard errors are clustered at firm-level.

Table 11 presents the regression results for our empirical model (1) applied to the two subsamples. The details of these samples are provided in Table 3 (descriptive statistics by country). Each column represents a different legal system, with Model (1) for common law and Model (2) for civil law.

The results support our hypotheses H2 and H3. In civil law countries, we found a highly significant and positive coefficient for MANDPOST, indicating that the introduction of mandatory ESG reporting is associated with an increase in the cost of equity capital for firms. This finding supports hypothesis H2. Conversely, in common law countries, the coefficient for MANDPOST is highly significant and negative, suggesting that mandatory ESG disclosure reporting decreases the cost of equity for firms. This supports hypothesis H3.

For the common law subsample, the intercept is significantly positive at 0.04150, indicating a base level of COE when all other variables are zero. MANDPOST has a negative and highly significant coefficient (-0.00740), suggesting that mandatory ESG reporting reduces the COE of firms in common law countries. SIZE also shows a negative and highly significant effect (-0.00273), implying that larger firms have a lower COE. BTM is positive and significant (0.00075), indicating that higher book-to-market ratios are associated with higher COE. LEV is positively significant (0.00263), meaning higher leverage increases COE. The results for these four control variables at firm level are in line with what is expected from the literature. ROE is positive and highly significant (0.00389), indicating that higher return on equity is associated with a higher COE. This finding contrasts with expectations from the literature. RETVAR is negative and highly significant (-0.00097), indicating that higher return variability reduces COE. RULE_OF_LAW and GDP_PER_CAPITA are not significant, whereas GDP_GROWTH is positive and highly significant (0.16476), indicating that higher GDP growth increases COE.

For the civil law subsample, the intercept is also significantly positive at 0.01199. MANDPOST has a positive and highly significant coefficient (0.00421), indicating that mandatory ESG reporting increases COE. SIZE is positive and significant (0.00024), suggesting that larger firms have a higher COE in civil law countries. BTM is negative and highly significant (-0.00047), indicating that higher book-to-market ratios are associated with lower COE. LEV is negatively significant (-0.00189), meaning higher leverage decreases COE. These findings for the control variables contrast with what is expected from the literature. However, here ROE is negative and highly significant (-0.00285), suggesting that higher return on equity is associated with a lower COE, which is in line with previous studies. RETVAR is positive and highly significant (0.00412), indicating that higher return variability increases COE. RULE_OF_LAW is negative and highly significant (-0.02030), suggesting that stronger legal frameworks reduce COE. GDP_PER_CAPITA is positive and highly significant (0.00103), indicating that higher GDP per capita increases COE. GDP_GROWTH is negative and highly significant (-0.06817), indicating that higher GDP growth reduces COE.

Overall, mandatory ESG reporting appears to reduce the cost of equity for firms in common law countries, while increasing it in civil law countries. These findings align with our hypotheses, suggesting

that in civil law countries, where there are higher levels of CSR disclosure and performance, the introduction of mandatory ESG reporting primarily exposes the "bad players." This results in additional compliance, proprietary, and political costs. In contrast, firms in common law countries seem to benefit from the increased transparency provided by mandatory ESG reporting, thereby bridging the gap between stakeholders' and shareholders' rights. Furthermore, the impact was anticipated to be more pronounced and negative in common law countries due to their comparatively weaker information environments.

Furthermore, from the results in Table 11, we observe contrasting effects of various factors on the cost of equity (COE) depending on the legal regime. In common law countries, firm size reduces COE, while in civil law countries, it increases COE. Higher leverage increases COE in common law but decreases it in civil law. Return on equity has a similar contrasting effect, increasing COE in common law and decreasing it in civil law. Return variability reduces COE in common law but increases it in civil law. Additionally, stronger legal frameworks reduce COE in civil law countries. GDP per capita has varying impacts, while GDP growth increases COE in common law but decreases it in civil law countries. These consistent contrasting effects highlight that variables typically thought to influence the cost of equity in a certain direction, such as leverage, actually depend on the legal regime in which the firm operates. This finding further underscores the importance of analysing the impact of variables on firms while considering their legal regime.

Table 11: Difference across legal regimes

Table 11 presents the results of analysing the effect of mandatory ESG reporting on cost of equity capital (COE) of firms in common law and in civil law countries. The subsample for common law countries encompasses the United States, the United Kingdom, Australia, and Canada. The subsample for civil law countries englobes Germany, France, Sweden, Italy, Brazil and, Japan. The dependent variable, COE, was calculated using the CAPM formula as detailed in point 3 form the "Data and methodology" section. The variable MANDPOST equals 1 for firms in countries that have introduced mandatory ESG reporting, starting from the year of introduction and continuing for all subsequent years, and 0 otherwise. Robust t-statistics, adjusted for firm-level clustering, are reported in parentheses. All continuous variables are winsorized at the 5% and 95% levels. Statistical significance is indicated by ***, **, and * at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)
Dep. Var. = COE	Common law	Civil law
(*Intercept*)	0.04150***	0.01199*
	(0.01168)	(0.00666)
MANDPOST	-0.00740***	0.00421***
	(0.00076)	(0.00047)
SIZE	-0.00273***	0.00024
	(0.00060)	(0.00038)
BTM	0.00073	-0.00047**
	(0.00045)	(0.00020)
LEV	0.00263*	-0.00189**
	(0.00136)	(0.00095)
ROE	0.00389***	-0.00285**
	(0.00117)	(0.00131)
RETVAR	-0.00097**	0.00412***
	(0.00039)	(0.00012)
RULE_OF_LAW	0.00256	-0.02030***
	(0.00198)	(0.00144)
GDP_PER_CAPITA	-0.00080***	0.00103***
	(0.00028)	(0.00029)
GDP_GROWTH	0.16476***	-0.06817***
	(0.01470)	(0.01118)
Observations	23,115	50,308
R-squared	0.51302	0.55783
Year FE	1,425	2,776
Industry FE	YES	YES
Country FE	YES	YES
Number of firms	YES	YES

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Author's research results, using the Stata program

3.3 Robustness tests

In this section, various robustness tests will be conducted to ensure the reliability of the linear regression model and the validity of the previously presented results. First, placebo tests will be carried out to verify that the observed impact of mandatory ESG reporting is not due to randomness, pre-existing trends or post-treatment events. Second, the model will be re-estimated with clustering by country to account for within-group correlations. Third, an additional robustness test will be performed by excluding Japan from the sample, as Japan constitutes more than half of the dataset and could introduce bias into the results.

3.3.1 Placebo test

In assessing the impact of the mandatory introduction of ESG reporting on the cost of equity (COE), it is relevant to verify that the observed effects are not due to coincidences, pre-existing trends or post-treatment events for example. To this end, we follow previous study from Chen et al. 2024, which has a rather similar setting[4] as this study and perform three different placebo tests. First, a random placebo test was conducted to ensure that the results were not due to random chance. The results can be found in Figure 5. The random placebo test consists of randomly assigning a year of treatment to firms and repeat the estimation of the regression 1,000 times to obtain a distribution of fictitious treatment coefficients. By comparing this distribution with the actual coefficient, we can test whether the observed effect is statistically significant. If the actual coefficient is significantly different from the distribution of fictitious coefficients, this reinforces confidence that the effect is real. The results show that no coefficient generated by our repeated regression is greater than our true coefficient from model (3) in Table 10. The p-value is 0, which means that the true coefficient (0.00083) is significantly different from the distribution of fictitious coefficients.

The histogram from Figure 5 displays the distribution of our fictious coefficients and shows a symmetric distribution centred around zero, indicating that the random assignment of treatment years generally produces coefficients close to zero. This is expected, as random assignments should not systematically affect the COE. The true treatment coefficient (0.00083) is significantly different from the mean of the placebo coefficients (0.00), as highlighted by the p-value of 0.000. This indicates that the observed effect is highly unlikely to be due to random chance. The p-value of 0.000 suggests that the probability of observing a coefficient as extreme as the true treatment coefficient under the null hypothesis – meaning the variable MANDPOST has no effect on the cost of equity (COE) - is less than 0.1%. This reinforces the conclusion that the introduction of mandatory ESG reporting has a real and statistically significant impact on the COE.

