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Strategy Economics

MSc Economics and Business

The effect of mandatory non-financial reporting regulation on Corporate Social Performance. A cluster analysis.

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[1] *The views stated in this thesis are those of the author and not necessarily those of the supervisor, second assessor, or the Erasmus School of Economics or Erasmus University.*

Abstract

This thesis examines the effects of Directive 2014/95/EU, a regulation from the EU that instructs large companies to disclose several non-financial themes related to environmental matters, social matters, anti-corruption and bribery issues. I will investigate whether Directive 2014/95/EU incentivised firms to change their business operation. This change can be analysed by observing specific firm activities, such as preventing pollution, taking care of personnel, and providing diversity and inclusion, also referred to as Environmental, Social and Governance activities (henceforth referred to as ESG activities) before and after the enforcement of Directive 2014/95/EU. I adopt a policy evaluation approach where the treatment group includes large firms in the EU and Norway, and the control group consists of large firms outside the EU. The results from this analysis show robust evidence of firms increasing their overall performance in ESG activities as a result of Directive 2014/95/EU. This thesis further examines whether this effect is different for firms that exceed ESG expectations, as compared to firms that perform according to ESG expectations, and firms that underperform on ESG expectations. No evidence was found that the Directive affected firms that exceed ESG expectations differently from firms that perform according to ESG expectations or underperform on ESG expectations. Furthermore, there is evidence that Directive 2014/95/EU increased firms' corporate performance only in the Governance pillar, in which the performance is estimated by measuring variables related to ESG reporting quality, transparency, management diversity and shareholder rights.

Keywords:

Directive 2014/95/EU; Mandatory non-financial disclosure; Corporate Social Performance

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1 | Introduction

A survey by BlackRock (2020) points out that investors are planning to have twice the amount of sustainable assets under BlackRock's management over the next five years, which highlights an actual desire by investors to invest sustainably. However, it can be challenging to find an overview of corporate non-financial disclosures that gives an accurate, mutually comparable overview of the corporations' Environmental, Social and Governance (henceforth referred to as ESG) activities. Bernow, Godsall, Klempner, and Merten (2019) point out that ESG disclosures are more complex to compare than financial disclosures because of a lack of conformity. Without regulations that oblige firms to publish about ESG activities, firms will be able to choose which ESG activities they want to address and which stakeholder interests to point out in their report. To prevent that, policymakers can create regulations that increase comparability. Policymakers have enough reason to create these regulations, as a comparable ESG framework will not only help investors with a desire to invest sustainably, a comparable ESG framework may also incentivise businesses to improve their ESG operations and make these improvements objectively accessible. Such a development could consequently help conserve the natural world, increase the consideration of companies towards employees and other stakeholders[2], and improve fair business practices.

Today, large private corporations in Europe are forced by law to report non-financial information related to Environmental, Social and Governance activities. In December 2016, the Non-Financial Reporting Directive 2014/95/EU was implemented for all EU countries, Norway and Iceland. Non-financial information in the context of this Directive entails information that companies report besides the organisation's financial aspects. 'Non-financial' often refers to information related to activities in the Environmental, Social and Governance pillars, which is the most conventional method to report on the firm's sustainability and societal impact (Deloitte, 2021). Directive 2014/95/EU obliges companies to disclose non-financial information related to "at least environmental matters, social and employee-related matters, respect for human rights, anti-corruption and bribery matters" (European Union, 2014, p. 2). Article 1 of this Directive states that large corporations (referred to as large undertakings) that are public-interest entities must comply with this Directive. Policymakers created the Directive

[2] 'Stakeholders' is any group or individual that is affected by a company's operation. Typically the term stakeholders include shareholders, suppliers, customers, employees and the community in near distance with the firm. (Freeman, 1984)

to ensure similar reporting practices for firms residing in Europe and to increase the accountability of firms for their non-financial disclosure within the EU. 2017 is the first financial year these companies are required to report in accordance with Directive 2014/95/EU (EU Monitor, 2019).

Several other countries have implemented mandatory non-financial reporting regulations. In 2009 South Africa adopted the King III Report on Corporate Governance, which aims to promote corporations to improve their social responsibility reporting practices. King III required disclosure of the remuneration of a firm's directors and senior executives. This regulation eventually proved effective, as Ioannou and Serafeim (2011) find that it enhances the social responsibility of business leaders. Similar to the King III Report on Corporate Governance, Directive 2014/95/EU may also change the ESG performance (frequently referred to as Corporate Social Performance) of firms in the European Union.

The objective of this thesis is to answer the following research question:

To what extent is Corporate Social Performance affected by mandatory non-financial reporting regulations?

Corporate Social Performance (henceforth referred to as CSP) is often measured by looking at the average of a firm's activities in the Environmental, Social and Governance categories. Wood (1991) defines CSP as "a business organisation's configuration of principles of social responsibility, processes of social responsiveness and policies, programs, and observable outcomes as they relate to the firm's societal relationships" (p. 693). Bams, van der Kroft and Maas (2021) identify a heterogeneous approach based on the promised to realised CSP. The heterogeneous view entails that the researchers do not consider a factor that affects CSP is associated with similar effects for all companies but that the association is different across three groups that are categorised based on a firm's difference between promised and realised CSP. The first group consists of firms that exceeds CSP expectations (Strategic CSR[3]), the second group of firms performed nearly as well as they promised (CSR-as-insurance), and the third subgroup underperforms in their promised CSP (corporate greenwashing). This thesis follows a similar heterogeneous approach, which could help attain a better understanding of how different types of firms respond to the non-financial reporting regulation.

[3] CSR refers to Corporate Social Responsibility. This term refers to practices undertaken by an organization to have a positive impact on the world.

This thesis also investigates the three Environmental, Social and Governance pillars separately. Each pillar highlights a different aspect of the firm's CSP, and examining these pillars may result in a more precise reflection of the effects of Directive 2014/95/EU on the CSP. The Environmental pillar is graded by observing the firm's emission, innovation and resource use performance. The performance in the Social pillar is measured by looking at the firm's relations with the community and the workforce; and by observing the firm's efforts and investments related to product responsibility. The Governance pillar performance is graded through the firm's dealing with management, shareholders, the quality of their ESG disclosure, and the transparency of the firm's operation.

The results in this thesis indicate that Directive 2014/95/EU increased the CSP of firms that have to obey this mandatory non-financial disclosure regulation, compared to those that do not. However, the increase of roughly 1.5% can be considered small, as the regulation was a unique event that took years of preparation for policymakers in the EU. The results further indicate that Directive 2014/95/EU does not affect a subsample that consists of firms that exceed Corporate Social Responsibility expectations (strategic CSR), firms that perform according to Corporate Social Responsibility expectations (CSR-as-insurance), and firms that underperform compared to Corporate Social Responsibility expectations (Corporate greenwashing) differently. Furthermore, the analysis provides evidence that Directive 2014/95/EU increased CSP in the individual pillar Governance, while there is no robust support that this Directive affected the individual Environmental and Social pillars.

2 | Theory and hypotheses development

2.1 | The implications of Corporate Social Performance and Directive 2014/95/EU

Examples of how firms can improve their CSP are investments in labour policies and practices, enhancing the lifespan of products, and reducing carbon- or environmental footprints. Policymakers are eager to create regulations to improve CSP, as a well-established CSP is not only beneficial for stakeholders and society, it can also be beneficial for the firm. Namely, A strong CSP could enable a firm to build a unique brand reputation (Menon & Kahn, 2003), and it may help attract talent (Edmans, 2011). Furthermore, a strong CSP may result in a strong Corporate Social Responsibility (henceforth referred to as CSR) reputation with insurance-like properties as for example, a sufficiently strong CSR reputation may reduce the severity of

damages in the event of, e.g., a faulty product (Mishra, 2017). Fombrun, Gardberg and Barnett (2020) find that a strong CSP can act as a buffer from losses associated with events like lawsuits. Furthermore, Minor and Morgan (2011) argue that a good CSP could protect a firm to some extent against reputation damages. The researchers point to the circumstance that in case of an adverse event, stakeholders of a firm with a program to improve the CSP are more likely to attribute bad luck as the cause. In contrast, stakeholders of a firm without a program to enhance their CSP program are more likely to attribute bad management as the cause of an adverse event.

During the 1980s, ethical funds started excluding firms that were deemed unethical from their portfolio (Ioannou & Serafeim, 2017), since these funds' clients were mainly parties who desired to invest sustainably. In this period, literature highlighted that investors and other stakeholders wanted firms to create annual reports that included information on ESG activities (Gray, Owen & Maunders, 1987). Since then, many countries have adopted regulations that obligate firms to publish their ESG activities; Table A1 and A2 offer an overview of relatively recent literature about Directive 2014/95/EU and other mandatory non-financial reporting regulations around the world. An example of a country that introduced mandatory non-financial reporting is Denmark. In 2008, the Danish government introduced mandatory non-financial regulations for large companies operating in Denmark by inserting a new section into the Danish Financial Statements Act. The main focus of this section is around providing transparency: companies do not need to have a CSP policy, however, they must report about it (Buhmann, 2013). South Africa adopted the previously mentioned King III Report on Corporate Governance in 2009. This regulation aimed to enhance firms their ESG reporting practices. It was intended for all organisations, no matter the size and stated that directors must act in the company's best interest and consider the interests of various stakeholders (Esser, 2009). A practical example is that King III requires disclosure of the remuneration of a firm's directors and senior executives (KPMG, 2016). Due to the complexity of the reporting process, only larger organisations must comply with this law; for smaller firms, it is tolerated they do not follow most requirements. Another example is that in 2008 the Shanghai Stock Exchange issued a notice which requires firms listed on this Exchange to follow specific guidelines for disclosing environmental information and other ESG activities besides their annual financial reports (Farag, Meng & Mallin, 2015).

Ioannou and Serafeim (2017) researched the effects of the regulations mentioned above in Denmark, China and South Africa. By employing a differences-in-differences analysis, they

looked into the amount of non-financial reports published after the enforcement of the aforementioned mandatory non-financial disclosure regulations and provided evidence that all nations experienced an increase in the scope of non-financial disclosures. These researchers argued that more research is needed to clarify how mandatory non-financial disclosure regulations affect the ESG activities of firms.

Article 1 of Directive 2014/95/EU requires large undertakings that are public-interest entities to comply with this Directive. A large undertaking is defined by Directive 2013/34/EU as organisations that exceed at least two of three criteria: (1) a balance sheet total of 20 million euros; (2) a net turnover of 40 million euros; (3) a total number of employees of more than 250 full-time employees during the financial year (European Union, 2013). This Directive requires large undertakings to report on environmental matters, social matters, employee aspects, respect for human rights and anti-corruption and bribery issues. For example, these large firms in the EU are now obliged to discuss the negative effects of their business operation on these aspects and what policies they adopt to mitigate these effects. This directive has two main objectives for policymakers. First, creating similar reporting practices for European firms will allow stakeholders to compare non-financial disclosures across firms. Second, non-financial reporting needs to be mandatory to increase the accountability of a firm's disclosure within the EU (La Torre et al., 2018).

