Does a widespread CSR reporting mandate provide sustained real effects? Analysis of the European Union's CSR directive

Student name: Asta Cecilija Baradulinaitė

Student number: 483630ab

University: Erasmus University – Erasmus School of Economics

Programme: MSc Accounting, Auditing and Control

Date final version: 2023-01-29

Thesis supervisor: Dr. Charlotte Antoons

Second assessor:

Abstract

This thesis examines the effect of the European Union's Directive 2014/95/EU on the mandatory reporting disclosure of Corporate Social Responsibility (CSR). This standard calls for large European firms to publish reports on the impact of their activities to the environment, nature and humankind. According to EU policy makers, the mandate is vital in order to manage change towards a sustainable global economy (European Union, 2014). Academic research has documented that a mandatory disclosure requirement will usually generate an uplift in a firm's environmental, social and governance practices (Ioannou and Serafeim, 2017; Downar et al., 2021; Tomar, 2022). Prior literature has focused primarily on the periods immediately surrounding the directive announcement and its coming into effect (Fiechter et al., 2022; Grewal et al., 2019). This paper contributes to the existing literature by focusing its analysis on the sustained effects of the disclosure mandate several years after the policy came into effect, by broadening the sample period to 2011-2021. The research is conducted using propensity score matching and difference-in-difference regression analysis. The results are mixed, finding the directive did have a positive and sustained effect on the CSR disclosures of companies, but inconclusive results on whether it has a sustained positive impact on real CSR activities as measured by CSR score and infrastructure. This lack of conclusive evidence holds when examining firms with high exposure vis-à-vis the directive.

Keywords: corporate social responsibility (CSR), mandatory disclosure, disclosure of non-financial information, real effects, matching

Acknowledgment

Writing this thesis would not have been possible without the support of my family and my boyfriend. It was sometimes frustrating to hear your questions on "what's the latest on your paper?", "when is the deadline?", "how many words did you write today?". In hindsight this was really helpful and gave me the push I needed.

I would like to also say a special thank you to my thesis supervisor Dr. Charlotte Antoons for your time, feedback and valuable comments. You were very approachable, kind and "down to earth" during this process.

Table of contents

Table list

1. Introduction

Nowadays, many societies are adopting a more social, economic and ecological behavior that is focused on the long-term sustainability of the environment, nature and mankind. Issues such as climate change, unsustainable use of natural resources, and unfair labor practices are inciting many "calls for action", not only among different governments and dedicated public institutions, but also within businesses. With greater and greater worldwide media access, such as online news outlets and scientific communications, as well as the evolution and growing popularity of social media, the general public has an exposure to these topics as never before (McKinsey, 2022; Harvard Business Review, 2022).

As a result of this shift, various stakeholders expect firms to do their part by amending their behavior and strategy and incorporating "corporate social responsibility" (CSR) in their operations and reporting. CSR activities demonstrate social as well as environmental behavior that goes beyond the legal, regulatory or contractual obligation of the relevant country, market and/or economy (Kitzmueller & Shimshack, 2012). Some examples include improving labor practices and policies, producing ecologically and socially responsible products, reducing carbon footprint or choosing supply chain partners and business clients that demonstrate similar behaviors adhering to relevant standards. Other examples include introducing new positions focused on CSR, changing the structure and purpose of the board of directors, examining internal corporate ethics, having external audits and disclosing social performance to the general public (Lataoi et al., 2019). Additionally, as a consequence of firms focusing on socially responsible behavior, so-called "CSR umbrella" organizations emerged. These are firms that focus on CSR consultancy, auditing, communities aiming to invest in sustainable and responsible firms as well as the growth of CSR subjects within the higher education landscape (Carroll, 2008).

In order to communicate their CSR efforts to stakeholders, many firms increasingly produce voluntary disclosures which incur costs. Nonetheless firms do so for reasons beyond altruism; many do so with the aim of reaping the economic and social benefits of brand goodwill associated with CSR and to gain a competitive advantage over firms who either do not engage in similar CSR activities or do not disclose them (Porter & Kramer, 2006). There is evidence supporting the link between firms' general activities and CSR reporting. For example, firms from industries that contribute highly to various emissions tend to provide more environmental disclosures (Christensen et al., 2021; Gamerschlag et al., 2011). In addition, firms operating within controversial industries such as alcohol, tobacco, firearms provide more information on their social and community activities compared to firms in noncontroversial industries (Byrd et al., 2016). Such disclosures are believed to help firms improve their public image and legitimize their operations to offset the perceived issues their business models create (Godfrey et al., 2009). This makes the subject of CSR reporting extremely sensitive and prone to drawing attention from various regulators who try to minimize and control such behavior. Thus, it could be argued that one way to increase overall market transparency is to introduce reporting mandates.

Concurrently, policy and law makers such as the European Union (EU), United Nations or national governments encourage this trend by introducing reporting mandates requiring firms to disclose their CSR activities. In 2014, the EU introduced Directive 2014/95 (hereafter, "CSR directive") that requires large, listed EU companies to prepare annual non-financial (CSR) reports starting from fiscal year 2017 onwards. Qualifying firms must disclose comprehensive details on their policies, risks and results related to environmental, social and employee matters. The main objective of the CSR directive is to incentivize firms towards CSR activities that, in the aggregate, support the EU's climate and sustainability goals. More specifically, EU regulators see it as a means to promote an increase in CSR activities, boosting the positive impact on society as well as to help measure and monitor this change (European Union, 2014). In addition, these reporting obligations bring transparency and enable various stakeholders (investors, suppliers, clients, general public) to effectively evaluate firms' CSR performance (Grewal et al., 2019).

The purpose of this thesis is to examine whether there are real effects resulting from the widespread CSR reporting mandate and whether they are sustained beyond the initial years. It is also within the scope of this research to examine if different types of CSR infrastructure were impacted in real terms, where different CSR infrastructure is defined by firms establishing specific CSR committees, providing CSR training, introducing CSR based targets and compensation.

Thus, the thesis will attempt to answer the following research question:

RQ: Does a widespread CSR directive result in sustained real effects?

The results of this thesis contribute to the academic literature by examining the longer-term effects of a CSR directive, years after its implementation, but find little evidence of a real sustained effect. It seems that while companies do improve their reporting and maintain those improvements generally, positive impacts to CSR scores and infrastructure diminish after a few years.

Prior research (Fiechter et al., 2022; Grewal et al., 2019) analyses the initial years of the directive and it is unknown if their findings continue to have a sustained effect. As mentioned, leveraging a greater sample period, this paper provides a longer-term look on the impact of the reporting mandate. Moreover, the results of this study differ from those of prior studies demonstrating that the effects measured may be more nuanced and complex than previously known. Additionally, this thesis broadens the current research on CSR reporting mandates specifically affecting multiple countries and industries simultaneously, a topic that has not yet been examined in great frequency. Prior papers mostly analyze the effects on single country, an industry or a specific reporting outcome in terms of an environmental target, such as various emission types (Cho et al., 2019; Chen et al., 2018; Downar et al., 2021; Tomar, 2022).

Moreover, this research area is of interest to investors, executives, regulators and policy makers who wish to better understand if reporting mandates affect firms' behaviors with regards to CSR. For instance, the combination of mixed results, showing an increase to CSR disclosure, but lackluster evidence for a real effect, can be used by policy makers or

governing institutions when amending or introducing new reporting mandates or policies (McKinsey Sustainability, 2019). These findings could inform further policy tailoring to more precisely incentivize and effectuate real CSR changes as there are further amendments to the directive planned (European Commission, 2021). Moreover, it helps stakeholders interested in the CSR activities of companies, such as investors, to better understand the relationships between the CSR directive, CSR disclosures and real CSR activities.

The remainder of this thesis proceeds as follows. Chapter 2 discusses corporate social responsibility, voluntary and mandatory disclosure requirements as well as the 2014/95/EU CSR directive. Chapter 3 introduces the hypotheses while chapter 4 presents the data collection process, sampling and methodology. Chapter 5 discusses the results and chapter 6 concludes, discusses limitations and provides suggestions for future research.

2. Theoretical framework

2.1 Corporate social responsibility

Overall, the concept of CSR is not new. The origins of this concept date back to the second Industrial Revolution in the mid-to-late 1800s, when firms were first concerned with the welfare of their employees in order to increase their productivity (Carroll, 2008). The first formal discussions and literature on CSR emerged mostly during the 20th century and principals and definitions pertaining to the concept have been developing in phases ever since.

According to Murphy (1978), a firm's social responsibility up until the 1950s was defined by the "philanthropic" era: a period in which firms donated to charities and communities. The following period, spanning the 1960s and 1970s, was named the "awareness" and "issue" age. The latter was characterized by firms recognizing their overall responsibility for the impacts of their business on the communities they served, balancing between profit maximization and social responsibilities to the labor force and the broader social groups (Lataoi et al., 2019). They started focusing on specific issues such as racial discrimination, urban decay and pollution problems. Following this, the mid-to-late 1980s are defined as the "responsiveness" era which continues to this day (Carroll, 2008). With globalization and the immense growth of businesses and economies, a slow evolution to a more modern, responsive and integrated view of corporate social responsibility has taken place. Many companies structurally incorporate CSR issues in their management decision making and business operations.

Following classical finance theory, firms should only be involved in activities that focus on profit maximization for their shareholders (Friedman, 1970). In this vein, corporate managers act purely as agents of the principal. Shareholders hire corporate executives to act on their behalf and use a firm's resources to engage in operations that are purposefully designed to increase profits and share price. This foundational theory dominated early academic literature in regard to firm value and agent-principal relationship, specifically on the relationship between the shareholders and firm's managers in a shared effort towards maximizing profits.

In time, evident changes in the economic, social and political circumstances were recognized, and a shift from shareholder- to stakeholder-focused thought emerged. In his book, Freeman (1984) suggests that businesses should create value not only for the owners of the firm, but for all stakeholders. Generally, a firm's stakeholders can be defined as a larger group of interested and affected parties whose scope depends on the industry, business model and regulatory landscape. Most commonly, stakeholders are current and potential employees, suppliers, customers, institutional investors, governmental institutions, competitors, environmental advocates and social communities. Company shareholders are also identified as stakeholders.

Increasingly, in the most recent decades, firms have realized that focusing only on the growth and profit maximization of the firm is not enough to remain respected and relevant among the stakeholders who themselves increasingly care about environmental and social

issues (Gulenko, 2018). As mentioned earlier, current worldwide access to company news and various socio-economic developments, have put a lot of pressure and scrutiny on firms' behaviors. Globalization factors and businesses' growth beyond single countries and continents also changed the CSR landscape as value chains extend and become more complex (European Union, 2014). As such, there are economic benefits and costs that firms factor when strategizing, that extend internationally and to whom they choose to work with.

CSR activities are believed to improve a firm's corporate reputation and perception by external stakeholders – investors, suppliers and customers (Branco & Rodrigues, 2006). In recent years, investor preferences for CSR policies, which firms convincingly demonstrate, are being taken into consideration when deciding where to invest or what capital to grant (Friedman & Heinle, 2016). For example, in 2020, 33% ($17.1 trillion) of assets managed in the United States were classified as sustainable investments (US SIF, 2020).

In consideration of the general growth trend of sustainable behavior in the general public, one could intuit that increasing CSR activities will boost a firm's value and performance in the eyes of stakeholders and investors. Indeed, while some amount of CSR may result from a firm's discretionary altruism, much of it is likely in response to socio-economic pressures stemming from conscientious individuals being selective when prospecting for future employers (Story et al., 2016), customers being wary of purchasing goods associated with clear negative externalities and vice versa, and investors adjusting their portfolios to reflect their values with respect to CSR (Khojastehpour & Johns, 2014). However, prior literature is inconclusive with regards to the direction CSR activities impact financial performance of firms.

Currently, some larger companies which can amortize the associated costs, operationalize CSR activities in their daily activities by setting up dedicated departments, promoting internally, as well as across their supply chains, sustainable and fair work ethics (Amran et al., 2014). This CSR focus is reflected in companies' goals and missions. It is common to create CSR-related targets for firm employees and link them to executive compensation plans. Additionally, firms increasingly diversify their board of directors to include members from different cultural and social backgrounds.

In examination of 191 Korean firms, a partial positive correlation was demonstrated for the effect of CSR on profitability (as proxied by return on assets) and firm value (as proxied by Tobin's Q) (Cho et al., 2019). The authors argue that the results of their analysis are undermined by sample biases and time-dependent ambiguities and that further research may shed more light on the subject. A study of American firms split into low and high performing groups based on CSR scores, finds that firms with high CSR scores also perform well, though a causal link is not stipulated in consideration of robustness checks (Awaysheh et al., 2020). This brings into question if it is CSR implementation that leads to better performance and valuation or if firms that do well have discretionary funds they can allocate to CSR infrastructure and reporting.

Similarly, there is an increasing interest from the regulatory bodies to find ways to make the CSR activities and results more measurable, transparent and comparable within the company as well as among different companies, industries and countries.

2.2 Voluntary disclosure

As is commonly understood and supported by academic research, firms engaging and investing in socially responsible behavior and products, gain a competitive advantage (Porter & Kramer, 2006). In order to reveal to the general public such behavior and activities, firms engage in voluntary disclosure. By effectively reporting CSR activities, firms maximize their economic benefits by boosting the perceived value of their brand, products and services and avoid potential future political and social costs (Gamerschlag et al., 2011). Naturally, both CSR activities and the reporting thereof incur costs and so firms are incentivized to report those CSR activities where the perceived stakeholder value and resulting benefit to the firm outweigh the incurred costs.

Proponents of voluntary disclosure argue that individual companies are suited to find processes and initiatives to implement CSR practices and lower their social externalities efficiently. This is achieved by tailored management decisions pertaining to specific industries and products that require inside knowledge and skills (Sheehy, 2015). Moreover, such discretionary freedom can promote innovation, especially when CSR is in its infancy. Companies might prefer voluntary disclosures due to budget constraints and minimal perceived benefits of such behavior. CSR activities by nature go beyond the basic compliance in terms of regulatory, administrative, legal and contractual obligation (Christensen et al., 2021). This highlights and emphasizes the voluntary nature of CSR, supporting self-disclosures as a result.

On the other hand, there are some concerns regarding voluntary CSR reporting. The first set of issues that arise from voluntary disclosures pertain to the lack of common standards. The practice of voluntary disclosure grants discretion and autonomy to companies when it comes to CSR reporting, with no required external standard set or validated by third parties (Christensen et al., 2021). This naturally leads to significant differences in reports, both between companies for a given period and between periods for a given company (year on year reports). As mentioned, companies may be incentivized to report beneficial elements and avoid negative ones, leading to both bias and incomplete information. As a result, the ability of stakeholders to evaluate the contained information, in a transparent and comparable way, is limited and thus, difficult to factor when making strategic decisions (McKinsey Sustainability, 2019).

Secondly, the lack of auditing and verification by external third parties creates a space in which "greenwashing" can occur – a practice where firms claim or embellish certain CSR activities in their disclosures, without necessarily having undertaken actions making those claims true (Walker & Wan, 2012). In this way they reap the benefits of an increase to the valuation of their perceived CSR activities without incurring costs. This nefarious practice obviously has negative consequences for many stakeholders, especially if widespread. Investors may be duped into making poor decisions, policy makers may make changes based on inaccurate information, the real CSR efforts of competing companies may be diminished, and society may be negatively affected as a whole.