The second placebo test verifies that there are no pre-existing trends that could influence the results. We restrict our sample to the period before the mandatory ESG reporting was introduced. Therefore, we assigned a fictitious treatment year that is 3 years prior to the actual adoption year and performed

[4] In their paper, Chen et al. (2024) investigate the impact of mandatory ESG disclosure on the dividend payout policy of firms.

the regression analysis. For the third placebo test, we ensured that the results were not driven by random post-treatment events. We restrict our sample to the period after the mandatory ESG reporting was introduced. We assign a fictitious treatment year that is 3 years after the actual adoption year and perform the regression analysis. The results for the second and third placebo tests are reported in table 12. The pre-treatment test includes 12,692 observations, while the post-treatment test includes 10,597 observations. For the pre-treatment placebo test, the coefficient is -0.000462 with a standard error of 0.000536, indicating an insignificant effect. For the post-treatment placebo test, the coefficient is 0.000661 with a standard error of 0.000526, also indicating an insignificant effect. These results suggest that the observed effect of mandatory ESG reporting on COE is not driven by pre-existing trends or random post-treatment events.

In conclusion, the placebo tests results provide strong evidence that the impact of mandatory ESG reporting on COE is not a result of random chance, or of spurious pre-existing trends or random events occurring after the treatment period. The significant difference between our true coefficient and the mean of the placebo coefficients, along with the insignificant coefficients found in both the pre- and post-treatment placebo tests, reinforces the robustness of our main findings. This ensures that the observed effects are genuinely attributable to the introduction of mandatory ESG reporting.

3.3.2 Clustering per country

Clustering is a technique used to adjust standard errors to account for within-group correlation. In the regression model used earlier in this thesis, country fixed effects (FE), year FE, industry FE, and clustering at the firm level were controlled for, but the model did not account directly for potential intra-country correlations. The decision not to cluster by country is justified in this study due to the small number of clusters in our sample —only 10 countries. Generally, clustering adjustments are more reliable with approximately 20 to 30 clusters as a rule of thumb.

However, clustering at the country level remains relevant as a robustness test since the introduction of mandatory ESG reporting occurs at the country level. Cameron et al. (2008) propose a solution for the issue of few clusters by using the wild cluster bootstrap test. This method ensures the reliability of the results for the regression when dealing with a small number of clusters. By applying this approach, researchers can improve the reliability of their statistical inferences and ensure that their results are both valid and robust, even in situations with a limited number of clusters. This technique enhances the quality of research findings and contributes to more accurate conclusions in empirical studies (Cameron et al., 2008; Canay et al., 2019).

Table 13 reports the results for our second robustness test. Our first and third hypotheses, respectively H1 and H3 do not hold anymore when clustering at country-level. However, the results for civil law countries are robust and our second hypothesis holds (H2), which reinforce the finding that the introduction of mandatory ESG disclosure reporting increases the cost of equity capital of firms in civil law countries.

Indeed, the impact of mandatory ESG reporting on the cost of equity is no longer significant when clustering by country for our main sample (Column 1) or for common law countries (Column 2). There is therefore no evidence that mandatory ESG reporting has an impact on cost of equity for these samples. However, Table 13 shows a positive and significant coefficient (0.00421) for our variable of

interest MANDPOST at the 5% level for civil law countries (Column 3), indicating an increase in COE when introducing mandatory ESG reporting.

Moreover, the variable RETVAR is statistically significant at the 10% level in the main sample, indicating that the variability of returns has a positive effect on the cost of equity. Other variables, such as SIZE, BTM, LEV, ROE, RULE_OF_LAW, GDP_PER_CAPITA, and GDP_GROWTH, do not exhibit statistically significant coefficients in the main sample. Notably, Rule of Law is significant and negative in the civil law sample, suggesting that stronger rule of law reduces COE. Additionally, in the common law subsample, SIZE is significant and negative, implying that larger firms have a lower cost of equity. GDP growth is significant and positive in the common law subsample, indicating that higher economic growth increases COE. For the civil law subsample, GDP growth is significant and negative, suggesting that higher economic growth reduces COE. The R-squared values range from approximately 0.497 to 0.557, implying that about 49.7% to 55.7% of the variation in the cost of equity is explained by the included variables and fixed effects.

When clustering by country, it is observed that data points within the same country tend to be more similar to each other than to those from other countries. For example, economic, cultural, or policy factors within a country can create correlations among the observations. By recognizing and adjusting for country-level effects, the model more accurately isolates the effect of our variable of interest from country-specific factors. This can result in a more realistic, and possibly lower, estimate of the significance of the variable.

The fact that the significance of the coefficient does not hold when clustering by countries for our main sample underscores the importance of accounting for country-specific factors when analysing the impact of mandatory ESG reporting on the cost of capital. This reinforces the decision to study the difference following the introduction of regulation according to the two main legal regimes. However, we observe that in common law countries, the results also do not hold, as the coefficient for MANDPOST is no longer significant. This might suggest that certain country-specific factors play important roles in influencing the cost of equity in these countries. It is also important to note that our sample for common law countries is the smallest in size, with only four clusters, which affects the robustness of our tests. Therefore, these results need to be interpreted with caution.

3.3.3 Model without Japan

The sample used in this study is composed predominantly of companies from Japan. This predominance can introduce significant biases and distortions in the linear regression analyses. Table 14 presents the results of the effect of mandatory ESG reporting on the cost of equity capital (COE) with Japan excluded from the main sample. The first model excludes Japan, while the second model includes Japan, consistent with the data presented earlier in Table 10 for ease of comparison. Both models are adjusted for firm-level clustering. The intercept is positive and significant in the model (1), indicating a base level of COE of 0.02713. The variable of interest MANDPOST is negative and significant, suggesting that mandatory ESG reporting lowers COE, with a coefficient of -0.00377. Conversely, MANDPOST is positive and significant when Japan is included, with a coefficient of 0.00083. These findings do not support our hypothesis H1. We therefore see an important difference when excluded Japan from our sample.

Furthermore, for the model without Japan, firm size (SIZE) has a negative and significant impact on COE in the model without Japan, indicating that larger firms have lower COE, with a coefficient of -0.00229. The book-to-market ratio (BTM) is positively associated with COE and significant in the model without Japan, with a coefficient of 0.00035. Leverage (LEV) shows a positive and significant effect on COE, with a coefficient of 0.00266. Return on Equity (ROE) has no significant effect. Return Variance (RETVAR) is positively significant in the model without Japan, with a coefficient of 0.00057. The variable RULE_OF_LAW is positively significant, with a coefficient of 0.00338. GDP_PER_CAPITA is not significant. GDP_GROWTH is positively significant, with a coefficient of 0.07635. The R-squared value is approximately 0.509, implying that about 50.9% of the variation in COE is explained by the included variables and fixed effects.

The key differences indicate that the exclusion of Japan has a substantial impact on the coefficients and significance of several variables, particularly MANDPOST, SIZE, and LEV. The main sample shows a positive and significant effect of mandatory ESG reporting on COE, whereas this effect turns negative and significant when Japan is excluded. This suggests that the inclusion of Japan in the sample plays a significant role in the observed relationship between mandatory ESG reporting and COE. To further refine our analysis, the subsample for civil law countries will be retested with Japan excluded.

Table 15 presents the results of our regression analysis excluding Japan from the subsample of civil law countries. The first model (Column 1) excludes Japan from the civil law subsample and adjusts for firm-level clustering. The second model (Column 2) includes Japan and also adjusts for firm-level clustering. This second model is identical to the regression presented earlier in Table 11 but is repeated here to facilitate comparison. The first model presents a coefficient for MANDPOST that is positive and significant (0.00093) at the 10% level, suggesting that the introduction of mandatory ESG reporting is associated with an increase in the cost of equity for firms in these countries. Therefore, we observe that the results are robust and support hypothesis H2. However, there is a noted decrease in the significance of the MANPOST coefficient, indicating a slight reduction in statistical power.

Furthermore, firm size (SIZE) has a negative but insignificant effect on the cost of equity. The book-to-market ratio (BTM) is also negative and insignificant. Leverage (LEV) has a negative effect but is not significant. Return on equity (ROE) is negative and significant (-0.00779), indicating that higher profitability is associated with a lower cost of equity. The return variability (RETVAR) is positive and significant (0.00339), suggesting that higher risk is associated with a higher cost of equity. The rule of law (RULE_OF_LAW) has a negative and significant impact (-0.00835), indicating that stronger legal environments are associated with a lower cost of equity. GDP per capita (GDP_PER_CAPITA) and GDP growth (GDP_GROWTH) are both positive and significant, indicating that better economic conditions are associated with a higher cost of equity. The model includes fixed effects for year, country, and industry, and explains approximately 52% of the variation in the cost of equity (R-squared = 0.52054).