In 2011, Ioannou and Serafeim advised regulators to make use of mandatory non-financial reporting disclosure as a catalyst to achieve a better CSP. Ioannou and Serafeim provided evidence that the CSP could become better in terms of a prioritisation of sustainable development, more employee training, more efficient supervision of management and a decrease in bribery and corruption. A reason for this increased CSP may be that firms feel motivated to improve their CSP to avoid reputation damages following the obligation to report an extensive non-financial disclosure about their ESG activities. Reputation is an important strategic asset that companies can use to support their business operations (Weigelt & Camerer, 1988; Dierickx & Cool, 1989; Aula & Mantere, 2008; Kim & Woo, 2019). In this context, the following hypothesis is proposed:

H1: "Mandatory non-financial disclosure regulation positively affects overall Corporate Social Performance"

2.2 | Heterogeneous view toward Corporate Social Responsibility

Bams, van der Kroft and Maas (2021) created a framework to approach the firm's social performance from a heterogeneous perspective. They do not expect that the social performance of corporations is associated with similar effects for all companies but that the association is different across three clusters of firms. The firms are divided into a cluster by looking at a firm's relative promised to realised CSP. The researchers labelled a firm as corporate greenwashing when its promised CSP exceeded its realised CSP. Firms that exceeded their promised CSP are clustered in the strategic CSR category. The third category consists of firms that meet CSP expectations, and are clustered into the CSR-as-insurance category. Bams et al. (2021) are the first researchers that identify firms as either Strategic CSR, CSR-as-insurance, or corporate greenwashing. They categorise these firms in two different steps. The first step is a firm-level k-means clustering analysis per industry. This captures heterogeneous CSR approaches by observing similarities in individual variables related to the three fundamental pillars: Environmental, Social, and Governance. Second, Bams et al. (2021) measured "CSR reporting, controversies, activities, targets, performance and policies with a non-parametric rank-ordering technique to provide a proxy for their promised to realised CSP" (p. 9).

Bams, van der Kroft and Maas proxied 'promised CSP' and 'realised CSP'. The promised CSP is proxied by looking at variables related to the four categories: a firm's CSR reporting, policy, activity and target ranks. Examples of variables related to 'CSR reporting' are the firm's ESG reporting scope and whether they report according to the global standards for sustainability reporting (GRI). Variables related to 'policy' include, amongst others, a firm's emission policy, energy efficiency policy and variables related to 'activities' include recycling initiatives and environmental partnerships.

The realised CSP of firms is measured using variables that can be objectively identified. These variables relate to 'CSR controversies' and 'performance ranks'. Variables related to 'CSR controversies' are for example tax fraud, a poison pill[4] and accounting controversies. Variables related to performance ranks include the use of green buildings, the salary gap between men and women and the relative number of female employees.

[4] Ryngaert (1988) describes a poison pill as several "contingent securities that impose financial burdens on acquirers when triggered by events such as a corporate merger". The aim of a poison pill is to increase the power of corporate boards and Directors (p. 377).

Bams et al. (2021) argue that firms in the Strategic CSR category may promise less than they deliver to manage the expectations of shareholders and other stakeholders. Fatemi, Glaum and Kaiser (2018) provided evidence that CSR strengths, combined with extensive ESG disclosure, weaken the positive valuation effect of its strong CSR operation. They further highlight that investors might interpret the comprehensive ESG disclosure as a company's attempt to justify excessive amounts of investments to enhance their CSR program. This may deter Strategic CSR firms from overpromising their CSP. Strategic CSR firms are likely to be very considerate towards their stakeholders by incorporating CSR in their long-term business strategy (Vishwanathan, Oosterhout, Heugens, Duran & Van Essen, 2020). This way of doing business is more likely to generate positive externalities for the firm and the community in contact with the firm (McWilliams, Siegel & Wright, 2006).

Firms belonging to the CSR-as-insurance cluster utilise CSR to mitigate investment risks. These firms aim to avoid CSR controversies, like lawsuits with the stakeholders of the business operation, by investing just enough in their ESG activities. Luo, Meier and Oberholzer-Gee (2011) studied the media coverage of spills for firms in the oil industry. They provided evidence that companies with either an excellent CSR program or an abysmal CSP record are more likely to get a lot of media attention in case of oil spills than firms with a CSR-as-insurance strategy (which are placed in the middle of the CSR ranking). Firms with a CSR-as-insurance strategy prioritise maintaining the community's support to continue their operations without too many hurdles and protests. A community's acceptance or approval of a specific company project or the entire company's ongoing operations in the community is generally referred to as a Social License to Operate (Cui, Jo & Velasquez, 2015). These firms typically do not have CSR as a core strategy but maintaining a License to Operate is part of their strategy. Oliver (1991) explains that organisations may comply with external pressures to enhance legitimacy and stability.

Dahl (2010) writes that the term greenwashing refers to the phenomenon that firms label part of their operation as more environmentally responsible than the firm itself is; thus, these firms promise more than they deliver. Greenwashing firms are likely to create expectations from shareholders and other stakeholders. However, they do not implement these ideas, and neither do they invest in them. Lyon and Maxwell (2011) explain the corporate greenwashing activities as follows: "the selective disclosure of positive information about a company's environmental or social performance while withholding negative information on these dimensions" (p.5). This

implies that greenwashing firms are not transparent to shareholders nor to community and selectively choose their disclosure themes.

As previously mentioned, the Directive 2014/95/EU aimed to increase the firm's accountability. The Directive obliges firms to report about e.g. business relationships, and products or services that are likely to negatively influence environmental and social matters. Furthermore, they have to report on policies and activities they implemented to mitigate the adverse effects of their business operation on the environment and the local- and global community. Firms are required to report on this every financial year; consequently, stakeholders can monitor their progress better than before the Directive was enforced. Stakeholders being able to monitor the adverse effects of a firm's business operation may be especially harmful to the reputation of firms with a higher promised CSP than realised CSP, which are categorised as corporate greenwashing firms. Around the moment Directive 2014/95/EU is enforced, corporate greenwashing firms might have more incentive to improve their ESG activities than firms that have a realised CSP that is just as high as their promised CSP (CSR-as-insurance), or a realised CSP that is higher than their promised CSP (Strategic CSR). In the event that greenwashing firms increase their ESG activities, stakeholders can assess the non-financial reports and see progress after the Directive was enforced, which might avoid reputation damages to these firms. The necessity to improve a firm's CSP may be weaker for firms with a realised CSP that was as good as promised (CSR-as-insurance) and weakest for firms with a better CSP than promised (strategic CSR). Firms categorised as Strategic CSR firms before the enforcement of Directive 2014/95/EU have the smallest incentive to increase their ESG activities as a consequence of the Directive. So it is likely that Corporations categorised as CSR-as-insurance firms one year prior to the enforcement of the Directive, show a larger increase in Corporate Social Performance as a result of the Directive, compared to firms categorised as Strategic CSR firms. Therefore, the next hypotheses in this thesis are formulated as follows:

H2a: "The positive effect of mandatory non-financial disclosure regulations on Corporate Social Performance is larger for corporations categorised as 'corporate greenwashing' than for firms categorised as 'Strategic CSR'"

H2b: "The positive effect of mandatory non-financial disclosure regulations on Corporate Social Performance is larger for corporations categorised as 'corporate greenwashing' than for firms categorised as 'CSR-as-insurance'"

H2c: "The positive effect of mandatory non-financial disclosure regulations on Corporate Social Performance is larger for corporations categorised as 'CSR-as-insurance' than for firms categorised as 'Strategic CSR'"

2.3 | Understanding the Environmental, Social and Governance pillars separately

The overall CSP is based on a firm's performance in the categories Environmental, Social and Governance. The activities on which the performance is graded are highlighted in Figure A1. To develop a more detailed understanding of a firm's CSP, this thesis examines the corporations' performance in the pillars Environmental, Social and Governance separately. Themes examined in the Environmental category are variables related to the amount of greenhouse gas and waste a firm produces. Other variables in this category relate to how well firms perform regarding green innovations, how much water and energy they use and how environmentally friendly a firm's supply chain is. The Social category looks into variables related to the community, human rights, product quality, and how well a firm maintains data privacy. The Social category further includes many variables related to the workforce, such as diversity and inclusion, career development and training, working conditions, and policies to ensure personnel's health and safety. The Governance category is based on a firm's CSR strategy and the quality and transparency of its non-financial information disclosures. Furthermore, this category uses variables related to management compensation, management independence, management diversity, shareholder rights and takeover defences.

Ioannou and Serafeim (2011) provide evidence that forcing companies to publish about specific non-financial topics is likely to increase the transparency of a firm's ESG activities. They researched the three pillars, Environmental, Social and Governance separately and show that mandatory non-financial disclosure is associated with, amongst others, the prioritisation of sustainable development and employee training. They also show that corporate boards supervised management more effectively and find a decrease in bribery and corruption. Their paper concludes that mandatory disclosure regulation of non-financial information positively impacts at least one variable associated with each of the individual Environmental, Social and Governance pillars. Although Ioannou and Serafeim's (2011) analysis included different mandatory non-financial disclosure regulations, there are many similarities between the non-financial disclosure regulations Ioannou and Serafeim researched in Denmark, South Africa and China and Directive 2014/95/EU. Therefore, in line with the study's results mentioned

above, it is hypothesised that Directive 2014/95/EU will positively impact CSP in all three individual pillars: Environmental, Social and Governance.

A detailed analysis of the ESG variables will provide a better understanding of how mandatory non-financial reporting regulation in Europe might affect each individual pillar. This understanding may lay the foundation for further research on why this Directive affected some pillars more than others and possibly also provide foundations for further development of the regulation. Therefore, the final hypothesis is phrased as follows:

H3: "Mandatory non-financial disclosure regulations have a positive effect on Corporate Social Performance in the Environmental, Social and Governance pillar"

3 | Data and methodology

3.1 | Data

The data used to proxy the dependent variable CSP is extracted from Refinitiv's Asset4 ESG database, previously known as Thomson Reuters (Refinitiv, 2022a). The financial data was collected from Refinitiv Eikon, which contains a large variety of firm-level financial data with numerous year observations over 120 countries (Refinitiv, 2022b). Furthermore, this thesis uses the cluster data statistics created by Bams et al. (2021) and chapter 2.2 explains the cluster analysis in detail. The financial year 2016 is used to determine the firm's categorisation as either Corporate greenwashing, CSR-as-insurance or strategic CSR and set for all firm-year observations. The dataset contains information on publicly listed firms from 2013 to 2019. This dataset comprises 28 countries all over the world. The dataset contains firms established in Europe, North America, Asia and Oceania. The treatment group consists of firms that are considered large undertakings by Directive 2013/34/EU in Europe and Norway. The control group contains firms outside Europe, and large enough to be considered large undertakings by Directive 2013/34/EU. These choices are made in order to create relatively similar control and treatment groups. Additional considerations in this context are the following.