As a result, the general public and consumers express skeptical opinions about the authenticity of CSR claims and the value of CSR as a whole is undermined and diluted (Gatti et al., 2019). In their study of CSR and greenwashing literature, Gatti et al. (2019) conclude that better information would be reported if legislators created an environment where a combination of voluntary and mandatory disclosure aspects is employed. According to the authors, this would encourage companies to continuously find new and effective CSR drivers, while keeping common rules and principles for the reporting standards. In this way firms could still differentiate themselves and present their creative CSR initiatives, but the existing reporting rules would prevent them breaching legislative requirements when communicating their CSR message.

In total, the negative effects associated with voluntary disclosure can lead to a great deal of heterogeneity, bias and opacity when it comes to evaluating a company's CSR endeavors and impacts. Stakeholders looking to analyze this information will need to invest considerable effort in order to understand and consolidate the information provided by companies before any comparisons can be made. Even then, without standards enforced by third parties, the information is likely less trustworthy, reliable and usable (McKinsey Sustainability, 2019). These factors and the fundamental goal of creating more unified, transparent and market-wide information on firms' environmental and social activities, provide fuel for policy makers and regulators to introduce mandatory reporting.

2.3 Mandatory disclosure

Initially, there were no reporting mandates introduced in regards to CSR or nonfinancial disclosure. This is mainly linked to the fact that historically, such activities were in relative infancy; fewer stakeholders were aware or perceived value in them. Moreover, governments and economies were focused on productivity and growth. Many societies still value growth well above CSR and as such, do not engage in or value CSR activities sufficiently to warrant implementing widespread standards (McKinsey Sustainability, 2019). It was understood that firms should be counted on to address CSR issues on their own. This was supported by the notion that engaging in CSR activities produced sufficient internal and/or external benefits for firms. These benefits relate to developing innovative resources and solutions resulting in a competitive advantage. At the same time, these practices can help firms retain their current employees, their commitment and loyalty and attract competitive talent (Story et al., 2016). Despite the aforementioned benefits of voluntary disclosure, there is a growing trend of introducing mandatory disclosure requirements related to CSR, environmental, social and sustainability areas.

The economic theory and reasoning behind introducing any regulation usually calls for positive externalities, country- or market-wide cost savings resulting from the new regulation or the mitigation of otherwise inevitable economic losses (Leuz & Wysocki, 2016). In the case of a CSR reporting mandate, positive disclosure externalities can occur due to information availability and transparency (Christensen et al., 2021). By forcing firms to disclose their activities or implicit lack thereof, reporting mandate changes the incentivizing cost-benefit analysis for each firm, since a significant portion of reporting costs can be considered sunk. Companies which engage in, but do not report CSR activities, will be more

likely to include them in the report as the marginal cost of reporting decreases. Furthermore, companies that lag behind in terms of CSR and want to improve could compare the results of their competitors, learn from business peers in different industries and amend future activities in order to improve their public image. With an increase in the amount of CSR reports available and the introduction of requirements and standardization, stakeholders could more easily (and less costly) compare alternatives (McKinsey Sustainability, 2019).

Another argument in favor of disclosure mandates is to ensure more trustworthy and transparent information for stakeholders. Within voluntary disclosure, firms are known to embellish and use "big" phrases to indicate their achievements that are rarely backed by real activities (Gatti et al., 2019). Even a few cases of such behavior being found out and reported in the media can have a market wide impact on other companies even if they are really following their CSR commitments. Widespread auditing and validation could help to both ensure that firms are doing as they say and increase the perceived value of CSR reports among stakeholders leading to real effects of disclosure.

Previous research demonstrates that mandatory disclosure of CSR has real effects on firms' performance and generates social externalities. For example, Chen et al. (2018) perform difference-in-difference analyses and find that China's 2008 CSR mandate increased firms' CSR investing activities. Consequently, profitability of these firms decreased. At the same time, the mandate created social externalities, as cities mostly affected by the disclosure requirement exhibited a drop in wastewater emission levels. Another study of a U.S. mine-safety requirement mandate, provides evidence that firms affected by the new regulation experienced lower worker injuries and raised awareness of safety issues to mutual fund investors (Christensen et al., 2017). However, these firms also showed a reduced labor productivity. In a multi-country study, Ioannou & Serafeim (2017), using propensity score matching and difference-in-difference analysis, find that mandated disclosures are positively linked with increases in firm value post-regulation as reflected in Tobin's Q.

Downar et al. (2021) in their study analyzed the impact of a reporting disclosure mandate of green-house gas (GHG) emissions in the UK. They show that the mandate has real effects as it decreased GHG emissions in the UK without having a negative impact on firm performance. One interesting factor exhibited in their study is that the information about the GHG emissions was already available to the public prior to the mandate. However, once it became mandatory to report these emissions, there was an 8% decrease in output of GHG. Interestingly, their study supports a statement of Drucker (1954): "what gets measured, also gets managed". Similarly, this observation is also supported by Tomar (2022) in the U.S GHG disclosure requirement analysis. The author found a 7.9% drop in real emissions following the mandate and stressed that peer disclosures as well as benchmarking portray a significant role in reporting quality.

Similarly, Fung et. al. (2007) describe the targeted disclosure cycle theory, which states that disclosure of information affects the actions of recipients (stakeholders) and, in turn, leads to real effects in the variables that are being disclosed. Firms, acting in the information providers role, assume a behavior and try to influence the variables in an effort to report more

beneficial figures. Thus, reporting mandates increase transparency for different stakeholders and, in turn, pressure companies' managers to improve the disclosed variables.

Reporting standards and regulations usually come with maturity, administrative burden and a significant tradeoff. This holds for CSR reporting mandates too. However, the promise of benefits resulting from mandating disclosures, in terms of transparency and real effects, leads to more and more of them being implemented.

2.4 European Union's Directive 2014/95/EU

As mentioned earlier, various national governments and multi-national institutions started implementing mandatory disclosure requirements. The European Union Commission released a new Directive 2014/95/EU on November 15th 2014 requiring large Member State's firms to prepare nonfinancial information reports focusing on social and environmental factors. This amendment extends the previous 2013/34/EU Directive (European Union, 2014). Put simply, a firm meets the mandate's criteria if it is publicly traded in any of the European Union exchanges and has on average more than 500 employees during the reported financial year. In addition, the company must hold a minimum of 20 million EUR of assets on its balance sheet or have at least 40 million EUR in annual turnover.

Among the stated goals of the reporting mandate is the facilitation of sufficient comparability among different member state's firms, to provide investors and other stakeholders comprehensive and fair representation of their CRS-related policies, activities, outcomes and risks. Matters to be disclosed include environmental, social and employee-related impacts as well as respect for human rights, anti-corruption and bribery. In addition, a special focus is placed on a disclosing firm's diversity policies: those related to its management and board of directors with regards to their age, gender, educational and professional backgrounds. It is believed that disclosing such information would notify the market of a firm's corporate governance level and result in motivating firms to retain a more diversified board of directors and corporate executives. This statement is also supported in academic research (Fernandez-Feijoo et al., 2012; Amran et al., 2014).

A further goal of the directive is to boost growth, strengthen confidence and reach a similarly high level of social and environmental information transparency across different EU countries. The directive stresses the importance of investors' access to non-financial information as an important milestone towards completing the roadmap to a resource-efficient Europe (European Union, 2014).

The Member States had until December 6th 2016 to prepare the regulatory and administrative environment for this mandate. It meant that necessary laws, legal and administrative settings had to exist for companies to be able to report. The mandate itself came into effect for the financial year 2017 (European Union, 2014). This practically meant that companies had roughly two years to prepare for the mandate since its announcement on November 15th 2014.

The directive also identifies that coordination and alignment is key in CSR activities and reporting, as firms operate in between and throughout countries and industries. A lack of

unifying elements would lead to unnecessary heterogeneity, muddying the waters for stakeholders. It is also important to note that the directive is subject to changes and further reporting requirement introduction as by its nature it is a continuous endeavor (European Union, 2014).

There are a few concern areas with regards to such general disclosure matters. Firstly, there is no universal template; companies can still decide on the contents of reports which makes it hard to generalize and compare them between each other. Although the directive proposes several reporting standards[1] that can be followed, there is no common reporting template that all companies have to use. While this does allow for a greater degree of freedom and potential innovation, it comes at a cost of comparability and utility of CSR reports in the aggregate.

Another issue is that the reporting requirement is not mandatory for all companies. Some companies, near the thresholds, can avoid meeting the criteria by adjusting their number of employees or redistributing their assets among subsidiaries. This behavior is intended to be mitigated by report audits. However, it is important to realize that companies acting in their own self-interest, and uncontrolled by audits may make strategic decisions that run counter to the mandate's intent and therefore reduce or obfuscate the results of analyses like the ones performed in this thesis. Overall, the mandate should be taken as a step towards a more transparent, trustworthy and comparable reporting system among different firms.

As suggested by recent research (Fiechter et al., 2022; Christensen et al., 2021; Grewal et al., 2019), it is important to continually analyze the impact of such disclosures over extended time periods. The current directive and guidelines are in relative infancy and future improvements are both needed and inevitable. As policies take effect, their impacts need to be measured for continual improvements in an effort to maximize effectivity and efficiency. Especially since affected companies are distributed between and across different industries, product types and diverse sets of CSR issues, in an environment where there is currently relatively minimal to no enforcement of the reporting quality.

---

[1] Directive 2014/95/EU indicates these frameworks as suitable for the required disclosure mandate: national frameworks, Eco-Management and Audit Scheme, United Nations (UN) Global Compact, the Guiding Principles on Business and Human Rights, UN "Protect, Respect and Remedy" Framework, the Organization for Economic Co-operation and Development Guidelines for Multinational Enterprises, the International Labor Organization's Tripartite Declaration of principles, The Global Reporting Initiative or other recognized reporting frameworks.

3. Hypothesis development

Considering the existing literature in the field of CSR activities, there is evidence that CSR disclosure mandates generate positive effects on affected firms (Chen et al.,2018; Christensen et al., 2021). As prior research of the EU CSR directive (Fiechter et al., 2022; Grewal et al., 2019) focuses only on the first year after coming into effect, there is a need to further explore what happens later. It is therefore of interest to research whether the CSR disclosure requirements continue to be effective in promoting CSR years after the initial introduction. Since the explicit intention of the directive is to have a positive real effect on CSR and taking into account the literature arguing for a competitive advantage to disclosing and engaging in CSR activities, a positive impact on CSR is expected. Thus, the following hypotheses are formed:

H1: Firms subject to the CSR directive demonstrate sustained positive increases to CSR as compared to those that are not.

H1a: The CSR directive leads to affected firms having continuous growth in CSR Scores.

H1b: The CSR directive leads to affected firms having continuous growth in CSR Reporting Scores.

H1c: The CSR directive leads to affected firms having continuous growth in CSR Infrastructure Scores.

In their study (Fiechter et al., 2022) provide evidence that firms with lower CSR scores prior to the mandate being announced, closed the gap in anticipation of the mandate taking effect. This provides an excellent anchor point from which to examine these firms' behavior in the years thereafter in order to determine if the trend to close the gap continued or not.

H2: The positive effect of the CSR directive on firms' CSR Scores, with low CSR Scores and CRS Reporting Scores pre-directive, is sustained; they continue to close the gap to those which have higher CSR Scores

4. Research design and data

4.1 Data and sample

Data for this research was obtained through Erasmus Data Service Center and collected using the Refinitiv Eikon Thomson Reuters platform interface. The firm characteristics data were collected from the Refinitiv Worldscope database. The Refinitiv ASSET4 database was used to gather CSR-related variables, actions, reporting standards and Environmental Social Governance (ESG) scores. The analyst following data were collected from Refinitiv I/ B/ E/ S section. The data cover an 11-year period; 2011-2013 (three years before the passing of the EU CSR directive), 2014 (the year when directive was announced), 2015-2016 (two preparation years), 2017 (first year directive came into effect) and 2018-2021 (four years after the mandate).

In line with the CSR directive's applicability requirements, firms with at least 500 employees and either a minimum of 20 million EUR of assets or at least 40 million EUR in annual turnover were included in the final sample. The treatment firms were EU28 firms taken from all industries that had balance sheets going back to 2011. Following prior research (Fiechter et al., 2022; Christensen et al., 2017), United States (U.S.) firms are the control group and act as a benchmark for the EU28 firms. The main reasons for this choice are data availability, socio-economic similarities and the fact that similar wide-reaching CSR reporting disclosure mandates are not in effect in the U.S.

Table 1 below provides an overview of the final sample. Panel A shows the consecutive steps that were taken to select the sample for the main analysis. First, firms with fewer than 500 employees for any observations were removed. The second set of restrictions pertain to missing temporal and key variable data; firms which had any of the key variables missing for any of the fiscal years were removed. The final step was to match the EU28 countries with their US counterparts based on firm characteristics (Appendix A), allowing for replacement with a single nearest neighbor, resulting in a final sample size of 4,609 firm-year observations in either category. The final matched dataset consists of 419 and 109 unique firms for the EU28 and U.S. respectively. Panels B, C and D show the distributions of the final sample across time, industry and country. Finally, Panel E shows the means and standard deviations of the outcome and control variables for the matched sample over the full sample period considered in this analysis. It is worth noting that for CSR Activities, Disclosure and Infrastructure, the EU28 firms generally exhibit higher means and lower standard deviations. This is expected, since the intended objective of the mandate was to create real effects that would lead to higher scores in these areas.