In conclusion, our findings do not hold when Japan is removed from the main sample, and the sign of our variable of interest is even reversed. However, when the subsample for civil law countries is tested without Japan, the results remain robust, despite a loss of some statistical power. The robustness of our H2 hypothesis, indicating that the introduction of mandatory ESG reporting increases the cost of equity capital for firms in civil law countries, is confirmed. This robustness for the results reinforces the importance of considering the legal regime in which firms operate when examining the relationship between mandatory ESG reporting and the cost of equity capital.

Discussion

From the findings in this thesis, it appears that, on average, the introduction of mandatory ESG disclosure reporting tends to increase the cost of equity capital for firms. These findings align with the argument presented by Grewal et al. (2019), suggesting that firms incur additional costs, namely political and proprietary costs, which are perceived as additional burdens by investors. Moreover, firms are expected to incur several compliance costs to be able to meet the requirements of mandatory ESG reporting regulations, such as hiring dedicated personnel for instance. According to a survey conducted by KPMG in 2023, only 25% of firms are prepared to comply with ESG disclosure regulations, leaving 75% needing to spend more to comply (Shannon, 2023). This study highlights the widespread unpreparedness of firms to comply with mandatory ESG regulations. Consequently, investors perceive these regulations as a burden on firms and therefore demand a higher return rate for their investments.

However, the significance of the coefficient for our variable of interest diminishes when accounting for country-specific factors (clustering by country), indicating that the impact on the cost of equity may be influenced by broader macroeconomic factors specific to each country. Additionally, the results show a reversed sign for our variable of interest when excluding Japan from the sample, suggesting that Japan significantly impacts the sample and that the effect of our variable of interest might not be as clear-cut. Therefore, we cannot conclusively determine whether the introduction of mandatory ESG reporting increases or decreases the cost of equity on average for firms. Nevertheless, the results from our placebo test confirm that the impact of mandatory ESG disclosure is not due to random chance, pre-existing trends, or post-treatment events. Consequently, we cannot confidently assert that our hypothesis H1 is supported.

Furthermore, in our initial analysis using the pairwise correlation matrix, we observe that the cost of equity (COE) and the introduction of mandatory ESG disclosure (MANDPOST) exhibit a significant and negative linear relationship. This relationship persists in the robustness tests when Japan is excluded from the sample. Specifically, the statistical significance of the coefficient improves, shifting from a 10% level to a 1% level of significance, indicating a stronger relationship in the absence of Japanese observations. However, as mentioned earlier, when clustering by country, the coefficient for MANDPOST becomes insignificant. Thus, the relationship between the introduction of mandatory ESG reporting and the cost of equity for our main sample cannot be determined with certainty. The results should be interpreted with caution, considering the outcomes of the robustness tests. From these analyses, it is clear that accounting for country-specific factors is important in understanding the relationship between the cost of equity (COE) and the introduction of mandatory ESG disclosure (MANDPOST). The complexity of this relationship suggests that it should be examined on a case-by-case basis rather than globally. The variability observed in our results underscores the necessity of considering the unique legal, economic, and market conditions of each country when evaluating the impact of ESG regulations on a firm's cost of equity.

The second objective of this thesis was to test the model within the context of the influence of countries' legal families on the results. The results from our second test found that the introduction of mandatory ESG reporting tends to decrease the cost of equity capital for firms in common law countries but increases it for firms in civil law countries. These findings align with the hypotheses and arguments presented in the literature review section. In common law countries, the introduction of mandatory ESG disclosure is seen as beneficial due to the increased flow of information available to stakeholders, further closing the existing gap between shareholder and stakeholder protection in those countries

(Renneboog and Liang, 2017; Castillo-Merino & Rodríguez-Pérez, 2021). Moreover, since these countries initially present weaker information environments due to lower disclosure levels, the impact is expected to be further significant and negative (Krueger et al., 2021). The additional transparency and information available provide higher monitoring power for investors and other stakeholders, reducing the agency problem. For firms in common law countries, the negative relationship with the cost of equity is believed to be largely due to the reduction in information asymmetry and the enhanced monitoring power for investors and other stakeholders. This additional information is valuable for investors and stakeholders, leading them to perceive the company as less risky given the improved trade-off of information.

Additionally, the results confirm the hypotheses that civil law countries do not benefit from such mandatory regulations. The level of CSR performance and disclosure is already high for firms in these countries. The mandatory nature of ESG disclosure primarily forces those firms that previously did not voluntarily disclose ESG information to comply. This generates compliance costs since these firms must adhere to the regulations within a constrained timeframe, making it even more costly for them. Furthermore, the reluctance to disclose information previously is suspected to be due to the potentially harmful effects of additional disclosure, especially ESG information, which is subject to moral scrutiny from stakeholders. This harmful information could be used against the company through litigations and damage its reputation, which would put the firm at a disadvantage and at risk. These are referred to as proprietary costs. Additionally, sensitive information might be used to pressure firms into investing in projects that generate lower returns, known as political costs. As a result, investors are expected to demand higher returns for their investments. This is particularly the case in civil law countries due to their historically weaker capital markets and more limited access to external financing resources (Chen et al., 2024).

However, for these findings, when clustering by countries, only the assumptions for civil law countries hold, as the coefficient for our variable of interest was no longer significant for common law countries. Therefore, the hypotheses for common law countries should be interpreted with caution. The robustness test results suggest that the impact on the cost of equity in common law countries is mitigated by intra-country correlations. However, the common law subsample includes only four countries, resulting in just four clusters, which is very few, even for the wild cluster bootstrap test. Consequently, it remains complex to determine the true relationship and significance of the introduction of mandatory ESG disclosure on the cost of equity in common law countries. On the other hand, the results and findings for the civil law subsample are robust to our robustness tests and can therefore be interpreted with greater confidence. Therefore, hypothesis H3 cannot be supported with assurance, but hypothesis H2 is supported and presents robust evidence.

It is also relevant to mention that missing values for control variables, especially book-to-market (BTM) and return on equity (ROE) as seen in Table 5, impact the significance of the coefficients in our regressions. Missing values for variables lead to weaker statistical power and increase the variability of estimates, which can create noise in the sample. This could explain why the BTM and ROE variables have little or no significance throughout our analyses. However, it was a deliberate choice to retain a certain level of missing values to maintain a representative sample of a certain size. The choice of the database might need to be reconsidered for further research given the rather high level of missing values.

Moreover, to further outline the limitations of this study, results should also be interpreted with caution due to the use of the CAPM formula for estimating the cost of equity. Although widely used in the literature, the CAPM formula has some limitations. First, the choice of input variables, such as the risk-free rate or market risk premium, can significantly impact the calculated cost of equity, leading to potential inaccuracies. Here, the MSCI World index was chosen for this study, but other indexes, such as the S&P 500 or a relevant market index for each region, could have been more appropriate. Secondly, CAPM is a single-factor model that considers only systematic risk (beta) and does not account for other factors that may influence an asset's return, potentially oversimplifying the estimation of the cost of equity. Failing to consider company-specific factors such as industry risk, business risk, and financial leverage can result in a generic and inaccurate cost of equity calculation (Dragotă, 2013).

For future research, it would be beneficial to conduct this study again using another measure for our dependent variable COE, such as an ex-ante measure of the cost of equity for instance. Ex-ante costs of equity have recently gained popularity in the literature due to several benefits. Many papers use the ex-ante cost of equity capital, implied from stock prices and analyst earnings forecasts, to estimate a firm's cost of equity. The decision to use an ex-ante measure is motivated by previous research, which raised concerns about the reliability and effectiveness of conventional proxies for realized returns, turning instead to expected return proxies. According to Mishra and O'Brien (2019), the ex-ante version of the Fama-French model is more effective in explaining the implied cost of equity observations compared to the ex-post versions. Moreover, this implied cost of capital is advantageous as it separates the cost of equity effect from growth and cash flow effects (Ghoul et al., 2011). However, since the performance of this measure has yet to be empirically proven, it is common among academics to use the average of four different popular models to estimate the cost of equity. These models use different approaches to estimate the cost of equity based on accounting earnings and various assumptions about earnings growth, forecasted value, and other factors.