Countries that do not play a significant role in the global economy are excluded from the sample for lack of sufficiently complete data. The United States is not part of the control group since many firms in the United States were added to Refinitiv's Asset4 ESG Database right around 2016 and 2017. Refinitiv systematically added many firms that belong to the Russel 2000. This index tracks the performance of the smallest 2000 firms belonging to the Russel 3000 index,

which includes the largest 3000 listed corporations in the United States. Adding the United States as a control group when a very high number of firms are added to the database right around the implementation of Directive 2014/95/EU violates the parallel trends assumption of the differences-in-differences analyses (Ottenstein et al., 2021). Table A3 contains a description of the variables used in the analysis.

Table 1 Descriptive statistics

Panel A | Whole sample

Variable	Obs	Mean	Std. Dev.	Min	Max
EU treated	5277	.495	.5	0	1
Post-treatment	5277	.61	.488	0	1
ESG rating	5256	50.663	20.92	.616	94.381
lnrevenue	5258	22.197	1.444	15.751	26.87
Debt-to-Equity	5277	.854	1.895	0	59.496
Profitability	5277	.116	.102	-.145	.604
SIZE	5115	30928.102	56353.68	0	664496
GRS	3959	1.808	.849	1	3

Panel B | Treated group

Variable	Obs	Mean	Std. Dev.	Min	Max
Post-treatment	2614	.625	.484	0	1
ESG rating	2607	55.868	19.144	.616	94.381
lnrevenue	2609	22.171	1.454	17.543	26.87
Debt-to-Equity	2614	1.012	2.433	0	59.496
Profitability	2614	.138	.113	-.145	.604
SIZE	2580	35320.902	64795.743	3	664496
GRS	1764	1.636	.768	1	3

Panel C | Control group

Variable	Obs	Mean	Std. Dev.	Min	Max
Post-treatment	2663	.596	.491	0	1
ESG rating	2649	45.54	21.329	.991	93.243
lnrevenue	2649	22.223	1.433	15.751	26.345
Debt-to-Equity	2663	.699	1.122	0	21.381
Profitability	2663	.093	.085	-.145	.604
SIZE	2535	26457.323	45786.835	0	423502
GRS	2195	1.945	.885	1	3

Note: Data extracted from Eikon & Refinitiv

Table 1 covers three panels. Panel A contains the descriptive statistics of the total sample, panel B the observations in the treatment group, and panel C contains the observations in the control group**.** Panel A highlights that 49.5% of the sample are large undertakings in the EU, whereas the other observations are in firms located outside the EU. The 'Post-treatment' variable contains information on the post-treatment period. It is a dummy variable with value '1' for observations measured between 2016 and 2019 and '0' otherwise. 62.5% of the observations are measured between 2016 and 2019. The average ESG rating of the whole sample is 50.663 on a scale of 100. These measures are graded based on many variables; eventually, the weights are normalised to numbers ranging from 0 (lowest CSP) to 100 (best CSP).

Table 2 | Correlation tables

Panel A | Whole sample

Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) ESG rating	1.000							
(2) EU Treated	0.247	1.000						
(3) Post-treatment	0.088	0.030	1.000					
(4) grs	-0.641	-0.167	0.021	1.000				
(5) Revenue	0.514	-0.027	-0.063	-0.434	1.000			
(6) Debt-To-Equity	0.026	0.086	-0.010	-0.040	0.084	1.000		
(7) Profitability	0.084	0.247	0.060	-0.042	-0.009	0.152	1.000	
(8) Size	0.341	0.100	0.010	-0.269	0.577	0.054	0.034	1.000

Panel B | Treated group

Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) ESG rating	1.000						
(2) Post-treatment	0.075	1.000					
(3) grs	-0.558	0.043	1.000				
(4) Revenue	0.579	-0.086	-0.390	1.000			
(5) Debt-To-equity	-0.044	0.018	0.022	0.029	1.000		
(6) Profitability	0.009	0.017	-0.030	0.016	0.218	1.000	
(7) Size	0.334	-0.001	-0.246	0.599	0.035	-0.009	1.000

Panel C | Control group

Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) ESG rating	1.000						
(2) Post-treatment	0.089	1.000					
(3) grs	-0.674	0.015	1.000				
(4) Revenue	0.506	-0.041	-0.489	1.000			
(5) Debt-To-Equity	0.082	-0.067	-0.103	0.201	1.000		
(6) Profitability	0.042	0.096	0.027	-0.024	-0.039	1.000	
(7) Size	0.345	0.018	-0.290	0.586	0.075	0.041	1.000

Note: The correlation results containing the dependent variables for hypothesis 3 resemble the ones presented above, these results are available upon request from the author.

Table 2 displays a correlation matrix where most values are between |0.015|[5] and |0.33|, which may be considered a moderate to low degree of correlation. This matrix could indicate multicollinearity when an independent variable is highly correlated with another independent variable. Collinearity between variables exceeding 0.8 indicates a cause for concern (Field, 2009). A high level of multicollinearity would violate the multicollinearity condition for the regression. The correlation matrix shows that most values are considered low; the value with the highest distance from 0, indicating possible multicollinearity, is 0.599 between Size and Revenue in the treated group. Since the statistics show no numbers near the threshold of 0.8 for the collinearity matrix, there is no indication of a concerning amount of multicollinearity.

Next to the correlation table, I calculated the variance inflation factor (henceforth referred to as VIF) to assess the multicollinearity in this model. The highest value for the VIF, excluding the interactions, is 1.79. Including the interactions accompanied by the differences-in-differences-in-differences model results in a higher maximum VIF value. The triple interaction with the CSR-as-insurance group has a VIF value of 7.72. Shieh (2011) points out that multicollinearity does not affect the p-value for a product of two or more variables when the VIF value of the variable itself is low. Since only the VIF values of the interaction variables are high, multicollinearity should not pose a problem. Furthermore, 7.72 does not exceed the commonly used threshold of 10, which indicates severe multicollinearity (Field 2009). The VIF test indicates no severe multicollinearity concern.

3.2 | Dependent variable

The dependent variable in this thesis for hypothesis 1 and hypotheses 2a, 2b and 2c is the overall ESG rating from Refinitiv's Asset4 ESG database. For hypothesis 3, the dependent variable is based on the grade in the individual Environmental, Social and Governance pillar. The Asset4 ESG database started collecting data on firms in 2002. Professional research analysts collect ESG data from individual firms using exchange filings, annual reports and news sources to gather their data (Figure A3). According to Ioannou and Serafeim (2012), it is estimated that 2.5 trillion dollars of assets under management made use of the Asset4 database to create their Portfolio in 2012. The ESG bases their rating on 186 different metrics. Of these metrics, 68 are based on the Environmental pillar, 62 are based on the Social pillar, and 56 are

[5] The two vertical straight lines is a symbol that refers to the absolute distance from '0'.

based on the Governance pillar. The dataset contains ESG rating data of 1325 unique firms with 5277 observations.

3.3 | Variables of interest

The variable of interest for hypotheses 1 and 3 in this thesis is the interaction between firms in the EU that are required to obey 2014/95/EU and the post-treatment year variable. 2016 is chosen as the start of the post-treatment period because it is plausible that most firms prepared and already took some concrete steps in order to prepare for the new regulation at least 1-year prior to the enforcement of Directive 2014/95/EU in 2017. The variable of interest for hypotheses 2a, 2b and 2c in this thesis is the interaction between the treatment group, the post-treatment period and the variable GRS. The variable GRS categorises the firm into either greenwashing, CSR-as-insurance, or Strategic CSR. The variable GRS categorises a firm based on their promised to realised CSP in the financial year 2016.

3.4 | Control variables

The control variables are selected based on literature related to CSP. Cho, Chung and Young (2019) provided evidence of a negative association between the debt ratio and CSP. Furthermore, a higher debt ratio may increase the demand for more detailed disclosure of activities from debt providers (Leftwich et al., 1981). The increased demand for detailed disclosure of lenders may affect the ESG ratings of firms with a particularly high or low debt ratio. This is why this thesis includes the debt-to-equity ratio, which is calculated by dividing the amount of debt by the firm's equity. Fatemi, Glaim and Kaiser (2018) presented evidence that the natural log of sales is positively correlated with the ESG disclosure scores, so the logged variable 'lnrevenue' is included in the empirical Model. Brammer and Pavelin (2005) argue that the average number of employees can substantially affect CSP as larger organisations are likely to have more stakeholder pressure resulting from the great number of people they employ. This thesis controls the average number of employees in a financial year as a proxy for a firm's size. The return on equity is often used in CSP literature to proxy Profitability (Chi, 2016; Callan & Thomas, 2009; Hart & Ahuja, 1996). Buallay (2018) provided evidence that return on equity is correlated with the amount of detail in social and environmental disclosure, which is why this thesis' model includes the variable Profitability.

3.5 | Models

Differences-in-differences is a popular method used to study the impact of non-financial disclosure regulations **(**Ioannou & Serafeim, 2017; Haju, 2013). The enforcement of the Directive 2014/95/EU resembles a natural experiment which can exploit the causality between Directive 2014/95/EU and the Corporate Social Responsibility ratings of large undertakings in the EU. Utilising the differences-in-difference approach makes it possible to observe and compare the change in the ESG ratings of the large undertakings in the EU with the control group across pre-treatment and post-treatment periods. The analysis is calculated using a fixed-effects panel-data system.

For the analysis of hypothesis 1, the following Model is used:

$$\begin{aligned} ESG\ Rating_{it} = {} & \alpha + \beta_1 EU\ treated_i + \beta_2 Post\text{-}treatment_t \\ & + \beta_3 EU\ treated_i\ x\ Post\text{-}treatment_t + \beta_4 LNrevenue_{it} \\ & + \beta_5 Debt\ to\ Equity_{it} + \beta_6 Profitability_{it} + \beta_7 SIZE_{it} \\ & + \beta_8 Year\ fixed\ effects_t + \beta_9 Firm\ fixed\ effects_i + \varepsilon \end{aligned}$$

The variable of interest is the interaction between EU treated and Post-treatment. The coefficient and significance will indicate whether hypothesis 1 holds. Subscript t stands for year t, and subscript i is firm i.

For the analysis of hypotheses 2a, 2b and 2c, the following Model is used:

$$\begin{aligned} ESG\ Rating_{it} = {} & \alpha + \beta_1 EU\ treated_i + \beta_2 Post\text{-}treatment_t \\ & + \beta_3 EU\ treated_i\ x\ Post\text{-}treatment_t + \beta_4 2.GRS_i + \beta_5 3.GRS_i \\ & + \beta_6 EU\ treated_i\ x\ 2.GRS_i + \beta_7 EU\ treated_i\ x\ 3.GRS_i \\ & + \beta_8 Post\text{-}treatment\ x\ 2.GRS_i + \beta_9 Post\text{-}treatment\ x\ 3.GRS_i \\ & + \beta_{10} EU\ treated_i\ x\ Post\text{-}treatment\ x\ 2.GRS_i \\ & + \beta_{11} EU\ treated_i\ x\ Post\text{-}treatment\ x\ 3.GRS_i + \beta_{12} LNrevenue_{it} \\ & + \beta_{13} Debt\ to\ Equity_{it} + \beta_{14} Profitability_{it} + \beta_{15} SIZE_{it} \\ & + \beta_{16} Year\ fixed\ effects_t + \beta_{17} Firm\ fixed\ effects_i + \varepsilon \end{aligned}$$

The variable of interest is the interaction between EU treated, Post-treatment and GRS. the variable GRS has three categories. One category serves as the base, and the two other categories are compared to this base. '2.GRS' is the categorisation of firms in the CSR-as-insurance category, and '3.GRS' is the categorisation of firms in the strategic CSR category. Corporate greenwashing firms will serve as the base, while the coefficients that relate to firms in the CSR-

as-insurance and Strategic CSR cluster will indicate whether hypothesis 2a and 2b holds. A Wald test can indicate whether hypothesis 2c holds. If the hypothesised results are according to prediction, the two coefficients of the categories CSR-as-insurance and Strategic CSR will be negative and significant.