Table 1: Sample description

Panel A: sample selection process		
Data selection criteria	**EU Sample**	**US sample**
Start: EU28 and U.S. firms (FY0 to FY-10 with Refinitiv Worldscope available, where number of employees > 499 [Directive 2014/95/EU])	20,706	20,673
Less observations of companies:		
Missing "Balance sheet period end date" data for any of the FY0 to FY-10	(2,109)	(2,274)
Missing "Balance sheet period end date" data for years 2011 to 2021 consecutively	(1,053)	(2,108)
Total Assets data missing or below 20 million EUR for any of the years 2011 to 2021	(110)	(22)
Missing ASSET4 data - environmental / social / governance pillar scores	(10,780)	(8,525)
Sample structure unbalanced based on covariates used in matching	(2,045)	(2,706)
Final sample before matching	4,609	5,038
Final sample after matching	4,609	4,609

Panel B: sample distribution per year												
	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**Total**
EU28 firms	419	419	419	419	419	419	419	419	419	419	419	4,609
U.S. firms	419	419	419	419	419	419	419	419	419	419	419	4,609

Panel C: sample distribution per industry (Fama & French 12 industry classification)				
	EU28 Firms		U.S. Firms	
	Firm-years	Percentage (%)	Firm-years	Percentage (%)
1) Consumer Nondurables	220	4.77	440	9.55
2) Consumer Durables	165	3.58	462	10.03
3) Manufacturing	847	18.38	429	9.31
4) Oil, Gas, and Coal Extraction and Products	165	3.58	66	1.43
5) Chemicals and Allied Products	231	5.01	352	7.64
6) Business Equipment	374	8.11	352	7.64
7) Telephone and Television Transmission	341	7.40	132	2.86
8) Utilities	165	3.58	77	1.67
9) Wholesale, Retail, and Some Services	484	10.50	187	4.06
10) Healthcare, Medical Equipment, and Drugs	275	5.97	242	5.25
11) Finance	231	5.01	341	7.40
12) Other (f. e., Construction, Transportation, Hotels, Entertainment)	1111	24.11	1528	33.16
Total	4,609	100.00	4,609	100.00

Panel D: sample distribution per country				
	EU28 Firms		U.S. Firms	
	Firm-years	Percentage (%)	Firm-years	Percentage (%)
Austria	88	1.91	0	0
Belgium	154	3.34	0	0
Cyprus	11	0.24	0	0
Denmark	143	3.10	0	0
Finland	231	5.01	0	0
France	715	15.51	0	0
Germany	539	11.69	0	0

(Continued)

Table 1: Sample description (continued)

Panel D: sample distribution per country

	EU28 Firms		U.S. Firms	
	Firm-years	Percentage (%)	Firm-years	Percentage (%)
Greece	66	1.43	0	0
Hungary	33	0.72	0	0
Ireland	99	2.15	0	0
Italy	154	3.34	0	0
Luxembourg	33	0.72	0	0
Netherlands	198	4.30	0	0
Poland	88	1.91	0	0
Portugal	44	0.95	0	0
Spain	242	5.25	0	0
Sweden	330	7.16	0	0
United Kingdom	1,441	31.26	0	0
United States of America	0	0.00	4,609	100.00

Panel E: summary statistics for EU28 and U.S companies

	EU28 firms (N = 4,609)		U.S. firms (N = 4,609)	
CSR Activities	**Mean**	**SD**	**Mean**	**SD**
CSR Score	0.62	0.21	0.58	0.20
Environmental Pillar Score	0.59	0.24	0.57	0.24
Social Pillar Score	0.64	0.22	0.58	0.21
CSR Disclosure				
CSR Reporting Score	3.28	1.35	2.71	1.37
CSR Sustainability External Audit	0.60	0.50	0.34	0.48
CSR Sustainability Report Global Activities	0.90	0.31	0.77	0.43
CSR Sustainability Reporting	0.94	0.25	0.87	0.35
OECD Guidelines for Multinational Enterprises	0.25	0.44	0.11	0.31
GRI Report Guidelines	0.60	0.50	0.65	0.48
CSR Infrastructure				
CSR Infrastructure Score	2.22	0.82	1.94	1.04
CSR Sustainability Committee	0.80	0.41	0.72	0.46
Policy Executive Compensation ESG Performance	0.50	0.51	0.44	0.50
CSR Training	0.93	0.27	0.79	0.42

Panel E: summary statistics for EU28 and U.S companies

	EU28 firms (N = 4, 609)		U.S. firms (N = 4, 609)	
Firm specifications	**Mean**	**SD**	**Mean**	**SD**
LN(TQ)	10.91	2.49	10.68	2.55
ROA	0.06	0.06	0.05	0.09
LN(TotalAssets)	22.64	1.45	22.81	1.21
LN(AF)	2.64	0.68	2.78	0.59
Leverage	0.63	0.22	0.67	0.21
CFOA	0.10	0.07	0.08	0.09
Log(FreeFloat)	0.56	0.17	0.58	0.19
Asset Turnover	0.87	0.60	0.76	0.48
PP&E	0.26	0.21	0.22	0.22
Governance Pillar score	0.58	0.22	0.55	0.23

Notes: Propensity score matching (PSM) (STATA function: psmatch2) is used to derive the final sample. The PSM sample is based on all EU28 and U.S. firms that have more than 499 employees and have 20 <= million EUR in assets or 40 <= million EUR in annual turnover. All covariates (excluding ASSET4's governance pillar score since it significantly lowered the matching quality), calculated CSR Score and CSR Reporting Score, industry membership as per FF12, are used as matching criteria. To increase matched sample size, matching with replacement is allowed and a caliper of 0.05 is applied. Following difference-in-difference design (see Fiechter et al., 2022), the matching is performed based on averaged pre-directive (2011-2014) values of the matching variables. All variables are defined in Appendix A.

4.2 Variable description

Some of the variables collected from the databases previously mentioned are directly used, while others are used to calculate measures to be included within the analyses. A full list of variables, definitions and sources is provided in Appendix A. In addition, this paper differs from other papers in the process of how the fiscal years are defined, in order to improve accuracy and veracity (Appendix B, table 1).

The analysis performed in this study relies on the regressions of three main dependent variables and their components. CSR Score is a measure taken by averaging the Social Pillar Score and Environmental Pillar Score. This is a common measure frequently used in academic analyses (Lys et al., 2015; Dai et al., 2021, Fiechter et al., 2022). The before-mentioned pillar scores are a combination of ratings of more than 630 company-level social, environmental and corporate governance data points pertaining to various aspects of sustainability performance. A subset of the 186 most comparable, material and powerful data points are then grouped into 10 categories which are later allocated into the relevant pillar scores.[2]

CSR Reporting Score is another dependent variable indicating the existence and quality of various CSR reports and guidelines chosen by firms in their sustainability reporting submitted annually. It is the sum of the Boolean indicators CSR Report Sustainability, CSR External Audit, CSR Report Global Activity, OECD Report Guidelines and GRI Report Guidelines. As such, it is an integer value (min = 0, max = 5).

Thirdly, Combined Infrastructure Score is also a sum of Boolean indicators (min = 0, max = 3). For each CSR Training, Policy Executive Compensation ESG Performance and CSR Sustainability Committee the score increases by one. CSR Training itself is 1 if any of Environment Management Training, Health & Safety Training or Supplier ESG training are 1. For all Boolean indicators in the raw dataset, it is assumed that a missing value is a 0, this is consistent with Fiechter et al., (2022).

In order to identify the degree of exposure firms had to the directive for the second hypothesis, the CSR Score means were calculated in groups. The observations were grouped by Fama & French 12 industry classification, years and whether they were part of EU28 or U.S.. These were then used to obtain the industry-mean adjusted CSR Scores by subtracting the respective mean from the actual score, to correct for industry-specific bias. "High" exposure was then characterized by those firms which had both industry-mean adjusted CSR Scores and CSR Reporting Scores in the lower 50th percentile. "Low" exposure firms were the remaining observations, where either one or both scores were in the upper 50th percentile.

4.3 Propensity score matching

The matching technique was first introduced by (Rosenbaum & Rubin) in 1983 and has since been widely employed in various types of research. Accounting research often relies on

---

[2] https://www.refinitiv.com/content/dam/marketing/en_us/documents/methodology/refinitiv-esg-scores-methodology.pdf

this method in order to balance samples of data where randomized treatment assignments are not possible. Treatment firms are matched to control firms based on similar pre-event performance (Robinson & Sanderford, 2016). As mentioned earlier, due to data availability and the fact that in the U.S. there is no equivalent mandate to EU CSR directive, the U.S. is used as a control group during matching. This characterizes a unique time period and setting that might change in the near future, as the Securities and Exchange Commission (SEC) in the U.S. are considering introducing new reporting rules with regards to climate-related risks and GHG emissions (McKinsey, 2022).

Adopting this methodology, U.S. and EU firms are matched on industry membership, CSR Score, CSR Reporting Score and other firm distinctive covariates. For example, firm size proxied by total assets, analysts following, percentage of shares in free float, asset turnover, leverage, cashflow from operating activities, return on assets and others (see Appendix A). Prior to performing the propensity score matching all matching variables (see Appendix A) were winsorized at 99% to account for any extreme outliers. A combination of these values is later used in the regression analysis as independent variables.

A noteworthy difference to prior similar analysis performed by Fiechter et al., (2022) who investigate this directive, is that in their study, the year 2013 is defined as the base year and 2014 as the first post mandate year. In this analysis, however, the year 2014 will be categorized as the base year and 2015 as the first post mandate year, since the mandate was announced only on November 15th 2014. It could be argued that there was insufficient time for companies to change their reporting strategies and targets to have already impacted their usual CSR reporting disclosures or activities for 2014. Following this, matching was performed on averaged values from pre-directive 2011-2014 years. Moreover, the matching was performed with replacement and with a single nearest neighbor. The results and covariate balance are provided in Appendix C.

4.4 Regression models

Consistent with prior research (Chen et al., 2018; Ioannou & Serafeim, 2017), data availability for both periods, before and after the mandate, was required, enabling the use of difference-in-difference analysis. This method is used to estimate the effect of the disclosure mandate on the treated firms (EU28) as compared to the control group (U.S.). This estimates whether the CSR Score, CSR Reporting Score and Combined CSR Infrastructure Score are increasing in firms in the subsequent periods.

The difference-in-difference method aims to establish quasi-experimental conditions in order to evaluate the effect of a treatment by comparing a treated group to a similar but untreated one (control) (Abadie, 2010). Its premise is founded on the belief that if it had remained untreated, the treated group would have evolved similarly to the control group. Simply put, the difference between the changes of the outcome variable in the treated group and control group, before and after the treatment took effect is calculated, hence the name. In order to limit biases and inaccuracies, steps are taken to ensure that the samples are similar and that time-dependent, fixed effects and various interfering variables are controlled for in

order to effectively isolate and estimate the treatment effect, ceteris paribus. Mathematically, the method used in this analysis is expressed in Equation (1).

Equation (1):

$$Outcome\ Variable = \beta + \sum \beta_n\ YEAR\ x\ EU_n + \sum \beta_j\ Controls_j + \sum \beta_i\ FixedEffects_i + \varepsilon$$

The outcome variable in the primary analyses is the CSR Score (H1a) and its components, the CSR Reporting Score and its components (H1b) or the Combined CSR Infrastructure Score (H1c) and its components. $YEAR\ x\ EU_n$ is a dummy variable to identify the observations that belonged to the treated group and year, in order to estimate the effect of the treatment. The control variables $Controls_j$ vary depending on the specific regression (see chapter 5), but generally include firm characteristics (Appendix A). $FixedEffects_i$ denote firm fixed effects. Prior research indicates that combination of the fixed effects and addition of well-defined control variables usually works well in mitigating endogeneity (Li et al., 2016).

5. Results

5.1 Hypothesis 1

H1: Firms subject to the CSR directive demonstrate sustained positive increases to CSR as compared to those that are not.

As per the EU CSR directive, the goal of mandated disclosure is to affect real positive change among different firms and countries. By doing so it is expected that companies will generally increase their CSR disclosures and initiatives (European Union, 2014). As such, if the directive was believed to have its intended effect, one would expect there to be a measured positive impact in these areas. The first in a series of analyses, starts by evaluating if firms affected by the CSR directive increase their CSR Score as a response to the mandate.

H1a: The CSR directive leads to affected firms having continuous growth in CSR Scores.

If the CSR directive had a positive sustained impact on affected firms' CSR activities, one would expect the difference-in-difference analysis to show a positive treatment effect of CSR Score when compared to the unaffected (U.S.) firms. However, as can be seen in Table 2, the results are mixed and inconclusive. No significant conclusions can be drawn from regression (1) in which CSR Score does not seem to be impacted by the mandate. As such, H1a is rejected; there is insufficient evidence to support it. When the CSR Score components are considered on their own as dependent variables, we can see that there was some mildly significant positive impact on the Social Pillar Score (3) in 2016 and 2017 (p-value = 0.080 and p-value = 0.038 respectively). However, this effect was not significantly sustained in 2018 to 2021 (p-values > 0.141). The results show that the directive had a negative effect on the Environmental Pillar Score (2) from 2018 to 2021. Specifically, it decreased by 4.7 percentage points in 2018 (p-value = 0.001), 4.1 percentage points in 2019 (p-value = 0.011), 4.5 percentage points in 2020 (p-value = 0.057) and 4.6 percentage points in 2021 (p-value = 0.036) compared to the base year 2014. These unexpected results could be evidence of the U.S. firms catching up faster relative to the EU firms and that it is both cheaper and easier to invest in social CSR activities as opposed to environmental ones.

These results are not consistent with the analysis conducted by Fiechter et al., (2022). Differing sample time frames and different base year selections (2013) could be some of the reasons causing the difference. As mentioned earlier, Fiechter et al., (2022), uses a time frame of 2011-2018 and 2013 as the base year.

Table 2: Effect of the CSR directive on CSR Score of firms

Dependent variable:		(1) CSR Score	(2) Environmental Pillar Score	(3) Social Pillar Score
2011 x EU		-0.010	-0.018	-0.003
		(-0.71)	(-0.72)	(-0.21)
2012 x EU		-0.013	-0.016	-0.011
		(-1.20)	(-0.93)	(-1.22)
2013 x EU		-0.014***	-0.019***	-0.010*
	Announcement of Directive (2014-11-15)	(-3.32)	(-3.52)	(-1.74)
2015 x EU		-0.010	-0.026**	0.005
		(-0.95)	(-2.11)	(0.49)
2016 x EU		0.011	-0.006	0.029*
		(1.08)	(-0.51)	(1.80)
2017 x EU	*Entry into force*	0.003	-0.024	0.031**
		(0.27)	(-1.63)	(2.15)
2018 x EU		-0.012	-0.047***	0.023
		(-1.08)	(-3.47)	(1.50)
2019 x EU		-0.009	-0.041**	0.022
		(-0.70)	(-2.68)	(1.35)
2020 x EU		-0.028	-0.045*	-0.011
		(-1.08)	(-1.95)	(-0.34)
2021 x EU		-0.032	-0.046**	-0.019
		(-1.35)	(-2.17)	(-0.56)
Control variables		Included	Included	Included
Firm fixed effects		Included	Included	Included
Industry x year fixed effects		Included	Included	Included
Adjusted R^2 (within)		0.629	0.508	0.585
N		9,218	9,218	9,218

Notes: this table shows results from difference-in-difference analysis based on Equation 1. The years indicate fiscal / reporting periods. Different CSR score outcomes are taken as dependent variables. Control variables are: LN(Tobin's Q), ROA, LN(TotalAssets), LN(AnalystFollowing), Leverage, Cash flow from operating activities, Log(FreeFloat), Asset Turnover, PP&E, Governance score. Industry fixed effects are based on Fama & French 48 industry classification. All variables are defined in detail in Appendix A. Appendix D contains tabulated control variable estimates; t-statistics are provided in parentheses. *, **, and *** indicate statistical significance levels at the 10%, 5% and 1% respectively. Two-tailed tests and clustered standard errors are used at the industry level.

The second analysis pertains to the CSR Reporting Score (1) to test H1b, as can be seen in Table 3. Columns (2) to (6) show how each individual reporting parameter included within the CSR Reporting Score are affected individually.

H1b: The CSR directive leads to affected firms having continuous growth in CSR Reporting Scores.