Another limitation of this study is the relatively small sample size. It would be valuable to replicate this study with a larger sample of international companies from multiple countries, linking them to their respective legal regimes. Expanding the research could also help identify further ramifications and specificities when distinguishing between French, German, and Scandinavian civil law systems.

While this thesis primarily focuses on institutional theory and country-level aspects, the findings should be considered complementary to previous studies that emphasize firm-level factors influencing the relationship between ESG reporting and the cost of equity. Indeed, our results indicate that variables such as firm size also impact the cost of equity and, additionally size is directly linked to mandatory ESG reporting. Currently, only larger firms are required to disclose ESG information, but the scope of mandatory ESG regulations is expanding, and it is expected in the future that all companies will likely be required to disclose such information. There may be notable differences in how firms respond to these requirements. Larger firms, possibly due to their greater resources and capacity to benefit from economies of scale, may respond more effectively to these requirements than small and medium-sized enterprises (SMEs). Conversely, SMEs might gain advantages from such regulations due to their heightened capacity to adapt and internal flexibility. Other characteristics warrant further investigation, such as the existing level of corporate governance within firms. For instance, we know that board diversity influences performance (Nguyen et al., 2015) and, also more specifically, the cost of equity (Saleh et al., 2022). Additionally, board diversity tends to encourage greater efforts in CSR practices

(Harjoto et al., 2014). Thus, there could be a link between board diversity and the effectiveness of ESG reporting that merits further exploration.

A key contribution of this thesis is its emphasis on institutional theory, highlighting that the legal structure and historical background of countries shape the economic relationships and behaviours of economic actors. Introducing one-size-fits-all regulations for firms globally is not desirable and likely will not achieve the intended effects without considering the unique circumstances and elements surrounding firms in different legal and economic contexts. Policymakers should note that mandatory ESG reporting may have different implications depending on the legal regime. In common law countries, macroeconomic factors like GDP growth may play a more significant role, whereas in civil law countries, institutional factors like the rule of law have more pronounced effects. Therefore, designing financial regulations and corporate governance practices tailored to specific legal and economic environments can enhance their effectiveness.

Conclusion

This thesis explores the effect of mandatory ESG (Environmental, Social, and Governance) disclosure on the cost of equity capital, emphasizing the role of legal regimes. Employing a staggered difference-in-difference approach across a sample of 10 countries, the study reveals several critical insights. The introduction of mandatory ESG disclosure generally leads to an increase in the cost of equity capital for firms. This is attributed to additional compliance, political, and proprietary costs perceived as burdens by investors, aligning with the findings of Grewal et al. (2019). However, the significance of this relationship diminishes when accounting for country-specific factors, indicating the influence of broader macroeconomic variables. Additionally, excluding Japan from the sample reverses the effect, suggesting a significant impact of Japan on the overall results. Therefore, the true nature of the relationship between these two values cannot be determined with assurance in the light of this research thesis.

To refine these findings, subsamples were created to account for differences between common law and civil law countries. In common law countries, mandatory ESG disclosure tends to decrease the cost of equity capital. This effect is attributed to improved information flow, reduced information asymmetry, and enhanced monitoring power for investors, consistent with Renneboog and Liang (2017), and Castillo-Merino and Rodríguez-Pérez (2021). The additional transparency provided by mandatory disclosure helps bridge the gap between stakeholder and shareholder protections, making firms appear less risky to investors. "However, the evidence for these results is not robust after subsequent testing. Conversely, in civil law countries, mandatory ESG disclosure increases the cost of equity capital. The high existing levels of CSR performance and disclosure mean that mandatory requirements primarily affect firms that previously did not disclose voluntarily. These firms face significant compliance costs and potential negative impacts from disclosing sensitive information, leading investors to demand higher returns. These findings align with the literature on political and proprietary costs (Grewal et al., 2019; Krueger et al., 2021; El-Hage, 2021).

The study underscores the importance of considering legal contexts and macroeconomic factors when analysing the impact of ESG regulations. Policymakers should note that one-size-fits-all regulations may not achieve the desired effects if not tailored to the specific legal and economic environments in which firms operate. Future research with larger, more diverse datasets and advanced methodologies is essential to fully understand the implications of mandatory ESG reporting on the cost of equity capital.

In conclusion, while mandatory ESG disclosure reporting is expected to increase the cost of equity capital on average, its impact varies significantly across different legal regimes. The findings highlight the complexity of implementing ESG regulations and the need for nuanced approaches that consider the specific legal and economic contexts in which firms operate, highlighting the relevance of institutional theory in research regarding mandatory regulations.

Appendices

Table 1: Summary statistics per variable

Table 1 provides a comprehensive overview of the descriptive statistics for the variables used in the analysis. The table includes the number of observations, mean, standard deviation, and key percentiles (25th, 50th, and 75th) for each variable. All continuous variables are winsorized at the 5% and 95% levels. The variable SIZE, which is typically used in the form of the natural logarithm of total assets, is presented here as the actual total assets to provide a more comprehensive view.

Variables	# obs.	Mean	SD	P25	P50	P75
COE	84,298	0.013	0.022	0.00310	0.01401	0.02498
MANDPOST	84,298	0.166	0.372	0	0	0
SIZE	81,501	89,700,000	198,000,000	1,022,505	12,000,000	56,100,000
BTM	80,649	1.017	0.694	0.47619	0.84746	1.38889
LEV	81,011	0.27	0.242	0.0311	0.2235	0.4582
ROE	80,694	0.066	0.115	0.0194	0.0663	0.1301
RETVAR	84,298	4.202	2.025	2.9694	3.5826	5.29227
RULE_OF_LAW	77,542	1.397	0.401	1.3037	1.43606	1.61115
GDP_PER_CAPITA	84,298	3.952	0.953	3.5387	3.91694	4.49682
GDP_GROWTH	84,298	0.014	0.02	0.00438	0.01667	0.02655

Source: Author's research results, using the Stata program

Table 2: Summary statistics per industry

Table 2 provides descriptive statistics for the different industry classifications within the dataset. The classification follows the general industry classification proposed by DataStream. The table includes the number of firm-year observations, the percentage of the total sample that each industry represents, and the mean cost of equity (COE) for each industry.

Industry	**#firm-year**	**%**	**Mean COE**
Industrial	68,274	80.99	0.01243
Utility	2,644	3.14	0.01588
Transportation	2,422	2.87	0.01791
Bank/Savings & Loan	3,380	4.01	0.01424
Insurance	924	1.10	0.00140
Other Financial	6,654	7.90	0.01181
Sum/Average	*84,298*	*100*	0.012599

Source: Author's research results, using the Stata program

Table 3: Summary statistics per country

Table 3 provides a summary of the key statistics for firms in common law and civil law countries, divided into Panels A and B, respectively. This table highlights various financial metrics and country-specific factors for the sample. Panel C provides an overview of mandatory ESG reporting regulations across various countries, detailing the year of introduction, the issuing institutions, and the major stock markets for each country.