For the analysis of hypothesis 3, the following three Models are used:

$$ESG\ Rating\ Environmental\ pillar_{it} = \alpha + \beta_1 EU\ treated_i + \beta_2 Post\text{-}treatment_t + \beta_3 EU\ treated_i\ x\ Post\text{-}treatment_t + \beta_4 LNrevenue_{it} + \beta_5 Debt\ to\ Equity_{it} + \beta_6 Profitability_{it} + \beta_7 SIZE_{it} + \beta_8 Year\ fixed\ effects_t + \beta_9 Firm\ fixed\ effects_i + \varepsilon$$

$$ESG\ Rating\ Social\ pillar_{it} = \alpha + \beta_1 EU\ treated_i + \beta_2 Post\text{-}treatment_t + \beta_3 EU\ treated_i\ x\ Post\text{-}treatment_t + \beta_4 LNrevenue_{it} + \beta_5 Debt\ to\ Equity_{it} + \beta_6 Profitability_{it} + \beta_7 SIZE_{it} + \beta_8 Year\ fixed\ effects_t + \beta_9 Firm\ fixed\ effects_i + \varepsilon$$

$$ESG\ Rating\ Governance\ pillar_{it} = \alpha + \beta_1 EU\ treated_i + \beta_2 Post\text{-}treatment_t + \beta_3 EU\ treated_i\ x\ Post\text{-}treatment_t + \beta_4 LNrevenue_{it} + \beta_5 Debt\ to\ Equity_{it} + \beta_6 Profitability_{it} + \beta_7 SIZE_{it} + \beta_8 Year\ fixed\ effects_t + \beta_9 Firm\ fixed\ effects_i + \varepsilon$$

Similar to the model of hypothesis 1, the variable of interest is the interaction between EU treated and Post-treatment for hypothesis 3. The coefficient and significance will indicate whether Directive 2014/95/EU affected firms obliged to obey the grade in the individual Environmental, Social and Governance pillars, compared to those who are not. The variable of interest is expected to be positive and significant in the three pillars.

3.6 | Assumptions

For the differences-in-differences approach, it is important to test certain assumptions. These assumptions need to hold to estimate reliable coefficients and standard errors. One of these is the parallel trends assumption, also known as the constant bias assumption. This assumption would hold if no other significant factor affected the control or treatment group during or close to the enforcement of Directive 2014/95/EU. This approach provides evidence that the result of the analysis in this thesis is valid and not the result of an unknown confounding factor.

Figure 1 | Testing the parallel trends assumption[6]

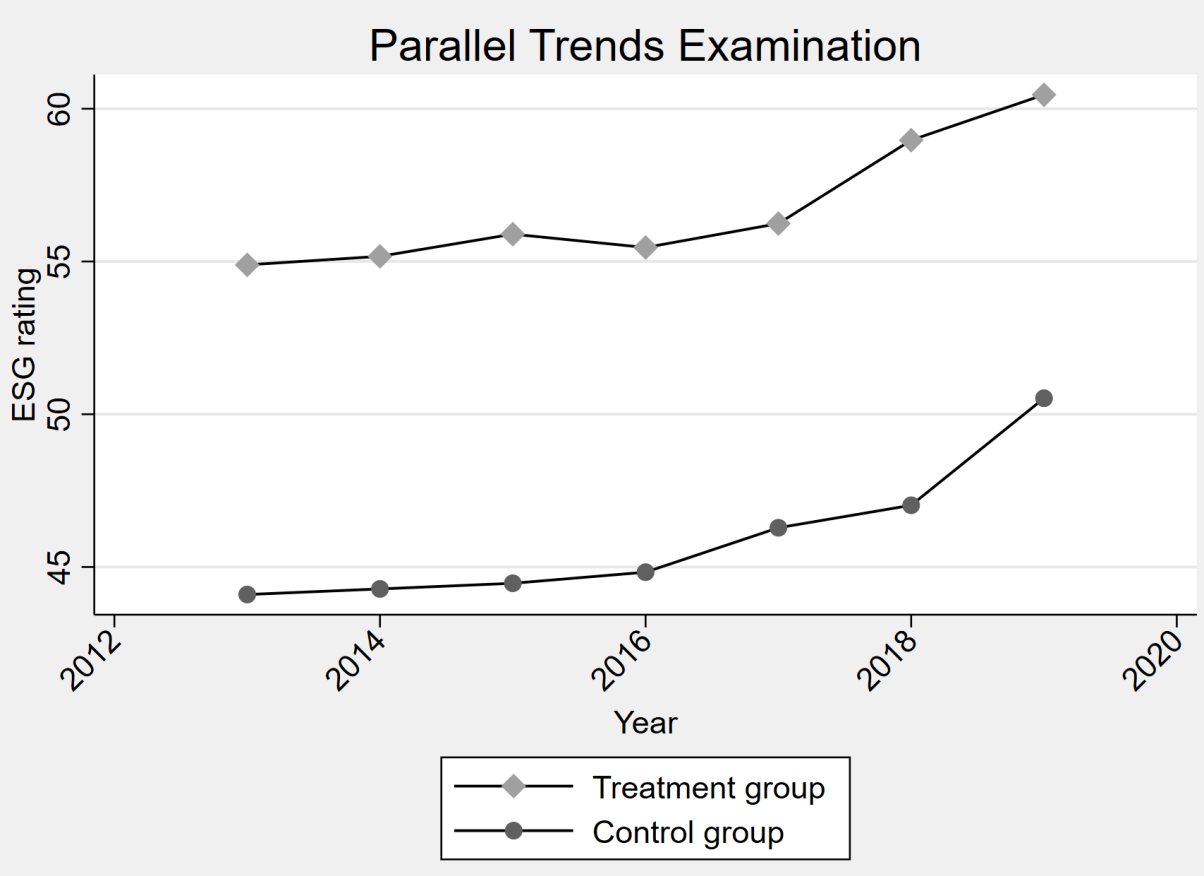

Figure 1 shows two lines: the control group is the bottom line, the treatment group is the top line. The y-axis describes the mean ESG rating, while the x-axis shows the years from 2013 to 2019. This basic graph highlights that there is no indication of a significant shock in the period previous to the enforcement of the Directive. If, between the years 2013 and 2016, the graph had displayed a spike for only one of the two lines, this would have indicated an event that affected one of the two groups, resulting in an invalid comparison between the two groups. As the lines appear to move relatively parallel, there is no indication of an impactful event affecting only one of the two groups.

[6] Only firms with more than 1 observations have been included to create Figure 1. The graph that includes firms with 1 observation can be found in Figure A4.

A second assumption is the Stable Unit Treatment Value assumption (also referred to as SUTVA). This assumption entails no relevant interactions between observations in the sample that affect the outcome variable, which in this thesis is the ESG rating. It is unlikely that the firms required to abide by Directive 2014/95/EU affected the ESG rating of the control group as a result of the requirements by this Directive. Following this line of reasoning, the Stable Unit Treatment Value assumption is likely to hold. This makes it plausible that the differences between the treatment and control groups are the result of Directive 2014/95/EU and not because of an interference between large undertakings in the EU and the treatment group.

4 | Empirical results

Table 3 | Regression results for hypothesis 1 (1) and hypotheses 2a, 2b and 2c (2)

VARIABLES	(1) ESG rating	(2) ESG rating
1.EU treated	omitted	omitted
Post-treatment	8.587***	7.646***
	(0.697)	(0.915)
1.EU treated#Post-treatment	1.482**	1.549
	(0.700)	(1.002)
2.GRS		omitted
3.GRS		omitted
1.EU treated#2.GRS		omitted
1.EU treated#3.GRS		omitted
Post-treatment #2.GRS		1.425
		(1.416)
Post-treatment #3.GRS		1.484
		(1.160)
1.EU treated#Post-treatment #2.GRS		-0.436
		(1.906)
1.EU treated#Post-treatment #3.GRS		1.506
		(1.937)
lnrevenue	4.710***	4.740***
	(0.914)	(1.006)
Debt-to-Equity	0.111	0.074
	(0.089)	(0.116)
Profitability	-0.393	0.483
	(2.263)	(2.378)
SIZE	-0.000	0.000
	(0.000)	(0.000)
Year fixed effects	YES	YES
Firm fixed effects	YES	YES
Constant	-57.992***	-58.506***

	(20.388)	(22.554)
Observations	5,085	3,824
R-squared	0.937	0.931

Source: Refinitiv Eikon & Bams et al. (2021)

Note: Standard errors (in parentheses) are clustered at the firm level. 2.GRS is the categorisation of firms in the CSR-as-insurance category, and 3.GRS is the categorisation of firms in the strategic CSR category.

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

4.1 | Hypothesis 1

The interaction variable in column (1) of Table 3 indicates whether hypothesis 1, which states that mandatory non-financial disclosure regulation positively affects overall CSP, holds. After employing a differences-in-differences analysis using a fixed-effects panel-data system, the results show support for hypothesis 1, as the variable of interest 'EU treated # Post-treatment' displays a positive coefficient that is significant at a 5% level. The ESG ratings of firms required to comply with Directive 2014/95/EU increased in the post-treatment period compared to firms that are not required to do so, keeping other variables fixed. The magnitude of the increase is 1.482 points on a scale of 100. Considering this Directive took years of preparation, the relatively small coefficient suggests that regulations can increase CSP, however, the effect seems limited in the case of Directive 2014/95/EU.

4.2 | Hypotheses 2a, 2b and 2c

Column (2) of Table 3 shows the results for hypotheses 2a, 2b. The result for hypothesis 2c is obtained from a Wald test. Employing the cluster data provided by Bams et al. (2021) in the regression allows the testing of the hypotheses. Column (2) reveals that the triple interaction terms are insignificant for both the CSR-as-insurance and the strategic CSR cluster of firms. This indicates that the data do not support hypotheses 2a and 2b. Furthermore, a Wald test on the interactions 'EU treated # Post-treatment # 3.GRS' and 'EU treated # Post-treatment # 2.GRS' show that the positive effect of Directive 2014/95/EU on CSP for the groups CSR-as-insurance and Strategic CSR do not differ significantly from each other. These results suggest no indication that the positive association between mandatory non-financial disclosure regulation and CSP differs across firms categorised as corporate greenwashing, CSR-as-insurance and strategic CSR.