The CSR directive did indeed have a positive sustained effect on corporate CSR disclosures starting in the year 2015 (*p*-value = 0.007) immediately after its announcement, where the CSR Reporting Score increased by 0.245 compared to the base year. The effect peaked with an increase of 0.572 in 2017 (*p*-value = 0.001), the year it went into force. In

2018 - 2021 the effect diminished slightly both in estimated coefficient and statistical significance. This is to be expected though, since as more and more firms make improvements and comply with the directive, there are fewer and fewer left who do not and thus the directive's effect will hit a natural limit as the percentage of firms complying maximizes. Therefore, hypothesis H1b can be accepted. This is consistent with Fiechter et al. (2022) who find similar coefficients and significance levels for overlapping sample years.

When looking at the subcomponents, such as CSR Report Sustainability (2), CSR Report Global Activity (4) and GRI Report Guidelines (6), one can see that the CSR directive's effect was immediate, but then waned. For the CSR Report Sustainability, the strongest estimated coefficients are observed in 2016 (p-value = 0.042) and 2017 (p-value = 0.005). The CSR Report Global Activity and GRI Report Guidelines' estimated effects peaked in 2017 (p-value = 0.003 and p-value = 0.010 respectively).

It is interesting to note that the year the mandate came into force, all components were positive and significant. It signals that firms strengthened their reporting landscape in preparation for the start of the CSR directive. This is in line with prior research on the real effects of mandatory CSR reporting (Chen et al., 2018; Christensen et al., 2021), where various stakeholder pressure mechanisms are explored. It could be argued that companies may have anticipated some enforcement or checks of compliance from governing bodies. Overall, the most significantly sustained element of CSR Reporting Score is the CSR External Audit, where the estimated coefficients indicated 11.0 (p-value = 0.007), 12.8 (p-value = 0.012) and 13.6 (p-value = 0.011) percentage point increases in 2017, 2018 and 2019 respectively. This signifies companies' desires to communicate to the capital market that their reports and initiatives are real and backed up. Such behavior is in line with overarching capital market participants' expectations pertaining to such disclosures (McKinsey Sustainability, 2019; Carrots & Sticks, 2020).

A further detail that can be observed in (5) and (6) is that firms adopt different reporting guidelines (GRI and OECD) at different times. GRI seems to have more adopters right after the announcement of the directive and also higher coefficient through all years compared to OECD. According to Carrots & Sticks (2020), GRI reporting guidelines are the most used standards for sustainability reporting worldwide which could explain the sustained effect.

Table 3: Effect of the CSR directive on the CSR disclosures of firms

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	CSR Reporting Score	CSR Report Sustainability	CSR External Audit	CSR Report Global Activity	OECD Report Guidelines	GRI Report Guidelines
2011 x EU	0.021	0.041	-0.064	0.007	-0.009	0.046
	(0.12)	(0.63)	(-1.14)	(0.10)	(-0.31)	(0.64)
2012 x EU	-0.062	0.009	-0.073	-0.019	0.003	0.018
	(-0.34)	(0.16)	(-1.44)	(-0.36)	(0.10)	(0.28)

(Continued)

Table 3: Effect of the CSR directive on the CSR disclosures of firms (continued)

Dependent variable:		(1) CSR Reporting Score	(2) CSR Report Sustainability	(3) CSR External Audit	(4) CSR Report Global Activity	(5) OECD Report Guidelines	(6) GRI Report Guidelines
2012 x EU		-0.062	0.009	-0.073	-0.019	0.003	0.018
		(-0.34)	(0.16)	(-1.44)	(-0.36)	(0.10)	(0.28)
2013 x EU		0.002	0.013	-0.061	0.029	0.021	-0.000
Announcement of the directive (2014-11-15)		(0.02)	(0.37)	(-1.37)	(0.67)	(0.82)	(-0.01)
2015 x EU		0.245***	0.063**	0.049	0.066*	0.009	0.058**
		(2.86)	(2.20)	(1.41)	(1.99)	(0.68)	(2.32)
2016 x EU		0.359**	0.115**	0.040	0.102*	0.013	0.089*
		(2.05)	(2.09)	(1.08)	(1.84)	(0.89)	(1.74)
2017 x EU	*Entry into force*	0.572***	0.114***	0.110***	0.163***	0.038**	0.147**
		(3.51)	(2.96)	(2.83)	(3.21)	(2.09)	(2.69)
2018 x EU		0.412**	0.067**	0.128**	0.047	0.048**	0.122*
		(2.27)	(2.20)	(2.62)	(0.69)	(2.37)	(1.78)
2019 x EU		0.375**	0.037	0.136**	0.001	0.070***	0.131*
		(2.30)	(1.36)	(2.65)	(0.02)	(3.19)	(1.84)
2020 x EU		0.326*	0.033	0.121**	-0.005	0.049	0.129
		(1.96)	(1.11)	(2.23)	(-0.11)	(1.55)	(1.63)
2021 x EU		0.387*	0.052	0.101*	-0.002	0.074**	0.162*
		(1.93)	(0.88)	(1.75)	(-0.04)	(2.35)	(1.69)
Control variables		Included	Included	Included	Included	Included	Included
Firm fixed effects		Included	Included	Included	Included	Included	Included
Industry x year fixed effects		Included	Included	Included	Included	Included	Included
Adjusted R^2 (within)		0.279	0.278	0.185	0.303	0.122	0.152
N		9218	9218	9218	9218	9218	9218

Notes: Appendix E provides this table with tabulated estimates of control variable coefficients; t-statistics are provided in parentheses. *, **, and *** indicate statistical significance levels at the 10%, 5% and 1% respectively. Two-tailed tests and clustered standard errors are used at the industry level.

The third series of regressions concerns H1c and the CSR directive's effect on corporate CSR infrastructure. Here one would expect that, in order to meet the requirements of the mandate, companies would invest in their CSR infrastructure resulting in a measurable impact.

H1c: The CSR directive leads to affected firms having continuous growth in CSR Infrastructure Scores.

An immediate growth in the Combined Infrastructure Score (1), is demonstrated in Table 4, where the estimated effect is an increase of 0.287 (*p*-value = 0.009) as compared to 2014. When the mandate came into effect, firms took strong measures to improve their infrastructure, but there is a lack of evidence for a sustained effect. This could be because once the infrastructure was in place, little more had to be done in terms of improvements.

Interestingly, CSR Training (2) actually decreased by 11.0 percentage points in 2020 (*p*-value = 0.020) and 10.2 percentage points in 2021 (*p*-value = 0.038). This could possibly be the result of restrictions and conflicting priorities due to the Covid-19 pandemic, during which nearly all face-to-face contact trainings and similar activities were shut down. Significant evidence for a positive impact can be seen in the executive compensation policy (3) where it approximately increased by 14.5 (*p*-value = 0.014) and 22.9 (*p*-value = 0.005) percentage points between 2017 and 2020, but not 2021 (*p*-value = 0.105). If the leaders of firms' performances are measured by their CSR impact, their incentivizing forces will translate through the companies' culture to a greater degree. Such effects would not be as directly impacted by pandemic-related restrictions. This analysis finds no statistically significant evidence for an impact on the CSR Sustainability Committee, implying the lack of a link between whether firms had sustainability committees and the CSR directive. Firms which did not have sustainability committees in 2014, were not driven by the directive to add them in later years.

Since there is limited significant evidence for a sustained effect for all post-directive years, H1c must be rejected. However, it is clear that there was a positive effect that may have been diminished due to exogenous effects outside the purview of this study.

Table 4: Effect of the CSR directive on the CSR infrastructure of firms

	(1)	(2)	(3)	(4)
Dependent variable:	Combined Infrastructure Score	CSR Training (Env, H&S and/or SupESG)	Policy Executive Compensation ESG Performance	CSR Sustainability Committee
2011 x EU	0.018	-0.013	0.049	-0.017
	(0.17)	(-0.38)	(0.80)	(-0.39)
2012 x EU	0.012	-0.005	-0.017	0.035
	(0.18)	(-0.18)	(-0.46)	(1.14)
2013 x EU *Announcement of the directive (2014-11-15)*	-0.038	0.000	-0.042*	0.004
	(-1.05)	(0.00)	(-1.77)	(0.21)
2015 x EU	-0.022	-0.040	0.023	-0.005
	(-0.40)	(-1.09)	(0.83)	(-0.18)
2016 x EU	0.173	0.104	0.064	0.006
	(1.58)	(0.92)	(1.29)	(0.17)
2017 x EU *Entry into force*	0.287***	0.092	0.145**	0.050
	(2.72)	(0.81)	(2.56)	(1.26)
2018 x EU	0.259**	0.054	0.152***	0.052
	(2.07)	(0.45)	(2.89)	(1.25)
2019 x EU	0.203*	-0.067	0.211***	0.059
	(1.81)	(-1.17)	(3.34)	(1.30)
2020 x EU	0.176	-0.110**	0.229***	0.057
	(1.44)	(-2.43)	(2.96)	(1.03)
2021 x EU	0.103	-0.102**	0.216	-0.011
	(0.59)	(-2.14)	(1.66)	(-0.15)
Control variables	Included	Included	Included	Included
Firm fixed effects	Included	Included	Included	Included
Industry x year fixed effects	Included	Included	Included	Included
Adjusted R^2 (within)	0.415	0.455	0.3	0.218
N	9,218	9,218	9,218	9,218

Notes: results with tabulated control variable coefficients are provided in Appendix F; t-statistics are provided in parentheses. *, **, and *** indicate statistical significance levels at the 10%, 5% and 1% respectively. Two-tailed tests and clustered standard errors are used at the industry level.

5.2 Hypothesis 2

The second set of analyses concerns itself with those firms especially targeted or affected by the mandate, namely those which did not have high CSR Score and CSR Reporting Score prior to the mandate.

H2: The positive effect of the CSR directive on firms' CSR Scores, with low CSR Scores and CRS Reporting Scores pre-directive, is sustained; they continue to close the gap to those which have higher CSR Scores

In Table 5, one can see how different portions of the treated sample were affected by the mandate. In this analysis the firms were split in two groups along the CSR Score and CSR Reporting Score medians. High exposure firms were defined as those in the lower median for both scores and Low exposure were the rest.

The regression of CSR Score (1) on this split population, does not provide evidence of a measured positive effect on the CSR Scores of the highly exposed, except for 2019 (*p*-value = 0.031). This, mixed with the negative effect seen for the lowly exposed between 2018 and 2021, could be caused by relative increases in the CSR Scores in the U.S. The regressions on the individual scores provide more substantial evidence of mixed effects. Here one can see that the effect on the Social Pillar Score (2) for the highly exposed was indeed positive. Beginning in 2016 an increase of 4.00 percentage points (*p*-value = 0.038) is estimated as compared to the base year 2014. The effect peaks in 2019 at 7.90 percentage points (*p*-value = 0.000), before having insufficient statistical significance in 2020 and 2021. This might be affected by the Covid-19 pandemic, as the Social Pillar Score measure is connected to health, safety and working conditions of the employees[3].

While not directly linked to the hypothesis, it is worth noting that a negative effect of the directive is found for the Environmental Pillar Score (3) on firms with low exposure. This could be the results of various factors, including improvements in the U.S. as well as the relatively costly expense of environmental initiatives (Fiechter et al., 2022). For high exposure firms, there is little significant evidence of an effect, implying that the CSR directive did not urge them to significantly improve their environmental initiatives and practices.

H2 is rejected since the only positive and significant coefficient is found for one of the two components comprising the CSR Scores and it is not sustained. The results are too mixed to convincingly find evidence to support a sustained effect conclusion.

Table 5: Effect of the CSR directive on CSR Score and its components for high and low exposure firms

	(1)		(2)		(3)	
Dependent variable:	CSR Score		Social Pillar Score		Environmental Pillar Score	
2011 x EU x Low Exp.	-0.017	(-1.09)	-0.010	(-0.74)	-0.023	(-0.90)
2011 x EU x High Exp.	-0.001	(-0.08)	0.007	(0.55)	-0.010	(-0.39)

(Continued)

---

[3] https://www.refinitiv.com/content/dam/marketing/en_us/documents/methodology/refinitiv-esg-scores-methodology.pdf

Table 5: Effect of the CSR directive on CSR Score and its components for high and low exposure firms (continued)

Dependent variable:	(1) CSR Score		(2) Social Pillar Score		(3) Environmental Pillar Score	
2012 x EU x Low Exp.	-0.023**	(-2.42)	-0.019**	(-2.30)	-0.026*	(-1.81)
2012 x EU x High Exp.	-0.000	(-0.02)	0.001	(0.11)	-0.002	(-0.08)
2013 x EU x Low Exp.	-0.020***	(-4.13)	-0.017**	(-2.65)	-0.023***	(-3.73)
2013 x EU x High Exp.	-0.008	(-1.27)	-0.000	(-0.01)	-0.015**	(-2.15)
2015 x EU x Low Exp.	-0.011	(-1.01)	0.006	(0.50)	-0.027**	(-2.18)
2015 x EU x High Exp.	-0.009	(-0.75)	0.005	(0.41)	-0.024*	(-1.78)
2016 x EU x Low Exp.	0.006	(0.57)	0.022	(1.40)	-0.011	(-0.99)
2016 x EU x High Exp.	0.020	(1.48)	0.040**	(2.14)	0.001	(0.04)
2017 x EU x Low Exp.	-0.009	(-0.90)	0.013	(0.94)	-0.032**	(-2.36)
2017 x EU x High Exp.	0.024	(1.45)	0.059***	(3.24)	-0.011	(-0.54)
2018 x EU x Low Exp.	-0.034**	(-2.68)	-0.007	(-0.42)	-0.061***	(-4.30)
2018 x EU x High Exp.	0.021	(1.41)	0.066***	(3.49)	-0.025	(-1.38)
2019 x EU x Low Exp.	-0.041***	(-2.78)	-0.017	(-0.95)	-0.066***	(-3.84)
2019 x EU x High Exp.	0.037**	(2.23)	0.079***	(4.06)	-0.005	(-0.29)
2020 x EU x Low Exp.	-0.068**	(-2.40)	-0.052	(-1.45)	-0.083***	(-3.31)
2020 x EU x High Exp.	0.029	(1.09)	0.047	(1.31)	0.011	(0.46)
2021 x EU x Low Exp.	-0.074***	(-2.78)	-0.059	(-1.64)	-0.088***	(-3.95)
2021 x EU x High Exp.	0.027	(1.10)	0.040	(1.19)	0.015	(0.60)
Control variables	Included		Included		Included	
Firm fixed effects	Included		Included		Included	
Industry x year fixed effects	Included		Included		Included	
Adjusted R^2 (within)	0.643		0.597		0.520	
N	9,218		9,218		9,218	
N for Cond. Var. High Exp.	175		175		175	
N for Cond. Var. Low Exp.	244		244		244	

Notes: results with tabulated control variable coefficients are provided in Appendix G; t-statistics are provided in parentheses. *, **, and *** indicate statistical significance levels at the 10%, 5% and 1% respectively. Two-tailed tests and clustered standard errors are used at the industry level.