Pannel A: Common law countries						
Country	#firm-year	%	Group	COE	MANDPOST	SIZE
Canada	5,204	6.17	Treatment	0.01172	0.72425	19,168,111
United State	11,554	13.71	Control	0.00231	0	19,729,750
Australia	5,069	6.01	Treatment	0.01334	0.75084	13,657,385
United Kingdom	4,797	5.69	Treatment	0.01027	0.28914	12,578,285
Sum/Average	*26,624*	*31.58*	*/*	*0.00398*	*0.33661*	*17,338,790*

Pannel A: Common law countries *(continued)*						
Country	BTM	LEV	ROE	Rule of law	GDP per capita in million $	GDP growth
Canada	0.80035	0.30037	0.07430	1.75273	3.92683	0.02402
United State	0.57865	0.03154	0.09457	1.42300	4.72936	0.02308
Australia	0.87834	0.24168	0.07335	1.75399	4.31396	0.03193
United Kingdom	0.85876	0.24174	0.09515	1.69488	3.90531	0.02022
Sum/Average	*0.72257*	*0.15832*	*0.08711*	*1.59164*	*4.34493*	*0.02443*

Source: Author's research results, using the Stata program

Pannel B: Civil law countries						
Country	#firm-year	%	Group	COE	MANDPOST	SIZE
Germany	2,721	3.23	Treatment	0.00752	0.14406	28,438,495
Italy	2,288	2.71	Treatment	0.00675	0.13899	23,237,984
Sweden	2,946	3.49	Treatment	0.00970	0.14494	36,207,384
France	4,783	5.67	Treatment	0.00998	0.81999	20,504,660
Brazil	1,802	2.14	Control	0.01350	0	32,971,112
Japan	43,134	51.17	Control	0.01671	0	153,000,000
Sum/Average	*57,674*	*68.41*	*/*	*0.00862*	*0.08772*	*121,600,000*

Pannel B: Civil law countries *(continued)*						
Country	BTM	LEV	ROE	Rule of law	GDP per capita in million $	GDP growth
Germany	0.73934	0.34842	0.09982	1.66423	3.78922	0.01436
Italy	0.93801	0.44094	0.04886	0.49078	3.12781	0.00527
Sweden	0.65986	0.27668	0.09355	1.88545	4.67545	0.02530
France	0.89293	0.38003	0.08851	1.40993	3.58234	0.01594
Brazil	1.07516	0.39540	0.10618	-0.30157	0.91023	0.02286
Japan	1.24860	0.30339	0.04592	1.34709	3.88123	0.00737
Sum/Average	*1.14797*	*0.31874*	*0.05640*	*1.30419*	*3.76994*	*0.00973*

Source: Author's research results, using the Stata program

Pannel C: Mandatory ESG reporting regulations			
Country	**Year of introduction**	**Issuing institution**	**Major stock markets**
Canada	2004	Stock Exchange	Toronto Stock Exchange; TSX Stock Exchange
United State	-	-	New York Stock Exchange; NASDAQ; NYSE Market
Australia	2003	Australian Stock Exchange	Sydney Stock Exchange
United Kingdom	2013	Secretary of State	Aquis Stock Exchange; London Stock Exchange
Germany	2016	Governments (Ministry of Justice and Consumer Affairs)	Hanseatische Wertpapierboerse Hamburg; Boerse Muenchen; Xetra
Italy	2016	Ministry of Economic Affairs	Milan Stock Exchange
Sweden	2016	Governments (Ministry of Industries and Innovation)	Spotlight Stock Market; Stockholm Stock Exchange; Nordic Growth Market
France	2001	Parliament	Euronext Paris
Brazil	-	-	Sao Paolo Stock Exchange
Japan	-	-	Tokyo Stock Exchange; JASDAQ; Osaka Stock Exchange; Nagoya Stock Exchange

Source: Krueger et al. (2021)[5]

[5] Krueger, P., Sautner, Z., Tang, D. Y., & Zhong, R. (2021). The effects of mandatory ESG disclosure around the world. *Social Science Research* Network. https://doi.org/10.2139/ssrn.3832745

Table 4: Summary statistics by year

Table 4 presents the descriptive statistics of the dataset by year, including the number of observations (# obs.), the percentage of the total sample (%), and the mean cost of equity (Mean COE) for each year from 1998 to 2018.

Year	# obs.	%	Mean COE
1998	4135	4.91	0.01791
1999	4067	4.82	0.02769
2000	4022	4.77	0.01196
2001	3930	4.66	0.00651
2002	3892	4.62	0.00722
2003	3892	4.62	0.02491
2004	3922	4.65	0.02215
2005	3940	4.67	0.01652
2006	3982	4.72	0.02108
2007	4030	4.78	0.01922
2008	4045	4.80	-0.01895
2009	4023	4.77	0.03217
2010	4040	4.80	0.01386
2011	4048	4.80	0.00694
2012	4044	4.80	0.01216
2013	4046	4.80	0.01715
2014	4049	4.80	0.00959
2015	4049	4.80	0.00091
2016	4040	4.80	0.00239
2017	4051	4.81	0.01171
2018	4051	4.81	0.00205
Sum/Average	*84,298*	*100*	0.012599

Source: Author's research results, using the Stata program

Table 5: Summary of missing values

The table 5 provides a summary of the number of missing values for the variables Size, BTM, LEV, and ROE across different countries. This information is important for understanding the completeness of the dataset and identifying any potential biases or gaps in the data that could affect subsequent analyses. The table lists the number of missing entries for each variable within each country, which highlights the extent of missing data that needs to be addressed during the data cleaning process.

Country	**Size**	**BTM**	**LEV**	**ROE**
Canada	269	316	304	401
United States	200	215	424	331
Australia	560	590	584	648
United Kingdom	685	730	708	0
Germany	0	0	5	30
Italy	67	136	67	151
Sweden	64	123	99	123
France	137	257	157	214
Brazil	54	92	69	131
Japan	761	1190	870	1575
Sum	*2797*	*3649*	*3287*	*3604*

Source: Author's research results, using the Stata program

Table 6: Variables definitions

Variables of interest	Definitions
COE	The cost of equity is calculated with the CAPM formula: $COE=rf+\beta*(E[Mkt]-rf)$.
MAND x POST	The variable MANDPOST equals 1 for firms in countries that have introduced mandatory ESG reporting, starting from the year of introduction and continuing for all subsequent years, and 0 otherwise.

Additional variables	Definition	Sources
r_f	The risk-free rate represents the yields of German Treasury bonds with maturities of ten years.	DataStream
β	The beta is the systematic risk of a company and is calculated as the slope coefficient of linear regression of the monthly returns of the stock price of a firm i at time t on the monthly return of a market index – here the MSCI World index.	Author's calculation based on data from DataStream
E[Mkt]	The expected return of the market is estimated as the return of the MSCI World index.	DataStream

Control variables	Definitions	Sources
SIZE	The size is calculated as the natural logarithm of the total assets of a firm.	Self-constructed based on data from Datastream
BTM	The book value to market value of equity is calculated as the book value defined as the book value of shareholders' equity scaled by the market price of equity at year-end.	Datastream
ROE	The return on equity is calculated by taking the net income available to common shareholders (after accounting for preferred dividends) and dividing it by the average common equity over the period.	Datastream
LEV	Leverage ratio defined as the amount of total debt scaled by the total capital.	Datastream
RETVAR	The return variability of the market index – here the MSCI World index - is quantified by calculating the standard deviation of its monthly returns. The average of these monthly standard deviations is then annualized to derive the yearly value.	Self-constructed based on data from Datastream

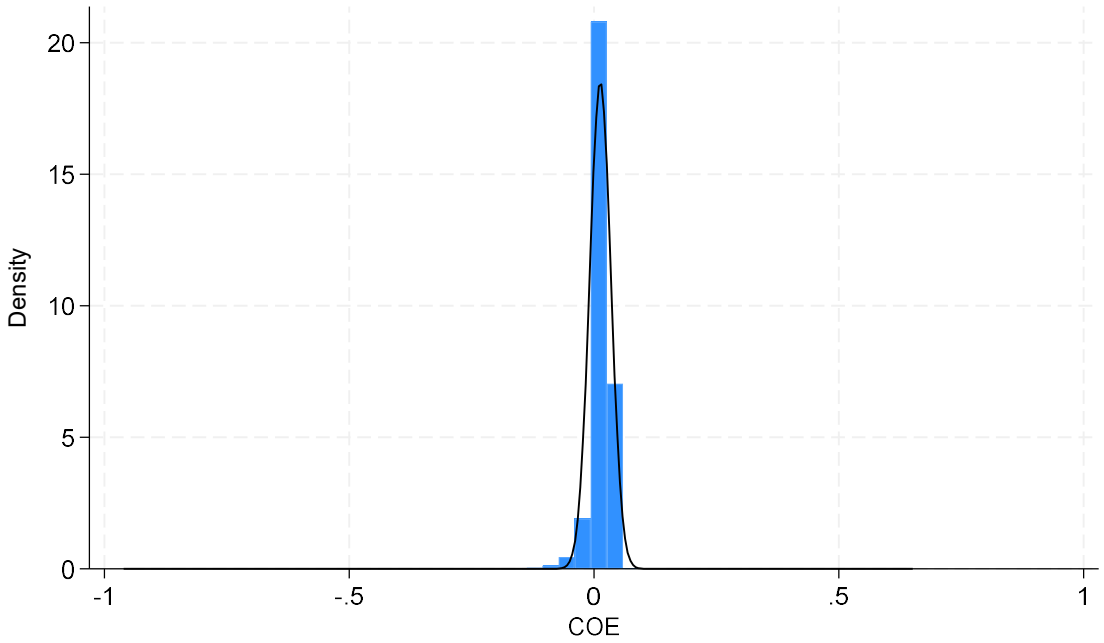
Table 2: Variables definitions *(continued)*

Control variables	Definitions	Sources
RULE_OF_LAW	Rule of Law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.[6]	World Bank
GDP_PER_CAPITA	GDP per capita is gross domestic product scaled by midyear population.	World bank
GDP_GROWTH	Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2015 prices, expressed in U.S. dollars.	World Bank

[6] "Rule of Law: Estimate," World Bank, accessed May 16, 2024, https://databank.worldbank.org/metadataglossary/worldwide-governance-indicators/series/RL.EST.