Table 4 | Regression results for hypothesis 3. Environmental pillar, Social pillar, and Governance pillar

VARIABLES	(1) Environmental pillar	(2) Social pillar	(3) Governance pillar
1.EU treated	omitted	omitted	omitted
Post-treatment	7.133***	13.145***	3.870***
	(0.905)	(0.914)	(1.071)
1.EU treated#Post-treatment	0.076	1.486	2.824**
	(0.927)	(0.944)	(1.166)
lnrevenue	5.303***	4.327***	4.325***
	(1.168)	(1.191)	(1.417)
Debt-to-Equity	-0.053	0.163	0.134
	(0.086)	(0.099)	(0.189)
Profitability	-2.086	1.940	-1.089
	(2.746)	(2.827)	(3.841)
SIZE	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)
Year fixed effects	YES	YES	YES
Firm fixed effects	YES	YES	YES
Constant	-70.896***	-53.199**	-46.144
	(26.020)	(26.557)	(31.530)
Observations	5,085	5,085	5,085
R-squared	0.940	0.922	0.837

Source: Refinitiv Eikon

Note: Standard errors (in parentheses) are clustered at the firm level.

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

4.3 | Hypothesis 3

Column (3) of Table 4 provides evidence for hypothesis 3, which states that mandatory non-financial disclosure regulations positively affect CSP in the Environmental, Social and Governance pillar. The interaction between ‘EU treated’ and ‘Post-treatment period’ is the variable of interest for column (1), column (2) and column (3). The results offer no evidence that firms that are required to comply with Directive 2014/95/EU attain a better Environmental and Social grade in the post-treatment period compared to firms that do not need to comply. However, column (3) does show a positive and significant coefficient for the Governance pillar grade. The grade in the Governance pillar of firms obliged to obey the Directive improved in the post-treatment period, compared to firms that are not obliged to do so, keeping other variables fixed; this is significant at a 5% level. The increase has a

magnitude of 2.824 points on a scale of 100. The significance of the coefficients in Table 4 suggests that the Governance pillar is the only pillar affected by Directive 2014/95/EU.

5 | Robustness checks

5.1 | Robustness check: the year of enforcement as the start of the post-treatment period

In the robustness check, the start of the post-treatment period is the financial year 2017 instead of 2016 in the primary analysis. The reason to choose 2017 as a robustness check is the following: some companies, despite potential preparations before Directive 2014/95/EU was enforced, might have only started taking concrete actions after the Directive was enforced.

Table 5 | Regression results for hypothesis 1 (1) and hypotheses 2a, 2b and 2c (2), where the post-treatment period starts in 2017

	(1)	(2)
VARIABLES	ESG rating	ESG rating
1.EU treated	omitted	omitted
Post-treatment	8.636***	7.444***
	(0.706)	(0.923)
1.EU treated#Post-treatment	1.362*	1.268
	(0.707)	(0.982)
2.GRS		omitted
3.GRS		omitted
1.EU treated#2.GRS		omitted
1.EU treated#3.GRS		omitted
Post-treatment#2.GRS		1.810
		(1.459)
Post-treatment#3.GRS		2.087*
		(1.246)
EU treated#Post-treatment #2.GRS		-0.454
		(1.856)
EU treated#Post-treatment #3.GRS		2.783
		(1.981)
lnrevenue	4.755***	4.583***
	(0.917)	(1.000)
Debt-to-Equity	0.118	0.126
	(0.087)	(0.108)
Profitability	-0.389	0.851
	(2.264)	(2.314)
SIZE	-0.000	-0.000
	(0.000)	(0.000)
Year fixed effects	YES	YES

Firm fixed effects	YES	YES
Constant	-58.971***	-55.043**
	(20.444)	(22.426)
Observations	5,085	3,824
R-squared	0.937	0.931

Source: Refinitiv Eikon & Bams et al. (2021)

Note: Standard errors (in parentheses) are clustered at the firm level. 2.GRS is the categorisation of firms in the CSR-as-insurance category and 3.GRS is the categorisation of firms in the strategic CSR category.

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

The results for hypothesis 1 resemble the primary analysis. Column (1) of Table 5 displays a positive coefficient for the interaction between 'EU treated' and 'Post-treatment period'. This indicates that the ESG ratings of firms required to comply with Directive 2014/95/EU increased in the post-treatment period compared to firms not required to do so, keeping other variables fixed. The magnitude of the increase is 1.362 points on a scale of 100 and is significant at a 10% level.

The coefficients of the triple interactions in Table 5 are insignificant, indicating no support for hypotheses 2a and 2b. Furthermore, a Wald test on the interaction variables 'EU treated # Post-treatment # 3.GRS' and 'EU treated # Post-treatment # 2.GRS' indicates no support for hypothesis 2c either.

Table 6 | Regression results for hypothesis 3, where the post-treatment period starts in 2017

VARIABLES	(1) Environmental	(2) Social pillar	(3) Governance
1.EU treated	omitted	omitted	omitted
Post-treatment	7.381***	13.270***	3.524***
	(0.916)	(0.921)	(1.060)
1.EU treated#Post-treatment	-0.440	1.207	3.505***
	(0.928)	(0.955)	(1.134)
lnrevenue	5.267***	4.360***	4.479***
	(1.175)	(1.196)	(1.413)
Debt-to-Equity	-0.051	0.170*	0.144
	(0.085)	(0.098)	(0.184)
Profitability	-2.203	1.907	-0.873
	(2.738)	(2.827)	(3.846)
SIZE	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)
Year fixed effects	YES	YES	YES
Firm fixed effects	YES	YES	YES
Constant	-70.066***	-53.906**	-49.578
	(26.162)	(26.681)	(31.450)

Observations	5,085	5,085	5,085
R-squared	0.940	0.922	0.838

Source: Refinitiv Eikon

Robust standard errors in parentheses

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

The results for hypothesis 3 are in Table 6 and resemble the primary analysis.[7] The results suggest no evidence that firms obliged to obey Directive 2014/95/EU attain a better Environmental and Social grade in the post-treatment period compared to those that are not obliged to do so. However, for the Governance pillar, there is evidence that the grade of firms that are required to comply with Directive 2014/95/EU increased in the post-treatment period compared to firms that are not required to comply, keeping other variables fixed. This is significant at a 1% level. The increase has a magnitude of 3.505 points on a scale of 100, indicating that the mandatory non-financial disclosure regulation is associated with an economically significant increase in the CSP of the Governance pillar. Tables 5 and 6 show that changing the start of the post-treatment period from 2016 to 2017 does not markedly alter the previously found results for all hypotheses.

5.2 | Robustness check: Propensity score matching

The descriptive statistics of Table 1 indicate that some variables have a mean of the treatment group that is different from the control group. The treatment group can be more comparable to the control group by employing propensity score matching on the two groups. The regression is combined with the nearest neighbour matching approach 'with replacement' on the variables revenue, profitability, size and the debt ratio. The 'with replacement' option has the consequence that some observations appear more than once. This can be prevented by using the 'no replacement' option. However, the 'with replacement' option is selected as research pointed out that this option can increase the average matching quality and decrease bias (Caliendo & Kopeinig, 2008). The previous regressions are calculated again, only based on matched samples instead of the whole sample. Table A4 displays the mean of the treated and sample group after the matching process using the 'pstest' command. With the 'pstest'

[7] Table A7 and Table A8 display the results of a similar analysis with 2015 as the start of the post-treatment period has also been executed without matched groups and the results remain similar to that of the primary analysis.

command in STATA, it is possible to assess the balance between the matched sets (Grotta & Belocco, 2014). Table A4 gives an overview of this balance and highlights that the treatment and control groups are more similar, as the p-value is higher than '0.1' for all variables. This indicates that the null hypothesis, which states that the groups are similar, is not rejected at the most commonly used significance levels.

Table 7 | Regression results for hypothesis 1 (1) and hypotheses 2a, 2b and 2c (2) on the matched sample using nearest neighbour matching with replacement

VARIABLES	(1) ESG rating	(2) ESG rating
1.EU treated	omitted	omitted
Post-treatment	8.375***	7.848***
	(0.997)	(1.425)
1.EU treated#Post-treatment	1.918**	1.763
	(0.847)	(1.300)
2.GRS		omitted
3.GRS		omitted
1.EU treated#2.GRS		omitted
1.EU treated#3.GRS		omitted
Post-treatment #2.GRS		1.759
		(2.202)
Post-treatment #3.GRS		0.703
		(1.536)
1.EU treated#Post-treatment #2.GRS		-0.859
		(2.526)
1.EU treated#Post-treatment #3.GRS		2.321
		(2.169)
lnrevenue	5.989***	6.533***
	(1.255)	(1.390)
Debt-to-Equity	0.197	0.159
	(0.124)	(0.137)
Profitability	4.742	5.984*
	(3.292)	(3.610)
SIZE	-0.000	-0.000
	(0.000)	(0.000)
Year fixed effects	YES	YES
Firm fixed effects	YES	YES
Constant	-86.720***	-98.556***
	(27.782)	(30.984)
Observations	5,128	3,788
R-squared	0.947	0.942

Source: Refinitiv Eikon & Bams et al. (2021)

Note: Standard errors (in parentheses) are clustered at the firm level. 2.GRS is the categorisation of firms in the CSR-as-insurance category and 3.GRS is the categorisation of firms in the strategic CSR category.

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

Rerunning the regressions on the matched groups in Table 7 highlights that hypothesis 1 aligns with the primary analysis. The positive coefficient of the interaction between 'EU treated' and 'post-treatment period' is significant at a 5% level. This indicates that the ESG ratings of firms that are obliged to obey the Directive increased by 1.918 points during the post-treatment period compared to firms that are not obliged to do so, keeping other variables fixed.

The results for hypotheses 2a and 2b are displayed in column (2) of Table 7. The results are in line with the primary analysis. There is no indication that the positive association between mandatory non-financial disclosure regulation and a firm's CSP is larger for corporations categorised as corporate greenwashing than for firms categorised as Strategic CSR. Furthermore, there is no indication that the positive association between mandatory non-financial disclosure regulation and a firm's CSP is larger for corporations categorised as corporate greenwashing than for firms categorised as CSR-as-insurance. A Wald test used for hypothesis 2c on the interactions 'EU treated # Post-treatment # 3.GRS' and 'EU treated # Post-treatment # 2.GRS' displays no support that the positive effect of mandatory non-financial disclosure regulations on Corporate Social Performance is larger for corporations categorised as CSR-as-insurance than for firms categorised as Strategic CSR.

Table 8 | Regression results for hypothesis 3 on the matched sample using nearest neighbour matching with replacement

VARIABLES	(1) Environmental	(2) Social pillar	(3) Governance
1.EU treated	omitted	omitted	omitted
Post-treatment	5.635***	12.817***	4.674***
	(1.341)	(1.310)	(1.429)
1.EU treated#Post-treatment	1.502	1.980*	2.507*
	(1.199)	(1.101)	(1.428)
lnrevenue	5.632***	4.501***	7.704***
	(1.533)	(1.453)	(1.996)
Debt-to-Equity	-0.145	0.218	0.456*
	(0.172)	(0.189)	(0.256)
Profitability	5.639	7.016	1.035
	(4.139)	(4.984)	(5.231)
SIZE	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)
Year fixed effects	YES	YES	YES

Firm fixed effects	YES	YES	YES
Constant	-79.698**	-57.262*	-120.762***
	(33.895)	(32.271)	(44.003)
Observations	5,128	5,128	5,128
R-squared	0.951	0.936	0.854

Source: Refinitiv Eikon

Standard errors (in parentheses) are clustered at the firm level.