5.3 Robustness checks

In order to verify the results' validity, two robustness checks were performed. Firstly, following Fiechter et al., (2022), an alternative control group is used to check if the same results hold. It can be argued that companies in the U.S. are impacted by different socio-economic and political forces that are difficult / impossible to control for during matching. Hence, two countries from Europe that are not part of EU28, namely Switzerland and Norway, are used as the control group. A subsample of the original treatment group consists of Germany, Austria, Sweden, Denmark and Finland. These countries are geographic and cultural neighbors to the chosen alternative control countries and should be affected by the same general, political and socio-economic trends. The results are included in Appendix H. The subsample size of 2640 observations is approximately one third of the main sample. In general, for the first set of hypotheses, the same results hold but are less significant. Interestingly, the executive compensation policy does not have any sustained effect in the

CSR infrastructure test. As in the main analysis, H2 is rejected. Noteworthy, is that none of "low" and "high" exposure groups have any significant coefficient estimates.

The second robustness check pertains to stricter matching parameters – matching with no replacement. This resulted in a final sample of 3058 firm-year observations with 139 unique firms in both treatment and control groups. The results of all hypotheses are tabulated in Appendix I. The overall results are in line with the main analysis. For hypothesis H1b the coefficients are higher in value and maintain the highest significance level throughout all post mandate years. Similar to the previous robustness check, "low" and "high" exposure firms from the H2 do not show any coefficients at significant levels.

6. Conclusion and discussion

6.1 Limitations of the study

This study has some limitations which should be taken into account. For one, the results cannot be generalized to the whole population of EU companies as the sample only reflects data from 419 firms. Furthermore, these 419 firms consist of a specific selection of firms based on parameters required for robust statistical analyses. Companies, that grew in the years since the mandate took effect, but were not sufficiently large to be part of the analyzed sample are not included. Moreover, companies that fluctuated around the employee or other applicability criteria are not included as well.

While US firms are very likely the best population to use as a control for EU firms, the matching is not perfect. General trends cannot be fully eliminated, nor can omitted variable bias be fully controlled. There could be various unaccounted for, competing or interfering effects on the outcome variables resulting from localized directives and laws in economies as large as the U.S. and EU. Furthermore, shifts in macroeconomic and exogenous effects resulting from the pandemic could have made the results more ambiguous.

Additionally, for the purpose of the analysis, all EU28 states were included, even though Brexit took place on January 31st 2020. There was a "grace period" where for one year all the laws previously applicable within EU were still in place in the UK, meaning the CSR directive was in effect until January 31st 2021. For the last year of the analysis, UK firms were not explicitly affected by the mandate. They could have strategically decided to divest from their CSR initiatives prematurely, in anticipation of the CSR directive's expiration. However, the option to remove it was rejected since it constitutes a large portion of affected firms (~30%) and omitting the UK would potentially introduce new issues.

6.2 Discussion

The aim of the thesis was to answer the following research question: *Does a widespread CSR reporting mandate provide sustained real effects?* In order to answer this question, multiple analyses were conducted on a propensity score matched sample of EU28 and U.S. firms using a difference-in-difference research design. The treatment group consists of large EU28 companies that meet the EU CRS directive applicability requirements, and the control group included U.S. firms with similar qualifying characteristics. The U.S. was selected as the matching group as there are no nation-wide CSR reporting requirements. The final sample consisted of 4,609 firm year observations in each group (EU28 and U.S.) and covered the fiscal periods from 2011 to 2021.

The results of analysis are inconclusive. On the one hand, insufficient evidence for a sustained positive real CSR effect (H1a) was found. Stronger effects were measured with regards to the CSR infrastructure (H1c), however these fell short of qualifying as sustained, due to waning effects measured in later years. Finally, this study did find sufficient statistical evidence to demonstrate a sustained positive effect on CSR Reporting. This was mostly driven by the adoption of one of the more popular reporting guidelines (GRI or OECD) and the increase of external audit of non-disclosure information. Firms which produced relatively

fewer CSR reports and had lower CSR Scores than their peers prior to the mandate taking effect should have been most impacted by the mandate. However, in the final analysis (H2) a mixed effect was estimated on the CSR Scores of these companies. While there are some positive effects measured for the Social Pillar Score for some years, the CSR Score for this subsample did not show a positive sustained effect as hypothesized.

Overall, this means that the positive effects of the CSR directive, as measured in this thesis are mixed. While there is evidence to support the argument that the directive had clear effects in the years after the CSR directive was announced and came into effect, these effects diminished in later years and were possibly not sustained. One reason for this effect could be the lack of enforcement by the governing authorities.

The European Securities and Markets Authority agency is one of the bodies that reviews how financial and non-financial regulations are being followed in the European Economic Area. In 2021 they examined 711 reports, representing 19% of the total estimated number of listed companies that were required to disclose non-financial information by the CSR directive (European Securities and Markets Authority, 2022). Inspection of these reports led to 72 enforcement actions for the issuers or approximately 10% of the total examined reports. This suggests that there is room for improvement for the governing bodies to increase enforcement and for firms to improve their disclosures.

Additionally, new changes to the CSR directive are being planned by the European Commission for future implementation. The amendment to the directive will introduce mandatory audits of the disclosures and increase the number of affected firms by expanding the applicability criteria (Carrots & Sticks, 2020; European Commission, 2021). This signals that the EU regulators might not have achieved the intended real effects from the initial CSR mandate analyzed in this paper.

6.3 Future research

One challenge of analyzing the CSR directive is that it spans a diverse range of industries, different business models and locations of operation. This can result in significantly distinctive CSR reporting concerns (Fiechter et al., 2022). For instance, manufacturing firms that have production sites in emerging and development economies need to report on carbon and wastewater emissions. Additionally, meal or grocery delivery firms, which generally focus on urban EU cities are required to disclose labor safety and working conditions of their (cyclist) delivery crew. Future research could address this heterogeneity by focusing on certain industries specifically and incorporating hand-collected data pertaining to the contents of the non-disclosure reports issued by firms.

As the topics of CSR and environmental social governance continue to grow in popularity and substance, future research should investigate if more specific reporting requirements emerge not only in the EU, but also in other regions (Asia, U.S, Latin America) and analyze the impact of similar disclosures there. Moreover, in further studies it would be wise to measure CSR reporting in an alternative way as binary values used in this analysis saturate at 1 and cease to demonstrate growth as reporting becomes commonplace. Focusing on the quality, diversity and veracity of CSR reports and their effects on stakeholders would be of

great importance. As the results of this study implied that the CSR directive increased CSR reporting, but not necessarily real effects and that the European Commission intends to address audits in upcoming changes, it would be interesting to investigate the possibility of a causal link between the effect of audits on report quality and real CSR effects.

7. References

Abadie, A. (2010). *Microeconometrics.* London: Palgrave Macmillan.

Amran, A., Lee, S., & Devi, S. (2014). The Influence of Governance Structure and Strategic Corporate Social Responsibility Toward Sustainability Reporting Quality. *Business Strategy and the Environment, 23*, 217-235.

Awaysheh, A., Heron, R. A., Perry, T., & Wilson, J. I. (2020). On the relation between corporate social responsibility and financial performance. *Strategic Management Journal*, 965-987.

Branco, M., & Rodrigues, L. (2006). Corporate Social Responsibility and Resource-Based Perspectives. *Journal of Business Ethics*(69), 111-132.

Byrd, J., Hickman, K., Baker, R., & Cohanier, B. (2016). Corporate Social Responsibility Reporting in Controversial Industries. *International Review of Accounting, Banking & Finance, 8*(2-4), 1-14.

Carroll, A. B. (2008). A history of corporate social responsibility: concepts and practices. In A. Crane, D. Matten, A. McWillians, J. Moon, & D. Siegel (Eds.), *The Oxford Handbook of Corporate Social Responsibility* (pp. 19-46). New York: Oxford University Press.

Carrots & Sticks. (2020). *Sustainability reporting policy: Global trends in disclosure as the ESG agenda goes mainstream.* Carrots & Sticks;. Retrieved from https://www.carrotsandsticks.net/media/zirbzabv/carrots-and-sticks-2020-june2020.pdf

Chen, Y.-C., Hung, M., & Wang, Y. (2018). The effect of mandatory CSR disclosure on firm profitability and social externalities: Evidence from China. *Journal of Accounting and Economics*, 169-190.

Cho, S. J., Chung, C. Y., & Young, J. (2019). Study on the Relationship between CSR and Financial Performance. *sustainability*, 343-369.

Christensen, H., Floyd, E., Liu, L., & Maffett, M. (2017). The real effects of mandated information on social responsibility in financial reports: Evidence from mine-safety records. *Journal of Accounting and Economics*, 284-304.

Christensen, H., Hail, L., & Leuz, C. (2021). Mandatory CSR and sustainability reporting: economic analysis and literature. *Review of Accounting Studies*(26), 1176-1248.

Dai, R., Liang, H., & NG, L. (2021). Socially responsible corporate customers. *Journal of Financial Economics, 142*(2), 598-626.

Downar, B., Ernstberger, J., Reichelstein, S., Schwenen, S., & Zaklan, A. (2021). The impact of carbon disclosure mandates on emissions and financial operating performance. *Review of Accounting Studies*(26), 1137-1175.

Drucker, P. (1954). The practise of management. *Harper Business*.

European Commission. (2021). *Directive of the European Parliament and of the Council amending Directive 2013/34/EU, Directive 2004/109/EC, Directive 2006/43/EC and Regulation (EU) No 537/2014, as regards corporate sustainability reporting.* European Commission. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021PC0189&from=EN

European Securities and Markets Authority. (2022). *2021 Corporate reporting enforcement and regulatory activities.* ESMA. Retrieved from https://www.esma.europa.eu/sites/default/files/library/esma32-63-1249_2021_corporate_reporting_enforcement_and_regulatory_activities.pdf

European Union. (2014, November 15). Directive 2014/95/EU of the European parliament and of the council. *Official Journal of the European Union.*

Fernandez-Feijoo, B., Blanco, S., & Romero, S. (2012). Does Board Gender Composition affect Corporate Social Responsibility Reporting? *International Journal of Business and Social Science, 3*(1), 31-38.

Fiechter, P., Hitz, J.-M., & Lehmann, N. (2022). Real Effects of a Widespread CSR Repoting Mandate: Evidence from the European Union's CSR Directive. *Journal of Accounting Research*, 1499-1549.

Freeman, E. R. (1984). *Strategic Management: A stakeholder approach.* Massachusetts: Pitman Publishing Inc.

Friedman, H., & Heinle, M. (2016). Taste, information, and asset prices: implications for the valuation of CSR. *Review of Accounting Studies*(21), 740-767.

Friedman, M. (1970). The social responsibility of business is to increase its profits. *In Coportate ethics and corporate governance*, 173-178.

Fung, A., Graham, M., & Weil, D. (2007). *Full Disclosure: The Perils and Promise of Transparency.* Cambridge University Press.

Gamerschlag, R., Moller, K., & Verbeeten, F. (2011). Determinants of voluntary CSR disclosure: empirical evidence from Germany. *Review of Managerial Science, 5*, 233-262.

Gatti, L., Seele, P., & Rademacher, L. (2019). Grey zone in - greenwash out. A review of greenwashing research and implications for the voluntary-mandatroy transition of CSR. *International Journal of Corporate Social Responsibility*(4), 1-15.

Godfrey, P., Merrill, C., & Hansen, J. (2009). The relationship between corporate social responsibility and shareholder value: an empirical test of the risk management hypothesis. *Strategic Mangement Journal, 30*(4), 424-445.

Grewal, J., Riedl, E. J., & Sarefeim, G. (2019). Market Reaction to Mandatory Nonfinancial Disclosure. *Management Science*, 3061-3084.

Gulenko, M. (2018). Mandatory CSR reporting—literature review and future developments in Germany. *Sustainability Management Forum, 3*, 3-17.

Ioannou, I., & Serafeim, G. (2017). Consequences of Mandatory Corporate Sustainability Reporting. *Harvard Business School research working paper*, 11-100.

Khojastehpour, M., & Johns, R. (2014). The effect of environmental CSR issues on corporate/brand reputation and corporate profitability. *European Business Review*, 330-339.

Kitzmueller, M., & Shimshack, J. (2012). Economic Perspectives on Corporate Social Responsibility. *Journal of Economic Literature*, 51-84.

Lataoi Agudelo, M., Johannsdottir, L., & Davidsdottir, B. (2019). A literature review of the history and evolution of corporate social responsbility. *International Journal of Coporate Social Responsbility*(4).

Leuz, C., & Wysocki, P. (2016). The Economics of Disclosure and Financial Reporting Regulation: Evidence and Suggestions for Future Research. *Journal of Accounting Research, 54*(2), 525-622.

Li, F., Li, T., & Minor, D. (2016). CEO power, corporate social responsibilty, and firm value: a test of agency theory. *International Journal of Managerial Finance, 12*, 611-628.

Lys, T., Naughton, J., & Wang, C. (2015). Signaling through corporate accountability reporting. *Journal of Accounting and Economics, 60*(1), 56-72.

McKinsey. (2022). Does ESG really matter and why? *McKinsey Quarterly*. Retrieved from https://www.mckinsey.com/capabilities/sustainability/our-insights/does-esg-really-matter-and-why

McKinsey Sustainability. (2019). *More than values: The value-based sustainability reporting that investors want.* McKinsey. Retrieved from https://www.mckinsey.com/capabilities/sustainability/our-insights/more-than-values-the-value-based-sustainability-reporting-that-investors-want

Murphy, P. E. (1978). An evolution: corporate social responsiveness. *University of Michigan Business Review*(November), 20-22.

Porter, M., & Kramer, M. (2006). The Link Between Competitive Advantage and Corporate Social Responsibility. *Harvard Business Review, 84*(12), 78-92.

Review, H. B. (2022). Sustainable Business Went Mainstream in 2021. (A. Winston, Ed.) *Harvard Business Review*. Retrieved from https://hbr.org/2021/12/sustainable-business-went-mainstream-in-2021

Robinson, S., & Sanderford, A. (2016). Green buildings: similar to other premium buildings? *The Journal of Real Estate Finance and Economics, 52*(2), 99-116.

Rosenbaum, P., & Rubin, D. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika, 70*(1), 41-55.

Sheehy, B. (2015). Defining CSR: Problems and Solutions. *Journals of Business Ethics, 131*(3), 625-648.

Story, J., Castanheira, F., & Hartig, S. (2016). Corporate social responsibility and organizational attractiveness: implications for talent management. *Social Responsibility Journal*, 484-505.

Tomar, S. (2022). Greenhouse Gas Disclosure and Emissions Benchmarking. Retrieved from http://ssrn.com/abstract_id=3448904

US SIF. (2020). *Report on US sustainable and impact investing trends.* Retrieved from https://www.ussif.org/files/trends%20report%202020%20executive%20summary.pdf

Walker, K., & Wan, F. (2012). The Harm of Symbolic Actions and Green-Washing: Corporate Actions and Communications on Environmental Performance and Their Financial Implications. *Journals of Bunsiness Ethics*(109), 227-242.