Figure 1: Distribution of the variable cost of equity (COE)

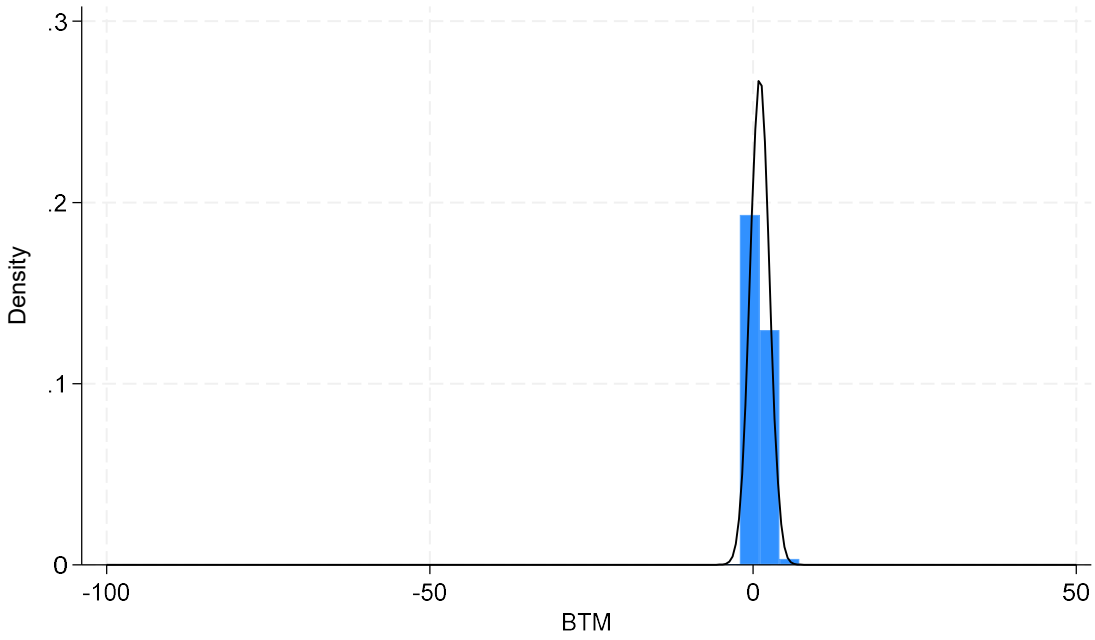
Figure 1 illustrates the distribution of the cost of equity (COE) alongside a normal density curve. The close correspondence between the COE distribution and the normal curve indicates a reasonable level of confidence in the robustness and reliability of the data.



Source: Author's research results, using the Stata program

Figure 2: Distribution of the variable book-to-market (BTM)

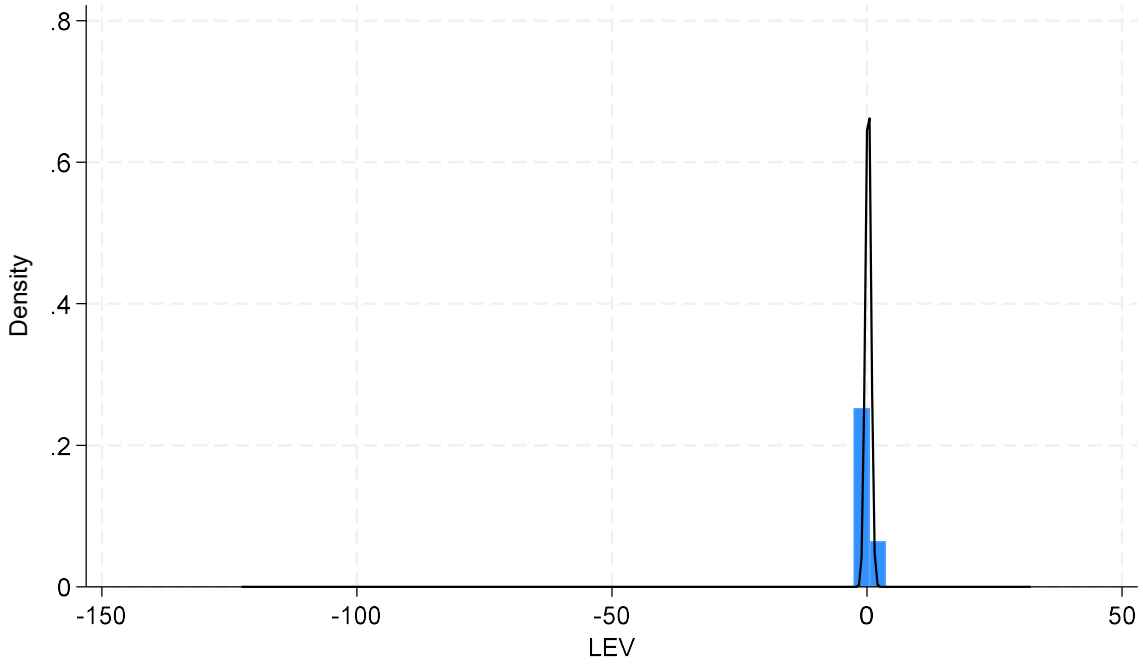
Figure 2 shows the distribution of the book-to-market ratio (BTM) with a normal density curve superimposed. While the distribution is generally aligned with the normal curve, there is a noticeable skewness, suggesting that the data may not perfectly conform to a normal distribution. This skewness should be taken into account when interpreting the results and may indicate the presence of outliers or non-normality in the data.



Source: Author's research results, using the Stata program

Figure 3: Distribution of the variable leverage (LEV)

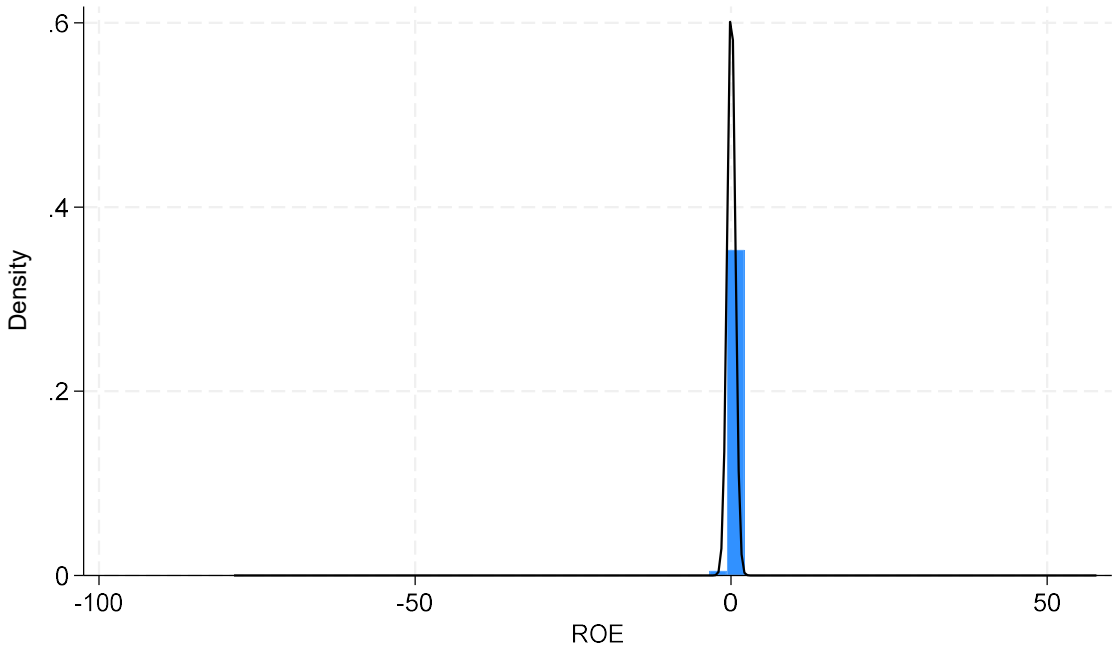
Figure 3 depicts the distribution of the leverage (LEV) ratio alongside a normal density curve. The distribution is skewed on the left and does not align well with the normal curve, indicating significant departures from normality. This pronounced skewness suggests the presence of extreme values or outliers, and it implies that the leverage data may not be normally distributed. This should be considered when conducting further analyses or interpreting the results.