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

The results in Table 8 suggest that there is no evidence that firms that have to obey Directive 2014/95/EU attain a better Environmental grade in the post-treatment period compared to the firms that do not have to follow Directive 2014/95/EU. The results indicate a positive increase of CSP in the Social pillar and the Governance pillar for firms obliged to obey Directive 2014/95/EU, compared to firms that are not obliged. Column (2) shows that the grade in the Social pillar for firms that have to obey the Directive increased during the post-treatment period compared to firms that do not have to obey Directive 2014/95/EU, keeping other variables fixed; this effect is significant at a 10% level. The increase has a magnitude of 1.980 points on a scale of 100. Column (3) shows that the grade in the Governance pillar of firms required to comply with the Directive increased with 2.507 on a scale of 100 during the post-treatment period, compared to firms that do not, keeping other variables fixed; this is significant at a 10% level. Table 7 and Table 8 highlight that the results of the primary analysis remain robust when the regressions are run on matched pairs that make the control and the treatment group more similar to each other.

As an additional robustness check, the same regressions that are displayed above are calculated with matched pairs, but in this regression, the start of the post-treatment period is shifted from financial year 2016 to 2017, which is the year Directive 2014/95/EU was enforced. The results in column (1) of Table A5 highlight that hypothesis 1 is robust, as the positive coefficient of the interaction between ‘EU treated’ and ‘Post-treatment period’ is significant at a 5% level. This indicates that the overall ESG grade for firms obliged to obey the Directive increased by 2.205 points during the post-treatment period compared to firms that are not obliged to do so. Column (2) shows the result for hypotheses 2a and 2b, and the significance of the coefficients indicate no support. Furthermore, a Wald test shows no support for hypothesis 2c. Table A6 is similar to the primary analysis, and the results partially support hypothesis 3 as the interaction between ‘EU treated’ and ‘Post-treatment period’ in columns (2) and (3) is positive and significant. Column (2) highlights that the grade in the Social pillar for firms required to

comply with Directive 2014/95/EU increased during the post-treatment period compared to firms that do not, keeping other variables fixed. The increase in the Social pillar has a magnitude of 2.116 points on a scale of 100 and is significant at a 10% level. Column (3) shows the results for the Governance pillar. The coefficient of the interaction variable 'EU treated' and 'post-treatment' in column (3) of Table A5 is significant and different from 0. This indicates that firms obliged to obey the Directive score a different grade in the Governance pillar than firms that are not obliged to do so. Particularly, the grade increases with 4.072 points more than for firms that are not required to obey Directive 2014/95/EU, keeping other variables fixed. This effect is significant at a 1% level.[8]

6 | Limitations and discussion

6.1 | Limitations

The primary analysis supports hypothesis 1 and provides evidence that the Mandatory non-financial disclosure regulation increases the firms' CSP, be it that the extent of the effect appears to be limited in the economic magnitude. The reliability of this result may have been limited because by eliminating the United States to maintain the requirements for the parallel trends assumption; firms residing in Japan took up a relatively large share of the control group, which resulted in a large part of the model outcomes being driven by firms in Japan. Furthermore, Japan and its environs have a vastly different culture from the EU, so there may be an omitted variable bias, as no variable takes up variation consequential to differences in culture that might have affected CSP between the region surrounding Japan and the EU. Similarly, this thesis, in view of its limited time frame, did not include firms in all EU countries, as firm-level data of smaller countries with a relatively low gross domestic product is hard to attain. Having data on more firms that are subject to Directive 2014/95/EU would give a more precise estimate of the overall effects of the regulation on CSP in Europe. Owing to incomplete data, the results of this study may not be externally valid for countries in the EU with a low gross domestic product.

[8] As a robustness check Table A9 and A10 contain a similar robustness check on the matched groups with 2015 as the start of the post-treatment period, as some companies could have started preparing two years prior to the Directives enforcement. The results for all hypotheses are similar to the primary analysis.

Another potential bias in this paper is associated with the use of propensity score matching. This matching method can create a control group that is more comparable with the treatment group; however, nearest neighbour matching may also give imprecise matches if the closest neighbour's propensity score, to which the observation is matched, lies numerically far off the other (Baser, 2006). Further, a well-known problem with propensity score matching is the propensity score paradox, in which propensity score matching may create an unbalanced dataset, where it was balanced before the propensity score matching process was executed (King, Nielsen, Coberley, Pope & Wells, 2011).

A further potential bias could be caused by imperfect information. It is possible that information on specific shocks e.g., new regulations or more vigorous enforcement of existing regulations around the time of, or shortly after the enforcement of Directive 2014/95/EU were missed when searching these on the internet and reading a selection of scientific papers. Such shocks could potentially undo the parallel trends assumption, which would render the increase in CSP as a result of Directive 2014/95/EU invalid.

Finally, this thesis was based on the assumption that the Refinitiv asset4 database offers a good representation of a firm's actual CSP. It is plausible that the ESG rating does not provide a representative reflection of the actual ESG performance. In case Refinitv does not include all variables related to ESG performance, this may give firms that perform well on this omitted ESG-related variable a lower grade than they actually ought to have. Hence, the results will indicate a lower CSP for this group of firms than deserved, giving an inaccurate estimation of the real firms' CSP.

Future research could proxy CSP using ESG ratings from other parties than Refinitiv. Examples are FTSE ESG[9], MSCI ESG IVA[10], Sustainalytics[11], and Vigeo-Eirus[12]. This could further indicate if the proxy for CSP in Refinitiv's ESG scores is reliable and gives a more accurate reflection of CSP. Future research could include more years in the post-treatment period. This dataset only contained two financial years after the treatment was enforced; future research might use data until the financial year 2021. With this data, it is possible to analyse four consecutive years after the enforcement. More extensive data might show a more

[9] ESG Ratings | FTSE Russell
[10] MSCI Index Methodology w Cover
[11] Company ESG Risk Ratings – Sustainalytics
[12] Vigeo Eiris Home - V.E (vigeo-eiris.com)

holistic view of the effect of Directive 2014/95/EU on the precise ESG ratings in the overall score and all the pillars over time. Furthermore, there is quite a difference in wealth amongst EU countries in this dataset. An analysis of the effects of mandatory non-financial disclosure regulation on the CSP across richer versus poorer EU countries might reveal further relevant insights for policymakers. Ultimately, it would be interesting to have research devoted to indicating which themes in Directive 2014/95/EU resulted in a higher CSP. Information on this complex research topic could be obtained by examining many mandatory non-financial disclosure regulations, giving out surveys to management in firms that were obliged to comply with the regulations and by analysing the individual (186) matrices examined by Refinitiv that are used for their overall ESG grade.

6.2 | Discussion

Most papers discuss the effect of Directive 2014/95/EU on the financial scope of firms in the EU. This thesis examines whether mandatory non-financial disclosure regulation affects CSP. The motivation for this study is to play a small part in the search for potentially effective measures that support companies to operate their business in a way that contributes to a more sustainable society. This thesis is unique in examining if companies actually improve their business operation so that it directly favours society, instead of selectively looking at the scope of the corporations' non-financial disclosure in a specific country. Furthermore, it implements data that categorises firms in either corporate greenwashing, CSR-as-insurance, or strategic CSR, using a new method as proposed just one year before this thesis was written by the researchers Bams, van der Kroft and Maas (2021).

The results in this thesis indicate that companies improve their overall CSP as a result of Directive 2014/95/EU. The magnitude of this result may be considered limited, especially since the Directive took many years of preparation. However, companies do seem to have improved their overall business operation, highlighting that mandatory non-financial disclosure regulation may be developed into an effective tool for policymakers to create enhanced business operations benefitting society. Furthermore, the results indicate that the effect of this Directive is not different for corporate greenwashing, CSR-as-insurance and strategic CSR. This result suggests that policymakers cannot use a similar regulation to target one of the firms categorised as corporate greenwashing, CSR-as-insurance or strategic CSR specifically. Finally, the outcomes indicate that Directive 2014/95/EU effectively increased

the CSP in the Governance pillar. The Governance pillar grade indicates that CSP increased in the themes ‘CSR strategy’, ‘Management’ and ‘Shareholders’. Such an increase can be attained by better non-financial reporting behaviour, more independent oversight of management, a fairer compensation structure of management or by a stronger CSR strategy. Refinitiv examines CSR strategy by looking at a company’s disclosure practices with its stakeholders on their decision-making processes about business operations related to financial social, and environmental matters (Refinitiv, 2022c). This thesis highlights that, even though the positive effect is still relatively small, these regulations do have the potential to make a positive change to society. Further research is needed to discover the exact mechanism in which mandatory non-financial disclosure regulations influence CSP, so policymakers can optimise the use of this tool and contribute to a better future.

7 | Conclusion

I examined to what extent Corporate Social Performance is affected by mandatory non-financial reporting regulations. The primary analysis supports hypothesis 1, which states that mandatory non-financial disclosure regulation increases overall CSP. The results provide evidence that Directive 2014/95/EU increases the CSP of European firms by roughly 1.5%, compared to non-European firms that do not have to comply with the Directive. No evidence supports hypotheses 2a and 2b, which state that mandatory non-financial disclosure regulations affect the CSP of firms in the greenwashing group differently from firms in the ESG-as-insurance and strategic CSR group. Similarly, the results show no support for hypothesis 2c, which stated that the positive effect of mandatory non-financial disclosure regulations on Corporate Social Performance is larger for corporations categorised as CSR-as-insurance than for firms categorised as Strategic CSR. In conclusion, there is partial support for hypothesis 3. There is evidence that Directive 2014/95/EU increased CSP in the individual Governance pillar by about 2.8%. On the other hand, the results provide no robust evidence that CSP in the Social and Environmental pillar are affected by Directive 2014/95/EU. This result indicates that mandatory non-financial disclosure regulations have a positive effect on CSP in the Governance pillar, but there is no robust evidence that this effect is similar for the CSP in the Environmental and Social pillar. A robustness check that shifts the start of the post-treatment year to the financial year in which Directive 2014/95/EU was enforced supports the results of the primary analysis. A further robustness check displays

results that align with the primary analysis when the treatment group is more similar to the control group after employing the propensity score matching technique. The analysis of Directive 2014/95/EU indicates that Corporate Social Performance is affected by mandatory non-financial reporting regulations.