Appendix A – Variable list

Variable group	Variable	Description	Data source
CSR activities	*CSR Score*	Outcome variable based on individual environmental and social pillar scores	Derived by taking an average of 2**
	Environmental Pillar Score	The environmental pillar reflects how well a company avoids environmental risks and capitalizes on environmental opportunities by using best management practices, generating long-term shareholder value. It measures a company's impact nature, including the water, air and land, as well as entire ecosystems (Refinitiv, 2022).	Refinitiv ASSET4
	Social Pillar Score	The social pillar reflects a company's license to operate and its reputation; key factors in generating long-term shareholder value. It measures a company's capacity, using best management practices, to generate loyalty and trust with its customers, workforce and society, by using best management practices (Refinitiv, 2022).	Refinitiv ASSET4
CSR disclosure	*CSR Reporting Score*	Assigns a score of 1, each time any of the following ASSET4 variables have a value of 1: CSR Sustainability External Audit, CSR Sustainability External Audit, CSR Sustainability Report Global Activities, OECD Guidelines for Multinational Enterprises, GRI Report Guidelines. Score has a range between 0 and 4 (0 - low level of CSR reporting, 4- high level of CSR reporting)	Derived based on ASSET4 variables**
	CSR Sustainability External Audit	Assigns (1/0) if firm's CSR/H&S/Sustainability reports are audited	Refinitiv ASSET4
	CSR Sustainability Report Global Activities	Assigns (1/0) if firm's CSR report includes global activities	Refinitiv ASSET4
	CSR Sustainability Reporting	Assigns (1/0) if the company publish a separate CSR/H&S/Sustainability report or publish a section in its annual report on CSR/H&S/Sustainability (web-based information is also considered, if it is updated annually)	Refinitiv ASSET4
	OECD Guidelines for Multinational Enterprises	Assigns (1/0) if firm's CSR report complies with OECD reporting guidelines for multinational enterprises	Refinitiv ASSET4
	GRI Report Guidelines	Assigns (1/0) if firm's CSR report complies with GRI reporting guidelines	Refinitiv ASSET4
CSR Infrastructure	*Combined CSR Infrastructure Score*	Assigns a score of 1 each time any of the following ASSET4 variables have a value of 1: CSR Sustainability Committee, Policy Executive Compensation ESG Performance, CSR Training. Scores range from 0 to 3, indicating low CSR levels for 0 and high CSR levels for 3	Derived based on ASSET4 variables
	CSR Sustainability Committee	Assigns (1/0) if a company has a CSR committee or team	Refinitiv ASSET4
	Policy Executive Compensation ESG Performance	Assigns (1/0) if firm has an ESG performance policy for the executive compensation	Refinitiv ASSET4
	CSR Training	Assigns (1/0) if at least one of the three types of CSR training is in place: 1) Environment Management Training; 2) Health & Safety Training; 3) Supplier ESG training	Refinitiv ASSET4

(Continued)

Variable group	Variable	Description	Data source
Firm characteristics	*LN(TotalAssets)**	Log of fiscal year's total assets	Refinitiv Worldscope**
	Leverage*	Total liabilities divided by total assets	Refinitiv Worldscope**
	Asset Turnover*	Net sales scaled by total assets	Refinitiv Worldscope**
	PP&E*	Property, plant and equipment divided by total assets	Refinitiv Worldscope**
	CFOA*	Cash from operating activities scaled by total assets	Refinitiv Worldscope**
	Log(FreeFloat)*	Log of percentage of shares in free float	Refinitiv Worldscope**
	ROA*	Net income available to common shareholders scaled by total assets	Refinitiv Worldscope**
	LN(TQ)*	Log of market value (Tobin's Q) (Total assets + (number of shares outstanding * Company Market Cap) - Total Equity) divided by total assets	Refinitiv Worldscope**
	LN(AF)*	Log of number of EPS analyst following	Refinitiv I/ B/ E/ S**
	Governance Pillar Score	The corporate governance pillar reflects a company's capacity to control and direct its rights and responsibilities by generating incentives and ensuring checks and balances. By doing so and employing best management practices, long term shareholder value is created. It measures a company's processes and systems, ensuring that its executives and board members act in the best interests of its long-term shareholders (Refinitiv, 2022).	Refinitiv ASSET4

* - Winsorized at a 1% (99%) level.

** - Variables used in matching.

Appendix B – Sample selection process

The data for this thesis was downloaded in December 2022 from Thomson Reuters Refinitiv via Erasmus Data Center. The data was either downloaded directly from the platform or using the Refnitiv Worldscope Excel add-in.

Majority of the data was time series in a format where company (Identifier RIC) was in the first column A and the fiscal years (FY0 to FY-11) was indicated in columns B-M. FY0 was set to be the most recent fiscal period, FY-1 was the period prior to that and so on. In order to transform into a time series data structure where a separate line for each company year combination exists, Excel power query unpivot and transpose functions were used.

Following this, final merged dataset was uploaded to Stata. In Stata, as a first step, companies that did not have 11 consecutive values for the "Balance sheet period end date" variable were dropped. Then, it was evaluated which fiscal year the "Balance sheet period end date" variable belongs to, since companies can have their fiscal reporting years not matching with the calendar year end. I did notice that this point was not addressed in other academic papers. The below table illustrates the approach:

Table 1: Fiscal year assignment

"Balance sheet period end date" as downloaded from Refinitiv	Fiscal year assigned	Fiscal year ID assigned
2021-07-01 to 2022-06-30	2021	FY0
2020-07-01 to 2021-06-30	2020	FY-1
2019-07-01 to 2020-06-30	2019	FY-2
2018-07-01 to 2019-06-30	2018	FY-3
2017-07-01 to 2018-06-30	2017	FY-4
2016-07-01 to 2017-06-30	2016	FY-5
2015-07-01 to 2016-06-30	2015	FY-6
2014-07-01 to 2015-06-30	2014	FY-7
2013-07-01 to 2014-06-30	2013	FY-8
2012-07-01 to 2013-06-30	2012	FY-9
2011-07-01 to 2012-06-30	2011	FY-10

If there were companies where, following this rule, the assigned fiscal years for the 11 periods were not consecutive, a manual check was performed. For example, in one year report was published on July 2, while in all others on June 30th, that would mean that there would be 2 same fiscal years assigned and one year would be missing. All cases with a yearly gap (or double of the same year), manual review was done to check if the company should stay in the sample dataset or should be dropped.

After this, EU Directive 2014/95/EU conditions were checked:

1) Companies that did not have 500 or more employees for all sample years were dropped;
2) Companies that did not have total assets of 20million EUR or more were dropped. (In this case, as total assets was a key variable in the further analysis, a first check was to drop companies if there was any year where "Total Assets" variable data were missing).

Since all of the remaining companies for all firm years had more than 20 million EUR in total assets, the total turnover check (40 million or more EUR) was no longer needed.

As this study depends on data availability with regards to corporate social responsibility variables available in the Refinitiv ASSET4 database, all companies that did not have the environmental / social / governance pillar score data were dropped. These variables (environmental and social pillar scores) were used to calculate the main outcome variable – CSR score.

Appendix C – Propensity score matching and covariate balance

Panel A: Probit model

	(1)		(2)	
Dependent variable:	Indicator variable (1=EU28 sample, 0=U.S sample)			
Sample	Unmatched pre-directive differences (model used to find propensity scores)		Matched pre-directive differences	
CSR score	-0.663	(-1.44)	-0.422	(-1.07)
CSR reporting score	0.770***	(11.42)	0.235***	(4.12)
LN(TQ)	0.088***	(3.07)	-0.013	(-0.53)
ROA	0.822	(0.41)	-1.230	(-0.84)
LN(TotalAssets)	-0.580***	(-9.06)	0.006	(0.11)
LN(AF)	0.201**	(2.11)	-0.213**	(-2.20)
Leverage	-0.115	(-0.35)	-0.761**	(-2.57)
CFOA	-7.438***	(-4.22)	2.412*	(1.94)
Log(FreeFloat)	-4.425***	(-8.15)	-0.382	(-1.23)
Asset Turnover	-0.171	(-1.35)	0.223**	(2.00)
PP&E	-0.792**	(-2.42)	-0.020	(-0.07)
Industry fixed effects	Included		Included	
Pseudo R^2	0.466		0.100	
N	877		838	

Panel B: mean differences

		Mean value		Difference (1) vs. (2)		
Variable used in matching		Treated (1)	Control (2)	Diff. (absolute)		t-stat
CSR score	Unmatched	0.57	0.43	0.14	***	-9.10
CSR score	Matched	0.57	0.52	0.05	***	-3.05
CSR reporting score	Unmatched	3.10	1.38	1.72	***	-17.35
CSR reporting score	Matched	3.10	2.78	0.32	***	-3.50
LN(TQ)	Unmatched	10.85	10.16	0.69	***	-3.90
LN(TQ)	Matched	10.85	11.23	-0.38	**	2.20
ROA	Unmatched	0.06	0.07	-0.01	***	2.75
ROA	Matched	0.06	0.06	0.00		0.80
LN(TotalAssets)	Unmatched	22.57	22.91	-0.34	***	3.75
LN(TotalAssets)	Matched	22.57	22.70	-0.13		1.50
Leverage	Unmatched	0.63	0.63	0.00		0.05
Leverage	Matched	0.63	0.66	-0.03	**	2.30
CFOA	Unmatched	0.09	0.11	-0.02	***	3.70
CFOA	Matched	0.09	0.05	0.04	***	-6.75
Asset Turnover	Unmatched	0.90	0.90	0.00		0.10
Asset Turnover	Matched	0.90	0.79	0.11	***	-2.85
Log(FreeFloat)	Unmatched	0.57	0.66	-0.09	***	12.15
Log(FreeFloat)	Matched	0.57	0.59	-0.02	**	2.35
PP&E	Unmatched	0.25	0.28	-0.03	*	1.65
PP&E	Matched	0.25	0.22	0.03	**	-2.30
LN(AF)	Unmatched	2.65	2.59	0.06		-1.15
LN(AF)	Matched	2.65	2.78	-0.13	***	3.05

Appendix D – Table 2 with tabulated control variables

Table 2: Effects of the CSR directive on CSR Score (and its components) of firms

	(1)	(2)	(3)
Dependent variable:	CSR Score	Environmental Pillar Score	Social Pillar Score
2011 x EU	-0.010	-0.018	-0.003
	(-0.71)	(-0.72)	(-0.21)
2012 x EU	-0.013	-0.016	-0.011
	(-1.20)	(-0.93)	(-1.22)
2013 x EU	-0.014***	-0.019***	-0.010*
	(-3.32)	(-3.52)	(-1.74)
2015 x EU	-0.010	-0.026**	0.005
	(-0.95)	(-2.11)	(0.49)
2016 x EU	0.011	-0.006	0.029*
	(1.08)	(-0.51)	(1.80)
2017 x EU	0.003	-0.024	0.031**
	(0.27)	(-1.63)	(2.15)
2018 x EU	-0.012	-0.047***	0.023
	(-1.08)	(-3.47)	(1.50)
2019 x EU	-0.009	-0.041**	0.022
	(-0.70)	(-2.68)	(1.35)
2020 x EU	-0.028	-0.045*	-0.011
	(-1.08)	(-1.95)	(-0.34)
2021 x EU	-0.032	-0.046**	-0.019
	(-1.35)	(-2.17)	(-0.56)
CSR Reporting Score	0.039***	0.041***	0.037***
	(8.46)	(6.31)	(11.26)
LN(TQ)	0.002	0.002	0.001
	(1.37)	(1.62)	(0.87)
ROA	-0.046	-0.093*	0.001
	(-0.96)	(-1.75)	(0.02)
LN(TotalAssets)	0.040***	0.054***	0.026**
	(5.95)	(8.82)	(2.20)
LN(AF)	0.002	-0.002	0.007
	(0.29)	(-0.21)	(0.86)
Leverage	-0.017	-0.003	-0.031
	(-0.52)	(-0.11)	(-0.51)
CFOA	0.007	0.002	0.012
	(0.14)	(0.03)	(0.24)
Log(FreeFloat)	-0.005	-0.014	0.004
	(-0.21)	(-0.50)	(0.11)
Asset Turnover	0.035***	0.041***	0.030
	(2.75)	(3.41)	(1.57)
PP&E	-0.015	-0.009	-0.020
	(-0.28)	(-0.16)	(-0.28)
Governance Pillar score	0.047**	0.067***	0.027
	(2.65)	(4.02)	(1.11)
Firm fixed effects	Included	Included	Included
Industry x year fixed effects	Included	Included	Included
Adjusted R^2 (within)	0.629	0.508	0.585
N	9,218	9,218	9,218

*, **, and *** indicate statistical significance levels at the 10%, 5% and 1% respectively. Two-tailed tests and clustered standard errors are used at the industry level; t-statistics are provided in parentheses.

Appendix E – Table 3 with tabulated control variable estimate

Table 3: Effect of the CSR directive on the CSR disclosures of firms (with tabulated control variables)

Dependent variable:	(1) CSR Reporting Score	(2) CSR Report Sustainability	(3) CSR External Audit	(4) CSR Report Global Activity	(5) OECD Report Guidelines	(6) GRI Report Guidelines
2011 x EU	0.021	0.041	-0.064	0.007	-0.009	0.046
	(0.12)	(0.63)	(-1.14)	(0.10)	(-0.31)	(0.64)
2012 x EU	-0.062	0.009	-0.073	-0.019	0.003	0.018
	(-0.34)	(0.16)	(-1.44)	(-0.36)	(0.10)	(0.28)
2013 x EU Announcement of the directive (2014-11-15)	0.002	0.013	-0.061	0.029	0.021	-0.000
	(0.02)	(0.37)	(-1.37)	(0.67)	(0.82)	(-0.01)
2015 x EU	0.245***	0.063**	0.049	0.066*	0.009	0.058**
	(2.86)	(2.20)	(1.41)	(1.99)	(0.68)	(2.32)
2016 x EU	0.359**	0.115**	0.040	0.102*	0.013	0.089*
	(2.05)	(2.09)	(1.08)	(1.84)	(0.89)	(1.74)
2017 x EU Entry-into force	0.572***	0.114***	0.110***	0.163***	0.038**	0.147**
	(3.51)	(2.96)	(2.83)	(3.21)	(2.09)	(2.69)
2018 x EU	0.412**	0.067**	0.128**	0.047	0.048**	0.122*
	(2.27)	(2.20)	(2.62)	(0.69)	(2.37)	(1.78)
2019 x EU	0.375**	0.037	0.136**	0.001	0.070***	0.131*
	(2.30)	(1.36)	(2.65)	(0.02)	(3.19)	(1.84)
2020 x EU	0.326*	0.033	0.121**	-0.005	0.049	0.129
	(1.96)	(1.11)	(2.23)	(-0.11)	(1.55)	(1.63)
2021 x EU	0.387*	0.052	0.101*	-0.002	0.074**	0.162*
	(1.93)	(0.88)	(1.75)	(-0.04)	(2.35)	(1.69)
LN(TQ)	-0.022	-0.006	-0.000	-0.011**	0.000	-0.005
	(-1.36)	(-1.38)	(-0.04)	(-2.42)	(0.13)	(-0.71)
ROA	-0.188	-0.122	0.010	-0.076	-0.033	0.033
	(-0.31)	(-0.81)	(0.05)	(-0.42)	(-0.38)	(0.14)
LN(TotalAssets)	0.149	0.029	0.025	0.102***	0.006	-0.014
	(1.36)	(0.81)	(0.57)	(2.94)	(0.29)	(-0.37)
LN(AF)	0.037	0.005	0.034	-0.022	0.011	0.009
	(0.29)	(0.20)	(0.96)	(-0.55)	(0.92)	(0.20)
Leverage	-0.343	-0.072	-0.062	-0.125	-0.038	-0.047
	(-0.87)	(-0.97)	(-0.42)	(-1.51)	(-0.93)	(-0.29)
CFOA	-0.818**	-0.255*	-0.179	-0.185	0.130	-0.330**
	(-2.23)	(-1.97)	(-1.43)	(-1.15)	(1.03)	(-2.14)
Log(FreeFloat)	0.162	0.017	-0.144	0.160	0.010	0.119
	(0.31)	(0.11)	(-1.38)	(0.99)	(0.14)	(0.76)
Asset Turnover	0.131	0.050	-0.009	0.136**	-0.021	-0.026
	(0.83)	(1.12)	(-0.11)	(2.51)	(-0.54)	(-0.46)