Source: Author's research results, using the Stata program

Figure 4: Distribution of the variable return on equity (ROE)

Figure 4 depicts the distribution of the Return on Equity (ROE) with an overlay of a normal density curve. The distribution is highly concentrated around zero, with a noticeable skewness, indicating that the ROE data may not follow a normal distribution. The presence of this skewness and the clustering of data points near zero suggest the potential influence of outliers or non-normality in the ROE variable. This deviation from normality should be considered when interpreting regression results, as it may impact the validity of statistical inferences made about ROE.



Source: Author's research results, using the Stata program

Table 7: Pearson correlation matrix

This table presents the Pearson correlation matrix for the variables used in the regression. Continuous variables undergo winsorization at the 5th and 95th percentiles to reduce outlier influence. Definitions for each variable can be found in Table 6. Coefficients marked with stars denote significance levels - ***, **, and * indicate statistical significance at the 1 %, 5 %, and 10 % levels, respectively.

Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) COE	1.000									
(2) MANDPOST	-0.055***	1.000								
(3) SIZE	0.074***	-0.371***	1.000							
(4) BTM	0.097***	-0.103***	0.157***	1.000						
(5) LEV	0.068***	0.050***	0.242***	0.028***	1.000					
(6) ROE	-0.012***	0.058***	-0.001	-0.295***	-0.091***	1.000				
(7) RETVAR	0.028***	-0.115***	-0.013***	0.143***	0.039***	-0.107***	1.000			
(8) RULE_OF_LAW	-0.052***	0.264***	-0.123***	-0.106***	-0.132***	0.038***	-0.051***	1.000		
(9) GDP_PER_CAPITA	-0.113***	0.235***	-0.053***	-0.043***	-0.225***	0.001	-0.072***	0.545***	1.000	
(10) GDP_GROWTH	-0.091***	0.132***	-0.248***	-0.220***	-0.100***	0.158***	-0.536***	0.098***	-0.024***	1.000

**** p<0.01, ** p<0.05, * p<0.1*

Source: Author's research results, using the Stata program

Table 8: Wald test for each variable individually

This table summarizes the Wald test results for each variable in the regression model. The F-statistic, degrees of freedom (DF), and p-value are reported for each test. The F-statistic tests whether the coefficient of the variable is significantly different from zero, with the null hypothesis stating that the coefficient is zero.

Variable	F-Statistic	DF	p-Value
MANDPOST	3.71	F (1,4200)	0.0543
SIZE	1.87	F (1,4200)	0.1710
BTM	5.76	F (1,4200)	0.0164
LEV	1.56	F (1,4200)	0.2124
ROE	0.14	F (1,4200)	0.7065
RETVAR	1573.50	F (1,4200)	0.0000
RULE_OF_LAW	113.18	F (1,4200)	0.0000
GDP_PER_CAPITA	119.19	F (1,4200)	0.0000
GDP_GROWTH	53.82	F (1,4200)	0.0000

Source: Author's research results, using the Stata program

Table 9: Wald test for the model

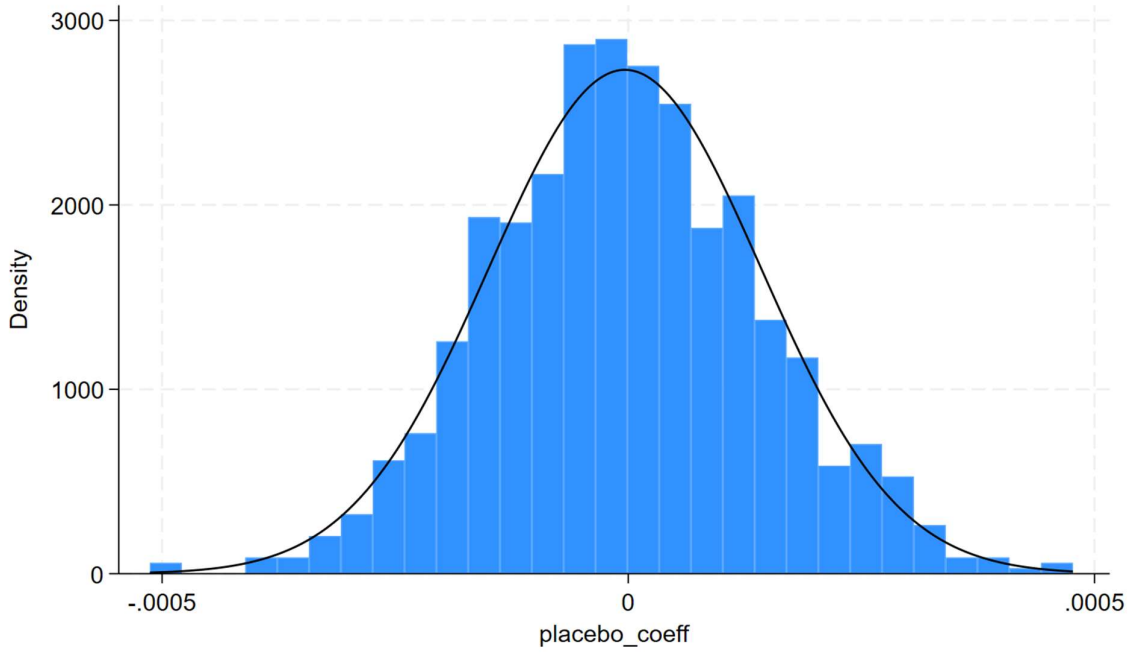
This table provides the result of the Wald test for the overall model. The F-statistic, degrees of freedom (DF), and p-value are reported, testing the null hypothesis for all the coefficients in the empirical model (1).

Test Global	F-Statistic	DF	p-Value
Empirical Model 51)	519.88	F (9, 4200)	0.0000

Source: Author's research results, using the Stata program

Figure 5: Placebo test

Figure 5 presents the results of the placebo test conducted to assess the robustness of the observed impact of mandatory ESG reporting on the cost of equity capital (COE). The histogram shows the distribution of the coefficients obtained from 1,000 iterations of assigning random treatment years to firms. The black line represents the normal distribution fit to the placebo coefficients. Below the histogram, a table summarizes the key statistics of the placebo coefficients and compares them to the true treatment coefficient.



Mean	Standard deviation	Min	Max	p-value	True coeff.
0.00	0.00015	-0.0005131	0,0004769	0.000	0.00083

Source: Author's research results, using the Stata program

Table 12: Placebo tests – pre- and post-treatment tests

Table 12 presents the results from our placebo tests aimed at verifying the robustness of the impact of mandatory ESG reporting on the cost of equity capital (COE). The table displays results for two different placebo tests: the pre-treatment placebo test and the post-treatment placebo test.

Dep. Var. = COE	(1) Pre-Treatment Placebo Test	(2) Post-Treatment Placebo Test
PLACEBO_POST	-0.000462	0.000661
	(0.000536)	(0.000526)
Observations	12,692	10,597
R-squared	0.631	0.610
Number of Number	1,282	1,431

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

Source: Author's research results, using the Stata program

Table 13: Regression clustering per country

Table 13 presents the results of robustness test B. This table presents the results of analysing the effect of mandatory ESG reporting on cost of equity capital (COE) of firms clustering for countries using the wild cluster bootstrap test. The first model is the regression for our main sample, the second model is for the subsample of common law countries, and the third model is for the subsample of civil law countries. The dependent variable, COE, was calculated using the CAPM formula as detailed in point 3 form the "Data and methodology" section. The variable MANDPOST equals 1 for firms in countries that have introduced mandatory ESG reporting, starting from the year of introduction and continuing for all subsequent years, and 0 otherwise. Robust t-statistics, adjusted for country-level clustering, are reported in parentheses. All continuous variables are winsorized at the 5% and 95% levels. Statistical significance is indicated by ***, **, and * at the 1%, 5%, and 10% levels, respectively.