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Appendix

Table A1 | Studies on mandatory non-financial reporting regulations

Reference	*Geographical focus*	*Name of Directive*	*Period of observations*	*Dependent variable*	*Independent variable*	*Industry*
Ioannou & Serafeim (2017)	China, Denmark, South Africa	Mandate for listed firms on SHSE, SZSE.	2005-2012	ESG disclosure score	Size, Profitability, Tobin's Q, leverage	Financial versus non-financial sectors
Doshi, Dowell, & Toffel (2013)	United States of America	The U.S. Emergency Planning and Community Right-to-Know Act of 1986	1995-2000	Environmental performance	Production level, employment	Manufacturing, mining, utilities, waste treatment and chemical distribution
Daske, Hail, Luez, & Verdi (2008)	The US and the entire world	Introduction of International Financial Reporting Standards (IFRS SEC 2007)	2001-2005	Tobin's Q, Bid-ask spread, transaction costs, #zero daily returns	Market value, turnover, volatility, Risk-free rate, Leverage	All
Mion & Adaui (2019)	Italy and Germany	Directive 2014/95/EU	2015-2018	Sustainability Reporting Quality index	Size, Profitability, Industry	All

Table A2 | Studies on Directive 2014/95/EU

Reference	Geographical focus	Name of Directive	Period of observations	Dependent variable	Independent variable	Industry
Pizzi, Baldo, & Caputo (2022)	Europe + Norway, and Iceland	Directive 2014/95/EU	2019	% reports according to Sustainable development goals	Hofstede dimensions (Hofstede 2011)	All
Lippai-Makra, Kovács, & Kiss (2022)	Hungary	Directive 2014/95/EU	2016-2018	Disclosure quality scores	Size, Profitability, Sustainability index and more	All
Carini, Rocca, , Veneziani, & Teodori, (2018).	Europe + Norway, and Iceland	Directive 2014/95/EU	2014-2017	N/A	N/A	Oil and gas
Venturelli, A., Caputo, F., Cosma, S., Leopizzi, R., & Pizzi, S. (2017).	Italy	Directive 2014/95/EU	2015-2016	Non-financial information score	# of employees, Assurance, Experience in sustainability disclosure	All
Matuszak, Ł., & Różańska, E. (2017)	Poland	Directive 2014/95/EU	2016-2017	N/A	N/A	All
Ottenstein, P., Erben, S., Jost, S., Weuster, C. W., & Zülch, H. (2021)	Europe, Norway and Iceland	Directive 2014/95/EU	2012-2018	Availability and comparability of ESG information	Size, Profitability, Leverage and more	All

Table A3 | Description of the variables in this thesis

Variable	Definition
Overall ESG score	ESG rating by Refinitiv, with a scale ranging from 0 (worst) to 100 (best)
Environmental Pillar	ESG rating by Refinitiv of the Environmental pillar with a scale ranging from 0 (worst) to 100 (best)
Social Pillar	ESG rating by Refinitiv of the Social pillar with a scale ranging from 0 (worst) to 100 (best)
Governance pillar	ESG rating by Refinitiv of the Governance pillar with a scale ranging from 0 (worst) to 100 (best)
EU treated	Variable with value ´1' when the firm is considered a large undertaking according to the criteria specified in 2013/34/EU
Post-treatment	Variable with value '1' if the year is from 2016 or later
Revenue	Yearly revenue of the firm
Debt	Yearly Debt-to-Equity of the firm
Profitability	Refers to the return on equity of the firm.
SIZE	Refers to the average number of full-time employees of a firm.
GRS	Categorises a variable into either (1) greenwashing, (2) risk management or (3) strategic CSR. 2016 is used as a base, this date determines in which category the subjects are before the treatment.

Table A4 | Propensity score matching Statistics of the treated and matched sample after the matching process

	Mean		t-test		V(T)/	
Variable	Treated	Control	%bias	t	p>t	V(C)
Profitability	0.138	0.137	0.800	0.270	0.785	1.050
lnrevenue	22.169	22.106	4.500	1.510	0.131	0.890*
Debt-to-Equity	0.914	0.889	1.500	0.570	0.569	0.480*
SIZE	35409	35011	0.700	0.220	0.824	1.050*

* if variance ratio outside [0.93; 1.08]

Table A5 | Regression results for hypothesis 1 (1) and hypotheses 2a, 2b and 2c (2) on the matched groups where the post-treatment period starts in 2017

VARIABLES	(1) ESG rating	(2) ESG rating
1.EU treated	omitted	omitted
Post-treatment	8.205***	7.532***
	(1.025)	(1.441)
1.EU treated#Post-treatment	2.205**	1.870
	(0.881)	(1.296)
2.GRS		omitted
3.GRS		omitted
1.EU treated#2.GRS		omitted
1.EU treated#3.GRS		omitted
Post-treatment #2.GRS		2.559
		(2.168)
Post-treatment #3.GRS		0.685
		(1.744)
1.EU treated#Post-treatment #2.GRS		-1.291
		(2.435)
1.EU treated#Post-treatment #3.GRS		4.165*
		(2.316)

lnrevenue	6.124***	6.496***
	(1.243)	(1.408)
Debt-to-Equity	0.166	0.162
	(0.131)	(0.141)
Profitability	4.791	6.484*
	(3.329)	(3.593)
SIZE	-0.000	-0.000
	(0.000)	(0.000)
Year fixed effects	YES	YES
Firm fixed effects	YES	YES
Constant	-89.656***	-97.838***
	(27.524)	(31.343)
Observations	5,128	3,788
R-squared	0.948	0.942

Source: Refinitiv Eikon and Bams et al. (2021)

Note: Standard errors (in parentheses) are clustered at the firm level. 2.GRS is the categorisation of firms in the CSR-as-insurance category and 3.GRS is the categorisation of firms in the strategic CSR category.

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

Table A6 | Hypothesis 3 with matched groups where the post-treatment period starts in 2017

VARIABLES	(1) Environmental pillar	(2) Social pillar	(3) Governance pillar
1.EU_treated	omitted	omitted	omitted
1.Post-treatment	5.954***	12.731***	3.793***
	(1.359)	(1.366)	(1.385)
1.EU_treated#Post-treatment	0.910	2.116*	4.072***
	(1.215)	(1.179)	(1.360)
lnrevenue	5.643***	4.622***	8.020***
	(1.547)	(1.433)	(1.971)
Debt-To-Equity	-0.160	0.187	0.401*
	(0.182)	(0.203)	(0.242)
Profitability	5.556	7.042	1.276
	(4.145)	(5.012)	(5.288)
Size	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)
Year fixed effects	YES	YES	YES
Firm fixed effects	YES	YES	YES
Constant	-79.894**	-59.879*	-127.668***
	(34.195)	(31.819)	(43.448)
Observations	5,128	5,128	5,128

R-squared	0.951	0.936	0.854

Source: Refinitiv Eikon

Robust standard errors in parentheses

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

Table A7 | Regression results for hypothesis 1 (1) and hypotheses 2a, 2b and 2c (2), where the post-treatment period starts in 2015

VARIABLES	(1) ESG rating	(2) ESG rating
1.EU treated	omitted	omitted
Post-treatment	8.694***	7.800***
	(0.693)	(0.905)
1.EU treated#Post-treatment	1.260*	1.647
	(0.726)	(1.011)
2.GRS		omitted
3.GRS		omitted
1.EU treated#2.GRS		omitted
1.EU treated#3.GRS		omitted
Post-treatment #2.GRS		1.197
		(1.414)
Post-treatment #3.GRS		1.406
		(1.134)
1.EU treated#Post-treatment #2.GRS		-0.780
		(1.998)
1.EU treated#Post-treatment #3.GRS		0.183
		(1.989)
lnrevenue	4.708***	4.808***
	(0.916)	(1.004)
Debt-to-Equity	0.118	0.097
	(0.088)	(0.112)
Profitability	-0.348	0.473
	(2.275)	(2.385)
SIZE	-0.000	0.000
	(0.000)	(0.000)
Year fixed effects	YES	YES
Firm fixed effects	YES	YES
Constant	-57.929***	-60.032***
	(20.429)	(22.521)
Observations	5,085	3,824
R-squared	0.936	0.930

Source: Refinitiv Eikon and Bams et al. (2021)

Note: Standard errors (in parentheses) are clustered at the firm level. 2.GRS is the categorisation of firms in the CSR-as-insurance category and 3.GRS is the categorisation of firms in the strategic CSR category.

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

Table A8 | Regression results for hypothesis 3, where the post-treatment period starts in 2015

VARIABLES	(1) Environmental pillar	(2) Social pillar	(3) Governance pillar
1.EU treated	omitted	omitted	omitted
Post-treatment	7.124***	13.393***	3.997***
	(0.885)	(0.916)	(1.078)
1.EU treated#Post-treatment	0.094	0.967	2.562**
	(0.947)	(0.978)	(1.237)
lnrevenue	5.304***	4.311***	4.327***
	(1.170)	(1.194)	(1.418)
Debt-to-Equity	-0.053	0.170*	0.146
	(0.085)	(0.098)	(0.188)
Profitability	-2.076	1.902	-0.958
	(2.747)	(2.834)	(3.880)
SIZE	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)
Year fixed effects	YES	YES	YES
Firm fixed effects	YES	YES	YES
Constant	-70.923***	-52.827**	-46.191
	(26.059)	(26.620)	(31.551)
Observations	5,085	5,085	5,085
R-squared	0.940	0.922	0.837

Source: Refinitiv Eikon

Robust standard errors in parentheses

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

Table A9 | Regression results for hypothesis 1 (1) and hypotheses 2a, 2b and 2c (2) with matched groups where the post-treatment period starts in 2015

VARIABLES	(1) ESG rating	(2) ESG rating
1.EU treated	omitted	omitted
Post-treatment	8.448***	7.793***
	(1.001)	(1.380)
1.EU treated#Post-treatment	1.775**	2.108
	(0.891)	(1.287)
2.GRS		omitted
3.GRS		omitted
1.EU treated#2.GRS		omitted
1.EU treated#3.GRS		omitted
Post-treatment #2.GRS		2.350
		(2.279)
Post-treatment #3.GRS		0.662
		(1.558)
1.EU treated#Post-treatment #2.GRS		-2.033

		(2.666)
1.EU treated#Post-treatment #3.GRS		0.971
		(2.242)
lnrevenue	6.028***	6.577***
	(1.282)	(1.421)
Debt-to-Equity	0.199	0.157
	(0.125)	(0.140)
Profitability	4.761	6.045*
	(3.307)	(3.566)
SIZE	-0.000	-0.000
	(0.000)	(0.000)
Year fixed effects	YES	YES
Firm fixed effects	YES	YES
Constant	-87.542***	-99.524***
	(28.360)	(31.663)
Observations	5,128	3,788
R-squared	0.947	0.941

Source: Refinitiv Eikon and Bams et al. (2021)

Note: Standard errors (in parentheses) are clustered at the firm level. 2.GRS is the categorisation of firms in the CSR-as-insurance category and 3.GRS is the categorisation of firms in the strategic CSR category.