(Continued)

Dependent variable:	(1) CSR Reporting Score	(2) CSR Report Sustainability	(3) CSR External Audit	(4) CSR Report Global Activity	(5) OECD Report Guidelines	(6) GRI Report Guidelines
PP&E	-0.179	0.070	-0.319**	0.081	-0.087	0.075
	(-0.46)	(0.72)	(-2.22)	(0.62)	(-0.73)	(0.55)
Governance Pillar score	0.950***	0.131**	0.209***	0.266***	0.045	0.300***
	(4.40)	(2.06)	(4.40)	(3.18)	(0.81)	(3.45)
Firm fixed effects	Included	Included	Included	Included	Included	Included
Industry x year fixed effects	Included	Included	Included	Included	Included	Included
Adjusted R^2 (within)	0.279	0.278	0.185	0.303	0.122	0.152
N	9218	9218	9218	9218	9218	9218

Notes: this table shows results from difference-in-difference analysis based on Equation 1. The years indicate fiscal / reporting periods. Different CSR reporting outcomes are taken as the dependent variables. Control variables are: LN(Tobin's Q), ROA, LN(TotalAssets), LN(AnalystFollowing), Leverage, Cash flow from operating activities, Log(FreeFloat), Asset Turnover, PP&E, Governance score. All variables are defined in detail in Appendix A.

*, **, and *** indicate statistical significance levels at the 10%, 5% and 1% respectively. Two-tailed tests and clustered standard errors are used at the industry level; t-statistics are provided in parentheses.

Appendix F – Table 4 with tabulated control variable estimate

Table 4: Effect of the CSR directive on the CSR infrastructure of firms

Dependent variable:	(1) Combined Infrastructure Score	(2) CSR Training (Env, H&S, and/or SupESG)	(3) Policy Executive Compensation ESG Performance	(4) CSR Sustainability Committee
2011 x EU	0.018	-0.013	0.049	-0.017
	(0.17)	(-0.38)	(0.80)	(-0.39)
2012 x EU	0.012	-0.005	-0.017	0.035
	(0.18)	(-0.18)	(-0.46)	(1.14)
2013 x EU *Announcement*	-0.038	0.000	-0.042*	0.004
of the directive (2014-11-15)	(-1.05)	(0.00)	(-1.77)	(0.21)
2015 x EU	-0.022	-0.040	0.023	-0.005
	(-0.40)	(-1.09)	(0.83)	(-0.18)
2016 x EU	0.173	0.104	0.064	0.006
	(1.58)	(0.92)	(1.29)	(0.17)
2017 x EU *Entry into force*	0.287***	0.092	0.145**	0.050
	(2.72)	(0.81)	(2.56)	(1.26)
2018 x EU	0.259**	0.054	0.152***	0.052
	(2.07)	(0.45)	(2.89)	(1.25)
2019 x EU	0.203*	-0.067	0.211***	0.059
	(1.81)	(-1.17)	(3.34)	(1.30)
2020 x EU	0.176	-0.110**	0.229***	0.057
	(1.44)	(-2.43)	(2.96)	(1.03)
2021 x EU	0.103	-0.102**	0.216	-0.011
	(0.59)	(-2.14)	(1.66)	(-0.15)
LN(TQ)	0.005	-0.002	0.006	0.001
	(0.98)	(-0.45)	(1.50)	(0.49)
ROA	0.501	0.242	0.104	0.154
	(1.08)	(1.01)	(0.42)	(0.85)
LN(TotalAssets)	0.208***	0.096**	0.057	0.054
	(4.22)	(2.53)	(1.19)	(1.66)
LN(AF)	-0.116***	-0.062**	-0.030	-0.024
	(-3.35)	(-2.42)	(-1.04)	(-0.86)
Leverage	0.005	0.038	-0.084	0.051
	(0.03)	(0.29)	(-0.59)	(0.52)
OCFA (winsorized)	-0.352	-0.173	-0.212	0.033
	(-0.73)	(-0.60)	(-0.90)	(0.20)
Log(FreeFloat)	-0.021	0.031	0.087	-0.139*
	(-0.11)	(0.61)	(0.60)	(-1.77)
Asset Turnover	0.018	0.068	0.014	-0.065
	(0.18)	(1.11)	(0.20)	(-0.97)
PP&E	-0.051	0.032	-0.073	-0.009
	(-0.15)	(0.22)	(-0.48)	(-0.05)
Governance Pillar Score	0.553***	0.149***	0.190***	0.214***
	(4.68)	(2.85)	(2.79)	(4.54)
Firm fixed effects	Included	Included	Included	Included
Industry x year fixed effects	Included	Included	Included	Included
Adjusted R^2 (within)	0.415	0.455	0.3	0.218
N	9,218	9,218	9,218	9,218

*, **, and *** indicate statistical significance levels at the 10%, 5% and 1% respectively. Two-tailed tests and clustered standard errors are used at the industry level; t-statistics are provided in parentheses.

Appendix G – Table 5 with tabulated control variable estimate

Table 5: Effect of the CSR directive on CSR Score and its components for high and low exposure firms

	(1)		(2)		(3)	
Dependent variable:	CSR Score		Social Pillar Score		Environmental Pillar Score	
2011 x EU x Low Exp.	-0.017	(-1.09)	-0.010	(-0.74)	-0.023	(-0.90)
2011 x EU x High Exp.	-0.001	(-0.08)	0.007	(0.55)	-0.010	(-0.39)
2012 x EU x Low Exp.	-0.023**	(-2.42)	-0.019**	(-2.30)	-0.026*	(-1.81)
2012 x EU x High Exp.	-0.000	(-0.02)	0.001	(0.11)	-0.002	(-0.08)
2013 x EU x Low Exp.	-0.020***	(-4.13)	-0.017**	(-2.65)	-0.023***	(-3.73)
2013 x EU x High Exp.	-0.008	(-1.27)	-0.000	(-0.01)	-0.015**	(-2.15)
2015 x EU x Low Exp.	-0.011	(-1.01)	0.006	(0.50)	-0.027**	(-2.18)
2015 x EU x High Exp.	-0.009	(-0.75)	0.005	(0.41)	-0.024*	(-1.78)
2016 x EU x Low Exp.	0.006	(0.57)	0.022	(1.40)	-0.011	(-0.99)
2016 x EU x High Exp.	0.020	(1.48)	0.040**	(2.14)	0.001	(0.04)
2017 x EU x Low Exp.	-0.009	(-0.90)	0.013	(0.94)	-0.032**	(-2.36)
2017 x EU x High Exp.	0.024	(1.45)	0.059***	(3.24)	-0.011	(-0.54)
2018 x EU x Low Exp.	-0.034**	(-2.68)	-0.007	(-0.42)	-0.061***	(-4.30)
2018 x EU x High Exp.	0.021	(1.41)	0.066***	(3.49)	-0.025	(-1.38)
2019 x EU x Low Exp.	-0.041***	(-2.78)	-0.017	(-0.95)	-0.066***	(-3.84)
2019 x EU x High Exp.	0.037**	(2.23)	0.079***	(4.06)	-0.005	(-0.29)
2020 x EU x Low Exp.	-0.068**	(-2.40)	-0.052	(-1.45)	-0.083***	(-3.31)
2020 x EU x High Exp.	0.029	(1.09)	0.047	(1.31)	0.011	(0.46)
2021 x EU x Low Exp.	-0.074***	(-2.78)	-0.059	(-1.64)	-0.088***	(-3.95)
2021 x EU x High Exp.	0.027	(1.10)	0.040	(1.19)	0.015	(0.60)
Combined CSR Reporting Score	0.036***	(7.99)	0.033***	(10.90)	0.038***	(5.97)
LN(TQ)	0.002	(1.43)	0.001	(0.89)	0.002	(1.66)
ROA	-0.026	(-0.57)	0.023	(0.40)	-0.074	(-1.52)
LN(TotalAssets)	0.038***	(5.71)	0.023*	(1.97)	0.053***	(8.99)
LN(AF)	0.004	(0.39)	0.009	(0.99)	-0.001	(-0.11)
Leverage	-0.016	(-0.51)	-0.031	(-0.50)	-0.002	(-0.08)
OCFA	0.011	(0.22)	0.017	(0.33)	0.004	(0.07)
Log(FreeFloat)	0.002	(0.11)	0.012	(0.32)	-0.007	(-0.28)
Asset Turnover	0.034***	(2.88)	0.028	(1.57)	0.040***	(3.46)
PP&E	-0.023	(-0.44)	-0.029	(-0.40)	-0.017	(-0.30)
Governance Pillar Score	0.045**	(2.69)	0.026	(1.09)	0.065***	(4.09)
Firm fixed effects	Incl.		Incl.		Incl.	
Industry x year fixed effects	Incl.		Incl.		Incl.	
Adjusted R^2 (within)	0.643		0.597		0.520	
N	9,218		9,218		9,218	
N for Cond. Var. High Exp.	175		175		175	
N for Cond. Var. Low Exp.	244		244		244	

*, **, and *** indicate statistical significance levels at the 10%, 5% and 1% respectively. Two-tailed tests and clustered standard errors are used at the industry level; t-statistics are provided in parentheses.

Appendix H – Robustness checks – alternative control group

Table 1: Effects of the CSR directive on CSR Score (and its components) of firms (subsample)

	(1)		(2)		(3)	
Dependent variable:	CSR Score		Social Pillar Score		Environmental Pillar Score	
2011 x EU Subsample	0.012	(0.62)	0.033*	(2.02)	-0.008	(-0.20)
2012 x EU Subsample	0.001	(0.03)	0.012	(0.44)	-0.011	(-0.39)
2013 x EU Subsample	-0.013	(-1.54)	0.001	(0.04)	-0.026	(-1.18)
2015 x EU Subsample	0.004	(0.26)	0.007	(0.38)	0.001	(0.03)
2016 x EU Subsample	0.017	(1.05)	0.009	(0.30)	0.025*	(1.72)
2017 x EU Subsample	0.012	(0.56)	0.003	(0.09)	0.022	(0.89)
2018 x EU Subsample	0.003	(0.13)	0.024	(0.92)	-0.018	(-0.86)
2019 x EU Subsample	-0.005	(-0.18)	0.013	(0.35)	-0.023	(-0.85)
2020 x EU Subsample	-0.004	(-0.15)	0.011	(0.36)	-0.019	(-0.60)
2021 x EU Subsample	-0.012	(-0.34)	-0.003	(-0.09)	-0.020	(-0.44)
Control variables	Included		Included		Included	Included
Firm fixed effects	Included		Included		Included	Included
Industry x year fixed effects	Included		Included		Included	Included
Adjusted R^2 (within)	0.684		0.649		0.541	
N	2,640		2,640		2,640	

*, **, and *** indicate statistical significance levels at the 10%, 5% and 1% respectively. Two-tailed tests and clustered standard errors are used at the industry level; t-statistics are provided in parentheses.

Table 2: Effect of the CSR directive on the CSR disclosures of firms (subsample)

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	CSR Reporting Score	CSR Report Sustainability	CSR External Audit	CSR Report Global Activity	OECD Report Guidelines	GRI Report Guidelines
2011 x EU Subsample	-0.482*	-0.064	-0.116***	-0.119*	-0.038	-0.145**
	(-1.88)	(-0.54)	(-3.17)	(-1.91)	(-0.93)	(-2.71)
2012 x EU Subsample	-0.265**	-0.035	-0.070**	-0.117*	0.023	-0.066*
	(-2.08)	(-1.17)	(-2.22)	(-1.75)	(0.39)	(-1.89)
2013 x EU Subsample	0.024	-0.010	0.049	-0.076	0.042	0.020
	(0.22)	(-0.87)	(1.03)	(-1.20)	(0.81)	(0.79)
2015 x EU Subsample	0.131*	0.033**	0.036	0.025	0.027	0.010
	(1.88)	(2.11)	(0.99)	(1.06)	(0.65)	(0.31)
2016 x EU Subsample	0.187	0.006	0.087**	0.016	0.001	0.076
	(1.37)	(0.11)	(2.25)	(0.26)	(0.03)	(1.26)
2017 x EU Subsample	0.255	0.008	0.158**	-0.015	-0.055	0.159
	(0.84)	(0.14)	(2.14)	(-0.23)	(-0.56)	(1.25)
2018 x EU Subsample	0.425	0.001	.237***	-0.031	0.081*	0.136
	(1.39)	(0.02)	(4.57)	(-0.38)	(1.77)	(0.94)

(Continued)

Dependent variable:	(1) CSR Reporting Score	(2) CSR Report Sustainability	(3) CSR External Audit	(4) CSR Report Global Activity	(5) OECD Report Guidelines	(6) GRI Report Guidelines
2018 x EU Subsample	0.425	0.001	0.237***	-0.031	0.081*	0.136
	(1.39)	(0.02)	(4.57)	(-0.38)	(1.77)	(0.94)
2019 x EU Subsample	0.341	-0.021	0.284***	-0.091	0.089*	0.079
	(1.10)	(-0.27)	(3.74)	(-1.10)	(1.96)	(0.55)
2020 x EU Subsample	0.132	-0.035	0.320***	-0.121	0.054	-0.086
	(0.48)	(-0.47)	(4.63)	(-1.46)	(1.12)	(-0.95)
2021 x EU Subsample	0.063	-0.022	0.215**	-0.111	0.109*	-0.128
	(0.20)	(-0.27)	(2.42)	(-1.19)	(1.86)	(-1.31)
Control variables	Included	Included	Included	Included	Included	Included
Firm fixed effects	Included	Included	Included	Included	Included	Included
Industry x year fixed effects	Included	Included	Included	Included	Included	Included
Adjusted R^2 (within)	0.405	0.356	0.363	0.264	0.253	0.370
N	2,640	2,640	2,640	2,640	2,640	2,640

*, **, and *** indicate statistical significance levels at the 10%, 5% and 1% respectively. Two-tailed tests and clustered standard errors are used at the industry level; t-statistics are provided in parentheses.