Dep. Var. = COE	(1) Main sample - Wild Cluster Bootstrap	(2) Common law – Wild Cluster Bootstrap	(2) Civil law - Wild Cluster Bootstrap
(*Intercept*)	0.02560	0.05487*	0.03146**
	(0.01808)	(0.01726)	(0.00845)
MANDPOST	0.00083	-0.00740	0.00421**
	(0.00295)	(0.00315)	(0.00121)
SIZE	-0.00043	-0.00273*	0.00024
	(0.00057)	(0.00105)	(0.00033)
BTM	-0.00045	0.00073	-0.00047
	(0.00046)	(0.00043)	(0.00076)
LEV	0.00099	0.00263	-0.00189**
	(0.00223)	(0.00214)	(0.00068)
ROE	0.00036	0.00389	-0.00285
	(0.00218)	(0.00247)	(0.00320)
RETVAR	0.00125*	-0.00283*	0.00141***
	(0.00060)	(0.00116)	(0.00019)
RULE_OF_LAW	-0.01225	0.00256	-0.02030***
	(0.00844)	(0.00724)	(0.00335)
GDP_PER_CAPITA	0.00249	-0.00080	0.00103
	(0.00187)	(0.00107)	(0.00103)
GDP_GROWTH	-0.05023	0.16476*	-0.06817
	(0.03474)	(0.05588)	(0.03611)
Constant	0.02560	0.05487*	0.03146**
	(0.01808)	(0.01726)	(0.00845)
Observations	73,423	23,115	50,308
Number of Firms	4,201	1,425	2,776
R-squared	0.49688	0.51302	0.55783
Year FE	YES	YES	YES
Country FE	YES	YES	YES
Industry FE	YES	YES	YES

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

Source: Author's research results, using the Stata program

Table 14: Main sample without Japan

Table 14 presents the results of the third robustness test. This table presents the results of analysing the effect of mandatory ESG reporting on cost of equity capital (COE) with Japan excluded from the main sample. The first model excludes Japan from the main sample. The second model presents the regression for the main sample with Japan and is identical to the regression presented earlier in Table 10 but is repeated here to facilitate comparison. The dependent variable, COE, was calculated using the CAPM formula as detailed in point 3 form the "Data and methodology" section. The variable MANDPOST equals 1 for firms in countries that have introduced mandatory ESG reporting, starting from the year of introduction and continuing for all subsequent years, and 0 otherwise. Robust t-statistics, adjusted for firm-level clustering, are reported in parentheses. All continuous variables are winsorized at the 5% and 95% levels. Statistical significance is indicated by ***, **, and * at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)
Dep. Var. = COE	Without Japan	With Japan
(*Intercept*)	0.02713***	0.00458
	(0.00735)	(0.00556)
MANDPOST	-0.00377***	0.00083*
	(0.00047)	(0.00043)
SIZE	-0.00229***	-0.00043
	(0.00045)	(0.00031)
BTM	0.00035	-0.00045**
	(0.00032)	(0.00019)
LEV	0.00266**	0.00099
	(0.00113)	(0.00079)
ROE	0.00119	0.00036
	(0.00136)	(0.00095)
RETVAR	0.00057*	0.00417***
	(0.00029)	(0.00011)
RULE_OF_LAW	0.00338***	-0.01225***
	(0.00092)	(0.00115)
GDP_PER_CAPITA	0.00014	0.00249***
	(0.00028)	(0.00023)
GDP_GROWTH	0.07635***	-0.05023***
	(0.00928)	(0.00685)
Observations	35,725	73,423
R-squared	2,147	4,201
Number of Firms	0.50807	0.49688
Year FE	YES	YES
Country FE	YES	YES
Industry FE	YES	YES

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

Source: Author's research results, using the Stata program

Table 15: Subsample civil law countries without Japan

This table presents the results of analysing the effect of mandatory ESG reporting on cost of equity capital (COE) of firms in civil law countries with Japan excluded from the subsample. The subsample for civil law countries englobes Germany, France, Sweden, Italy, and Brazil. The first model excludes Japan from the civil law subsample. The second model presents the regression for the subsample for civil law with Japan and is identical to the regression presented earlier in Table 11 but is repeated here to facilitate comparison. The dependent variable, COE, was calculated using the CAPM formula as detailed in point 3 form the "Data and methodology" section. The variable MANDPOST equals 1 for firms in countries that have introduced mandatory ESG reporting, starting from the year of introduction and continuing for all subsequent years, and 0 otherwise. Robust t-statistics, adjusted for firm-level clustering, are reported in parentheses. All continuous variables are winsorized at the 5% and 95% levels. Statistical significance is indicated by ***, **, and * at the 1%, 5%, and 10% levels, respectively.

Dep. Var. = COE	(1) Civil law without Japan	(2) Civil law with Japan
(*Intercept*)	0.00516	0.01199*
	(0.01244)	(0.00666)
MANDPOST	0.00093**	0.00421***
	(0.00043)	(0.00047)
SIZE	-0.00070	0.00024
	(0.00082)	(0.00038)
BTM	-0.00071	-0.00047**
	(0.00054)	(0.00020)
LEV	-0.00032	-0.00189**
	(0.00202)	(0.00095)
ROE	-0.00779**	-0.00285**
	(0.00334)	(0.00131)
RETVAR	0.00309***	0.00412***
	(0.00052)	(0.00012)
RULE_OF_LAW	-0.00835***	-0.02030***
	(0.00252)	(0.00144)
GDP_PER_CAPITA	0.00179**	0.00103***
	(0.00071)	(0.00029)
GDP_GROWTH	0.04711***	-0.06817***
	(0.01584)	(0.01118)
Observations	12,610	50,308
R-squared	722	2,776
Number of Number	0.52054	0.55783
Year FE	YES	YES
Country FE	YES	YES
Industry FE	YES	YES

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

Source: Author's research results, using the Stata program

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Executive summary

ESG reporting has become increasingly important for firms, investors, governments, and stakeholders due to heightened awareness of environmental and social issues, and investor demand for sustainable investments. While producing beneficial effects, ESG reporting has also presented challenges, primarily due to the lack of harmony in voluntary ESG disclosures, making it difficult for stakeholders to compare and assess corporate sustainability efforts effectively. Therefore, efforts around the world have been made by governments and other relevant organizations to regulate reporting, creating mandatory ESG reporting regulations.

Scholars have investigated whether mandatory ESG reporting regulations are beneficial or detrimental to firms. Benefits include reductions in greenwashing, improved risk management, and better stock liquidity. However, some studies have found adverse market reactions, making the impact of mandatory ESG reporting unclear. Firms may benefit from reduced information asymmetry, reputation effects, and a decrease in the risk of shareholder expropriation. On the other hand, mandatory ESG disclosure involves compliance costs that might impact profitability. Additionally, proprietary and political costs pose significant challenges to its effectiveness.

Attention in the literature has also been given to country and market-specific factors when examining the impact of mandatory ESG reporting. Differences are expected across legal regimes, namely common law and civil law. In common law countries, mandatory ESG reporting is expected to decrease the cost of equity due to prior lower levels of stakeholder protection and weaker information environments. Conversely, in civil law countries, it is anticipated to increase the cost of equity due to higher existing ESG performance levels, which may result in exposing "bad players" and greater compliance costs, thereby leading to negative market reactions.

This thesis tests the impact of mandatory ESG reporting on the cost of equity capital for firms, using a staggered difference-in-difference methodology to analyse data from 10 countries from 1998 to 2018. The main results indicate an average increase in the cost of equity following the introduction of mandatory ESG reporting, with comparative analysis revealing a decrease in common law countries and an increase in civil law countries. The conclusions emphasize the importance of considering legal and country-specific contexts when assessing the effects of ESG reporting on financial performance.

Keywords: Mandatory ESG reporting – Cost of capital – Legal regimes – CAPM – Corporate Social Responsibility

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