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

Table A10 | Regression results for hypothesis 3 with matched groups where the post-treatment period starts in 2015

VARIABLES	(1) Environmental pillar	(2) Social pillar	(3) Governance pillar
1.EU treated	omitted	omitted	omitted
Post-treatment	5.409***	13.271***	4.636***
	(1.316)	(1.317)	(1.486)
1.EU treated#Post-treatment	1.904	1.145	2.561*
	(1.221)	(1.160)	(1.546)
lnrevenue	5.710***	4.479***	7.777***
	(1.551)	(1.476)	(2.022)
Debt-to-Equity	-0.142	0.217	0.460*
	(0.171)	(0.192)	(0.255)
Profitability	5.741	6.920	1.101
	(4.172)	(5.022)	(5.156)
SIZE	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)
Year fixed effects	YES	YES	YES
Firm fixed effects	YES	YES	YES
Constant	-81.377**	-56.728*	-122.323***

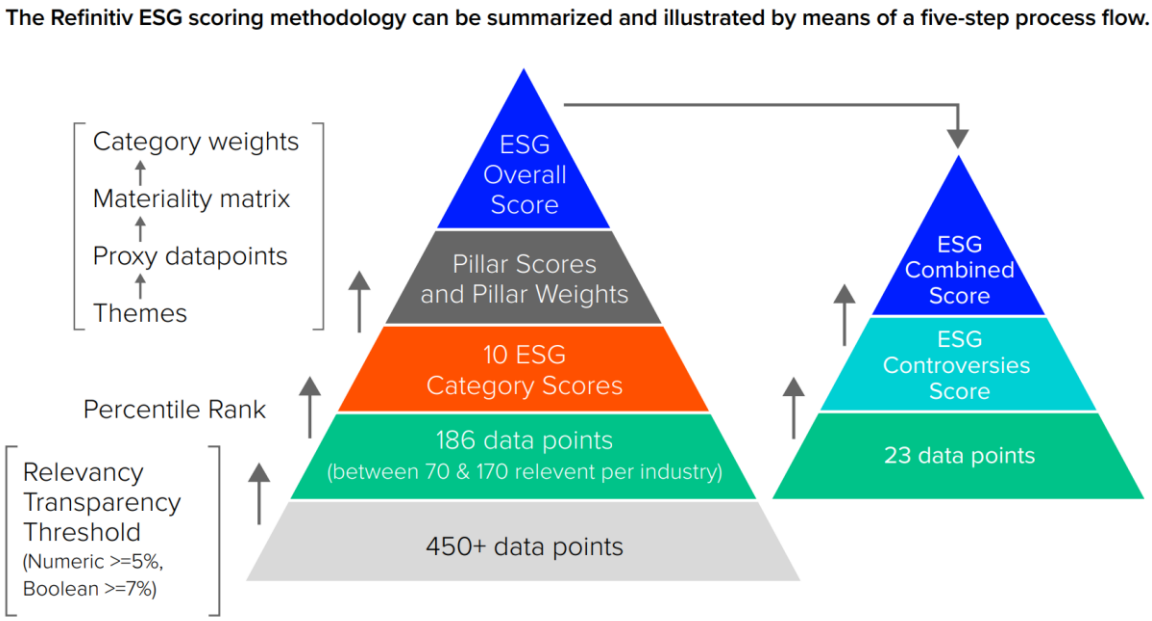
	(34.286)	(32.761)	(44.584)
Observations	5,128	5,128	5,128
R-squared	0.951	0.936	0.853

Source: Refinitiv Eikon

Note: Standard errors (in parentheses) are clustered at the firm level.

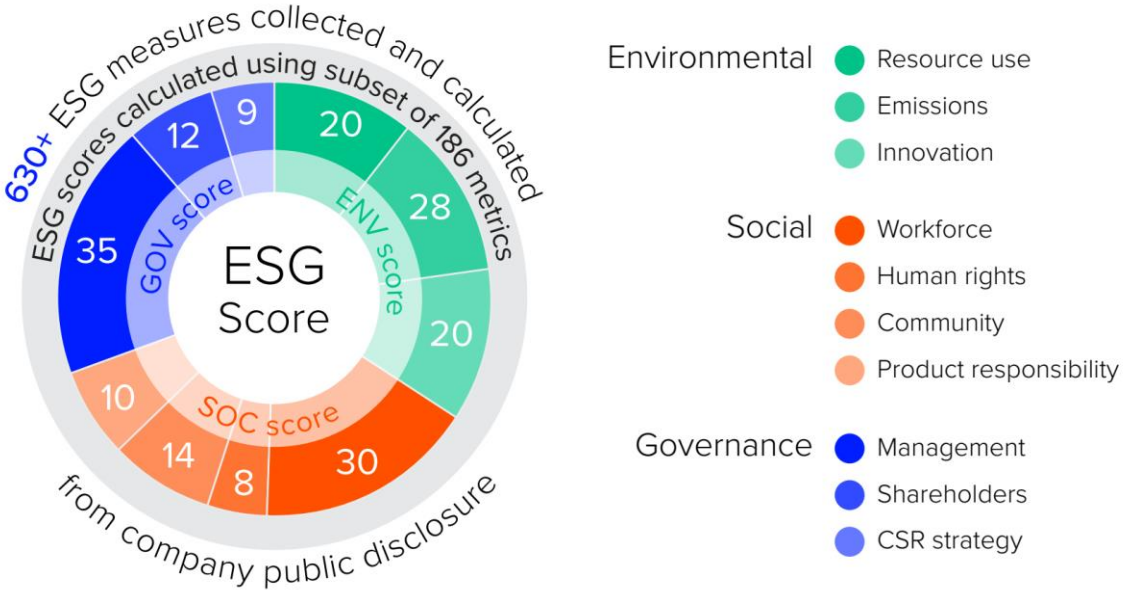
*** p<0.01, ** p<0.05, * p<0.1

Figure A1 | Overall ESG score



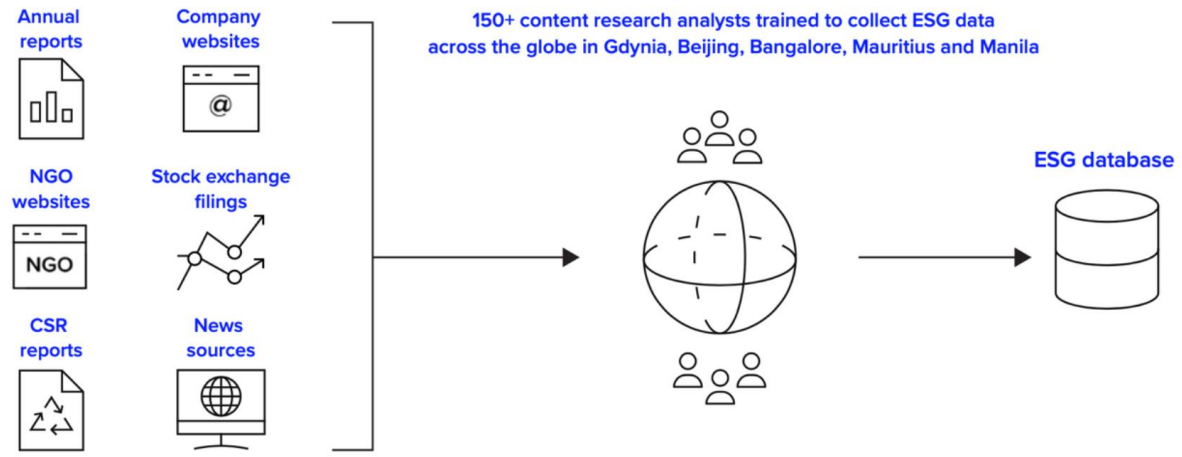
*Source (Refinitiv, 2022c).

Figure A2 | Components for the ESG score. Source: Refinitiv



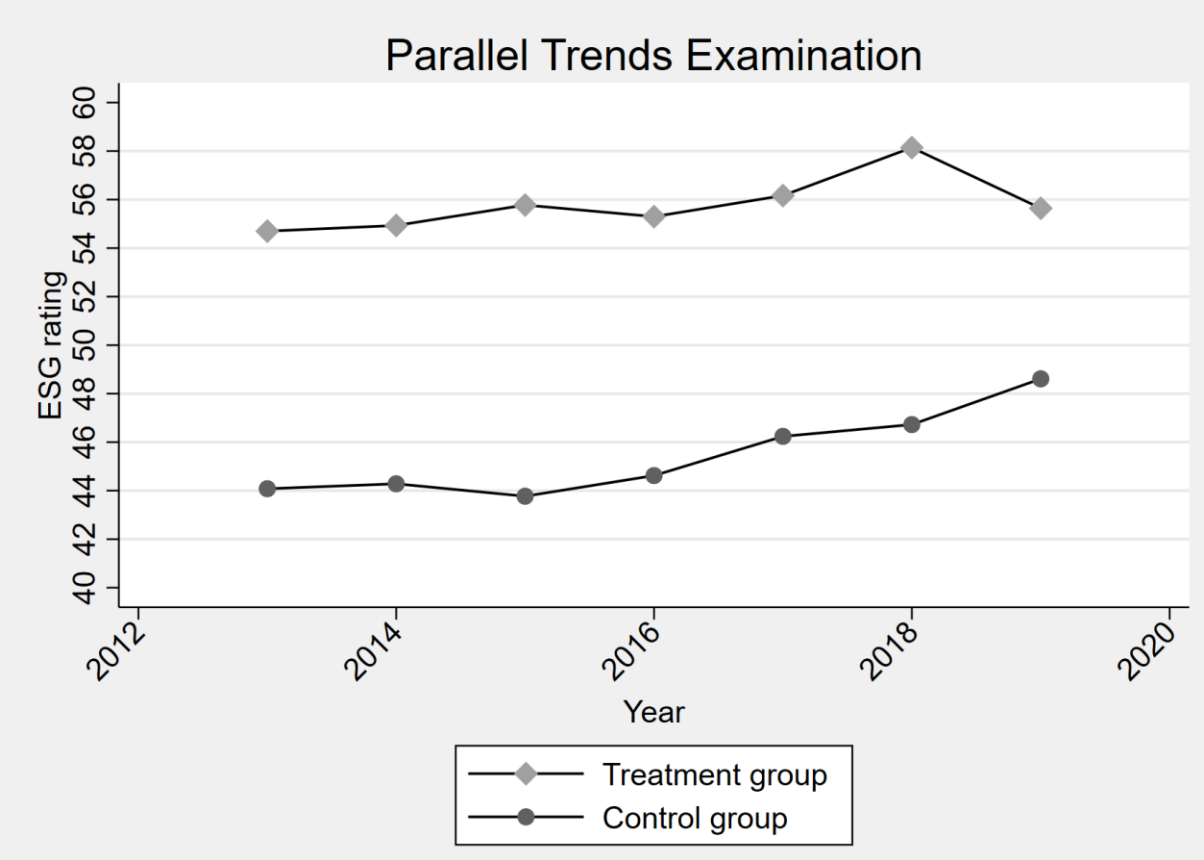
Source: (Refinitiv, 2022c)

Figure A3| Data sources for the ESG score Source: Refinitiv



Source: (Refinitiv, 2022c)

Figure A4 | Testing the parallel trends assumption. This figure includes firms with only one observation between 2013 and 2019.



Source: Refinitiv