Table 3: Effect of the CSR directive on the CSR infrastructure of firms (subsample)

Dependent variable:	(1) Combined Infrastructure Score	(2) CSR Training (Env, H&S and/or SupESG)	(3) Policy Executive Compensation ESG Performance	(4) CSR Sustainability Committee
2011 x EU Subsample	0.065	0.036	0.033	-0.004
	(0.63)	(0.79)	(0.46)	(-0.09)
2012 x EU Subsample	0.008	0.034	0.003	-0.029
	(0.10)	(0.81)	(0.06)	(-1.06)
2013 x EU Subsample	0.052	0.069**	0.005	-0.022
	(0.70)	(2.21)	(0.11)	(-0.64)
2015 x EU Subsample	0.013	-0.057	0.094**	-0.024
	(0.18)	(-0.99)	(2.23)	(-0.49)
2016 x EU Subsample	0.021	-0.043	0.092	-0.029
	(0.20)	(-0.68)	(1.41)	(-0.45)
2017 x EU Subsample	-0.015	-0.014	0.005	-0.007
	(-0.11)	(-0.20)	(0.06)	(-0.10)
2018 x EU Subsample	0.002	-0.029	0.035	-0.004
	(0.01)	(-0.39)	(0.32)	(-0.06)
2019 x EU Subsample	-0.015	0.005	0.019	-0.039
	(-0.08)	(0.06)	(0.14)	(-0.42)
2020 x EU Subsample	0.026	0.012	-0.020	0.035
	(0.16)	(0.15)	(-0.15)	(0.42)
2021 x EU Subsample	0.082	0.036	0.024	0.022
	(0.36)	(0.50)	(0.15)	(0.22)
Control variables	Included	Included	Included	Included
Firm fixed effects	Included	Included	Included	Included
Industry x year fixed effects	Included	Included	Included	Included
Adjusted R^2 (within)	0.479	0.323	0.415	0.312
N	2,640	2,640	2,640	2,640

*, **, and *** indicate statistical significance levels at the 10%, 5% and 1% respectively. Two-tailed tests and clustered standard errors are used at the industry level; t-statistics are provided in parentheses.

Table 4: Effect of the CSR directive on CSR Score and its components for high and low exposure firms (subsample)

	(1)		(2)		(3)	
Dependent variable:	CSR Score		Social Pillar Score		Environmental Pillar Score	
2011 x EU x Low Exp. Subsample	0.016	(0.99)	0.044**	(2.62)	-0.012	(-0.35)
2011 x EU x High Exp. Subsample	-0.000	(-0.01)	0.005	(0.22)	-0.006	(-0.11)
2012 x EU x Low Exp. Subsample	-0.005	(-0.25)	0.016	(0.53)	-0.026	(-0.95)
2012 x EU x High Exp. Subsample	0.007	(0.30)	0.001	(0.04)	0.013	(0.38)
2013 x EU x Low Exp. Subsample	-0.016*	(-1.82)	0.002	(0.07)	-0.033	(-1.66)
2013 x EU x High Exp. Subsample	-0.006	(-0.46)	0.001	(0.07)	-0.013	(-0.47)
2015 x EU x Low Exp. Subsample	0.009	(0.50)	0.012	(0.52)	0.005	(0.37)
2015 x EU x High Exp. Subsample	-0.003	(-0.16)	0.000	(0.01)	-0.006	(-0.25)
2016 x EU x Low Exp. Subsample	0.019	(1.15)	0.019	(0.63)	0.019	(1.66)
2016 x EU x High Exp. Subsample	0.015	(0.68)	-0.005	(-0.12)	0.035	(1.31)
2017 x EU x Low Exp. Subsample	0.002	(0.10)	-0.004	(-0.11)	0.009	(0.41)
2017 x EU x High Exp. Subsample	0.033	(1.36)	0.019	(0.53)	0.047	(1.36)
2018 x EU x Low Exp. Subsample	-0.015	(-0.75)	0.004	(0.16)	-0.034	(-1.61)
2018 x EU x High Exp. Subsample	0.038	(1.33)	0.062*	(1.85)	0.013	(0.40)
2019 x EU x Low Exp. Subsample	-0.031	(-1.04)	-0.017	(-0.40)	-0.046	(-1.57)
2019 x EU x High Exp. Subsample	0.045	(1.24)	0.070	(1.66)	0.021	(0.53)
2020 x EU x Low Exp. Subsample	-0.034	(-1.20)	-0.020	(-0.53)	-0.048	(-1.41)
2020 x EU x High Exp. Subsample	0.051	(1.43)	0.069	(1.69)	0.033	(0.76)
2021 x EU x Low Exp. Subsample	-0.046	(-1.19)	-0.037	(-0.81)	-0.055	(-1.14)
2021 x EU x High Exp. Subsample	0.050	(1.12)	0.058	(1.35)	0.043	(0.74)
Control variables	Incl.		Incl.		Incl.	
Firm fixed effects	Incl.		Incl.		Incl.	
Industry x year fixed effects	Incl.		Incl.		Incl.	
Adjusted R^2 (within)	0.700		0.664		0.551	
N	2,640		2,640		2,640	
N for Cond. Var. High Exp.	175		175		175	
N for Cond. Var. Low Exp.	244		244		244	

*, **, and *** indicate statistical significance levels at the 10%, 5% and 1% respectively. Two-tailed tests and clustered standard errors are used at the industry level; t-statistics are provided in parentheses.

Appendix I – Robustness checks – matching without replacement

Table 1: Effects of the CSR directive on CSR Score of firms (matching without replacement)

	(1)	(2)	(3)
Dependent variable:	CSR Score	Environmental Pillar Score	Social Pillar Score
2011 x EU	-0.018*	-0.006	-0.029**
	(-1.72)	(-0.50)	(-2.18)
2012 x EU	-0.015	-0.008	-0.022**
	(-1.51)	(-0.67)	(-2.16)
2013 x EU	-0.016**	-0.011	-0.021**
	(-2.61)	(-1.43)	(-2.60)
2015 x EU	-0.012	-0.026**	0.002
	(-1.25)	(-2.41)	(0.16)
2016 x EU	-0.000	-0.026	0.025*
	(-0.03)	(-1.43)	(1.90)
2017 x EU	0.000	-0.029	0.029*
	(0.01)	(-1.06)	(1.75)
2018 x EU	-0.015	-0.053**	0.023
	(-0.86)	(-2.26)	(1.62)
2019 x EU	-0.000	-0.029	0.028
	(-0.03)	(-1.46)	(1.64)
2020 x EU	-0.000	-0.023	0.022
	(-0.01)	(-1.03)	(1.40)
2021 x EU	-0.000	-0.017	0.017
	(-0.01)	(-0.84)	(1.10)
Control variables	Included	Included	Included
Firm fixed effects	Included	Included	Included
Industry x year fixed effects	Included	Included	Included
Adjusted R^2 (within)	0.538	0.365	0.509
N	3,058	3,058	3,058

*, **, and *** indicate statistical significance levels at the 10%, 5% and 1% respectively. Two-tailed tests and clustered standard errors are used at the industry level; t-statistics are provided in parentheses.

Table 2: Effect of the CSR directive on the CSR disclosure of firms (matching without replacement)

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	CSR Reporting Score	CSR Report Sustainability	CSR External Audit	CSR Report Global Activity	OECD Report Guidelines	GRI Report Guidelines
2011 x EU	0.043	-0.022	0.039	-0.030	-0.015	0.070
	(0.26)	(-0.35)	(0.64)	(-0.56)	(-1.20)	(1.39)
2012 x EU	-0.038	-0.032	-0.011	-0.054	-0.011	0.071
	(-0.23)	(-0.55)	(-0.23)	(-1.08)	(-0.68)	(1.40)
2013 x EU Announcement	-0.070	-0.038	-0.019	-0.023	-0.004	0.014
of the directive (2014-11-15)	(-0.62)	(-1.10)	(-0.59)	(-0.58)	(-0.24)	(0.41)

(Continued)

Dependent variable:		(1) CSR Reporting Score	(2) CSR Report Sustainability	(3) CSR External Audit	(4) CSR Report Global Activity	(5) OECD Report Guidelines	(6) GRI Report Guidelines
2015 x EU		0.351***	0.091**	0.077***	0.081*	0.015	0.087**
		(3.42)	(2.42)	(2.70)	(1.85)	(0.62)	(2.32)
2016 x EU		0.488***	0.141***	0.080*	0.122**	0.017	0.128**
		(3.80)	(3.45)	(1.78)	(2.66)	(0.73)	(2.56)
2017 x EU	Entry-into force	0.748***	0.180***	0.158***	0.173***	0.044	0.193***
		(4.26)	(3.10)	(3.20)	(2.78)	(1.30)	(3.53)
2018 x EU		0.703***	0.172***	0.173***	0.164**	0.034	0.160***
		(4.23)	(3.39)	(2.82)	(2.60)	(0.81)	(2.79)
2019 x EU		0.521***	0.095*	0.123*	0.103**	0.040	0.160**
		(2.92)	(1.89)	(1.86)	(2.04)	(1.04)	(2.43)
2020 x EU		0.447***	0.092*	0.101	0.052	0.035	0.166**
		(2.88)	(1.86)	(1.58)	(1.35)	(0.81)	(2.40)
2021 x EU		0.459***	0.080	0.054	0.064	0.087*	0.174**
		(2.90)	(1.65)	(0.85)	(1.61)	(1.86)	(2.45)
Control variables		Included	Included	Included	Included	Included	Included
Firm fixed effects		Included	Included	Included	Included	Included	Included
Industry x year fixed effects		Included	Included	Included	Included	Included	Included
Adjusted R2 (within)		0.246	0.167	0.140	0.131	0.133	0.122
N		3,058	3,058	3,058	3,058	3,058	3,058

*, **, and *** indicate statistical significance levels at the 10%, 5% and 1% respectively. Two-tailed tests and clustered standard errors are used at the industry level; t-statistics are provided in parentheses.

Table 3: Effect of the CSR directive on the CSR infrastructure of firms (matching without replacement)

Dependent variable:		(1) Combined Infrastructure Score	(2) CSR Training (Env + H&S + SupESG)	(3) Policy Executive Compensation ESG Performance	(4) CSR Sustainability Committee
2011 x EU		0.080	0.012	0.053	0.016
		(1.17)	(0.39)	(1.33)	(0.41)
2012 x EU		0.008	0.010	-0.015	0.013
		(0.13)	(0.34)	(-0.45)	(0.44)
2013 x EU	*Announcement of the directive (2014-11-15)*	-0.044	0.010	-0.031	-0.024
		(-0.99)	(0.35)	(-1.15)	(-0.93)
2015 x EU		0.010	-0.045	0.052	0.003
		(0.13)	(-1.11)	(1.11)	(0.11)
2016 x EU		0.122	-0.003	0.100*	0.025
		(1.19)	(-0.06)	(1.78)	(0.62)
2017 x EU	*Entry into force*	0.197*	0.001	0.133**	0.063
		(1.87)	(0.03)	(2.32)	(1.35)
2018 x EU		0.205*	-0.002	0.128**	0.080
		(1.77)	(-0.05)	(2.27)	(1.42)

(Continued)

Dependent variable:	(1) Combined Infrastructure Score	(2) CSR Training (Env + H&S + SupESG)	(3) Policy Executive Compensation ESG Performance	(4) CSR Sustainability Committee
2019 x EU	0.157 (1.30)	-0.033 (-0.86)	0.114 (1.55)	0.076 (1.28)
2020 x EU	0.166 (1.41)	-0.040 (-1.18)	0.160** (2.05)	0.046 (0.82)
2021 x EU	0.162 (1.43)	-0.030 (-0.83)	0.174** (2.42)	0.019 (0.32)
Control variables	Included	Included	Included	Included
Firm fixed effects	Included	Included	Included	Included
Industry x year fixed effects	Included	Included	Included	Included
Adjusted R^2 (within)	0.226	0.083	0.183	0.092
N	3,058	3,058	3,058	3,058

*, **, and *** indicate statistical significance levels at the 10%, 5% and 1% respectively. Two-tailed tests and clustered standard errors are used at the industry level; t-statistics are provided in parentheses.

Table 4: Effect of the CSR directive on the CSR infrastructure of firms (matching without replacement)

Dependent variable:	(1) CSR Score		(2) Social Pillar Score		(3) Environmental Pillar Score	
2011 x EU x Low Exp.	-0.021*	(-1.74)	-0.031**	(-2.49)	-0.011	(-0.66)
2011 x EU x High Exp.	-0.011	(-0.73)	-0.024	(-1.19)	0.002	(0.13)
2012 x EU x Low Exp.	-0.022**	(-2.35)	-0.029***	(-2.87)	-0.016	(-1.24)
2012 x EU x High Exp.	-0.002	(-0.13)	-0.009	(-0.60)	0.005	(0.26)
2013 x EU x Low Exp.	-0.021***	(-2.80)	-0.026**	(-2.57)	-0.017*	(-1.77)
2013 x EU x High Exp.	-0.006	(-0.50)	-0.013	(-0.91)	0.000	(0.02)
2015 x EU x Low Exp.	-0.009	(-0.82)	0.012	(0.82)	-0.031***	(-3.10)
2015 x EU x High Exp.	-0.014	(-1.19)	-0.014	(-1.16)	-0.014	(-0.85)
2016 x EU x Low Exp.	0.002	(0.12)	0.034*	(1.81)	-0.031*	(-1.78)
2016 x EU x High Exp.	-0.002	(-0.08)	0.011	(0.70)	-0.015	(-0.47)
2017 x EU x Low Exp.	-0.003	(-0.13)	0.025	(1.33)	-0.031	(-1.05)
2017 x EU x High Exp.	0.009	(0.30)	0.040*	(1.70)	-0.021	(-0.52)
2018 x EU x Low Exp.	-0.023	(-1.16)	0.013	(0.71)	-0.060**	(-2.28)
2018 x EU x High Exp.	0.004	(0.18)	0.044**	(2.57)	-0.035	(-0.97)
2019 x EU x Low Exp.	-0.018	(-0.89)	0.010	(0.45)	-0.046*	(-1.89)
2019 x EU x High Exp.	0.033	(1.18)	0.062***	(2.79)	0.004	(0.10)
2020 x EU x Low Exp.	-0.023	(-1.17)	0.005	(0.26)	-0.051**	(-2.15)
2020 x EU x High Exp.	0.042	(1.53)	0.054**	(2.10)	0.030	(0.80)

(Continued)

Dependent variable:	(1) CSR Score		(2) Social Pillar Score		(3) Environmental Pillar Score	
2021 x EU x Low Exp.	-0.028	(-1.61)	-0.005	(-0.23)	-0.052**	(-2.16)
2021 x EU x High Exp.	0.050**	(2.06)	0.055**	(2.05)	0.045	(1.35)
Control variables	Included		Included		Included	
Firm fixed effects	Included		Included		Included	
Industry x year fixed effects	Included		Included		Included	
Adjusted R^2 (within)	0.545		0.514		0.371	
N	3,058		3,058		3,058	
N for Cond. Var. High Exp.	88		88		88	
N for Cond. Var. Low Exp.	51		51		51	

*, **, and *** indicate statistical significance levels at the 10%, 5% and 1% respectively. Two-tailed tests and clustered standard errors are used at the industry level; t-statistics are provided in parentheses.