Cross-Border Spillover Effects of Sustainability Reporting Mandate through Subsidiaries

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ABSTRACT: We investigate whether the European Union's (EU) corporate sustainability disclosure mandate has had spillover effects on U.S. firms through their EU subsidiaries. The Non-Financial Reporting Directive (NFRD) mandated large EU public interest entities to disclose their environmental and social matters starting in 2018, enhancing the EU's sustainability information environment. We find that U.S. firms with EU subsidiaries improved their CSR transparency compared to U.S. firms without EU subsidiaries following NFRD. Moreover, U.S. multinationals indirectly exposed to NFRD through their EU subsidiaries significantly improved their CSR performance. We find that the spillover effect of NFRD on U.S. multinationals is greater for firms with greater EU market exposure, superior prior ESG performance, more established ESG policies, and more salient EU subsidiaries (as proxied by their size, revenue, and similarity in operations). Our findings support that EU subsidiaries of U.S. multinationals serve as channels through which firms observe and strategically imitate global peers operating in more heavily regulated information environments. More broadly, our results indicate that sustainability reporting regulations can have spillover effects beyond their formal jurisdictions and underscore the importance of global standards in shaping corporate CSR practices across borders.

Keywords: corporate social responsibility (CSR); non-financial reporting directive (NFRD); regulation; multinational corporation (MNC); real effects; spillover effect; knowledge transfer; ESG

JEL Classifications : *G18 ; M48* **;** *M14 ; M41 ; F23 ; D83*.

1. Introduction

This study examines how the corporate social responsibility (CSR) reporting mandate in one jurisdiction can affect voluntary behaviors of firms in other jurisdictions through their subsidiaries' exposure to the regulatory change. As CSR gains prominence among policymakers and businesses—driven by growing stakeholder demands for transparency and accountability—CSR disclosure regulations have emerged as a key global policy issue of our time (e.g., Grewal & Serafeim, 2020; Fiechter et al., 2022). Among these efforts, the European Union (EU) has taken a leading role with the adoption of the Non-Financial Reporting Directive (NFRD, 2014/95)[1], which mandated large public interest entities to begin disclosing information on environmental and social matters in 2018. This regulatory shift to mandatory disclosure transformed the CSR reporting landscape in the EU, significantly increasing the volume of corporate sustainability information available to the market.

Compared to the EU, the U.S. takes a distinct approach to CSR reporting—focusing on financial materiality and relying more on voluntary reporting driven by market demand.[2] Despite being a regulation of a different jurisdiction, the EU CSR reporting mandate may have an effect on U.S. multinational corporations' (MNCs) CSR disclosure and activities by prompting them to respond to evolving regulatory norms in markets where they maintain a presence. We examine whether the NFRD has indirectly influenced U.S. firms' CSR disclosure and activities due to their operational presence in the EU via subsidiaries, even when those subsidiaries are not directly subject to the mandate. Existing empirical evidence demonstrates that CSR disclosure mandates

[1] The Directive is later replaced by the EU Corporate Sustainability Reporting Directive (CSRD), which introduces stricter and more explicit requirements for firms starting in 2025, covering the fiscal year 2024.
[2] There is no single unified law in the U.S. mandating all firms to report on their sustainability practices, although certain specific mandatory disclosure requirements exist, such as those regarding conflict minerals under the Dodd-Frank Act.

influence firms' reporting practices and activities within their respective jurisdiction (e.g., Fiechter et al., 2022; Chen et al., 2018). However, little is known about how CSR disclosure mandates generate cross-border spillover effects through firms' strategic monitoring of foreign jurisdictions where they maintain subsidiaries.

Prior literature identifies CSR knowledge as a strategic asset[3] for enhancing corporate reputation, meeting diverse stakeholder expectations, and supporting long-term competitive advantage (e.g., Chen et al., 2023; Porter and Kramer, 2006). In general, stakeholder expectations around CSR tend to be less demanding in the U.S. than in the EU. As a result, U.S. firms may view that the costs of CSR investments outweigh the perceived benefits. However, US MNCs operate across a range of institutional and regulatory environments, exposing them to evolving norms and practices, particularly in strategically important markets where they maintain significant operations. These firms are therefore likely to monitor regulatory developments in key jurisdictions to remain competitive and align with stakeholder and institutional expectations (Christmann, 2004; Marano & Kostova, 2016). Subsidiaries play a central role in linking firms to foreign markets, as "*the presence of subsidiaries implies a greater embeddedness of firms in the host country environment, which subjects them to stronger local institutional pressures*" (Marano and Kostova 2016, p. 36). Therefore, we predict that U.S. multinational firms with subsidiaries in the EU to be more motivated and capable to learn from the regulatory changes in the EU.

Particularly when faced with uncertainty, firms are prone to strategically imitate their peers (e.g., DiMaggio and Powell 1983; Christmann 2004). Globally, MNCs may voluntarily adopt CSR practices to keep pace with international competitors operating under stricter regulatory environments (Marano and Kostova 2016). When the EU mandated CSR reporting for large firms

[3] Chen et al. (2023), for example, show how firms acquire CSR knowledge through cross-border mergers and acquisitions to achieve sustainable competitive advantage.

through the NFRD, the regulation effectively raised the bar for CSR transparency and accountability. The NFRD's enhancement of CSR transparency in the EU likely increased public scrutiny and stakeholder pressure on firms, resulting in improvements in their practices (Fiechter et al., 2022; Christensen et al., 2017; Christensen et al., 2021; She, 2022). Subsidiaries can serve as points of heightened sensitivity to institutional and regulatory developments in their locations, prompting US firms with significant EU subsidiaries to respond to NFRD by aligning with the evolving standards and strategically imitating peers operating under stricter CSR mandates in the EU. The US firms may have gained practical insights into CSR disclosure by observing their EU peers under the mandate, including learning about the formats, content choices, and disclosure practices. They may have also monitored how these disclosures are received, noting signals from investors, media, and NGOs. In this way, U.S. firms, despite operating in a comparatively less regulated domestic environment, may voluntarily enhance their CSR practices, driven by exposure to EU regulations and peer behavior via their subsidiaries.

Based on the above prediction, we investigate whether U.S. multinational firms with EU subsidiaries were indirectly influenced by the NFRD mandate, using a difference-in-differences approach. We compare the treatment group—U.S. public firms with one or more subsidiaries in EU countries—with the control group—US public firms with subsidiaries only in the U.S. or in non-EU countries—around the first year of NFRD compliance. Specifically, the post-period includes the three firm-years starting from 2018, while the pre-period comprises the three firm-years preceding 2018.

Our findings reveal that U.S. firms with subsidiaries in the EU significantly improved their corporate social reporting transparency and performance following the start of the mandated NFRD reporting in 2018. Specifically, when the dependent variable is the aggregated CSR

transparency score, the interaction between EU subsidiary indicator and the post-period is statistically significant and positive across various model specifications and robustness checks. Similarly, both environmental and social performance of US firms with EU subsidiaries exhibit significant improvements after the mandated NFRD reporting began, indicating that firms not only increase transparency, but they also invest more in CSR activities. Importantly, firms with greater exposure to the EU market, proxied by an above-median number of EU subsidiaries, demonstrate stronger responsiveness to the NFRD mandate. This heightened effect is evident in CSR transparency and environmental performance, reflecting that increased exposure prompts parent firms to more actively monitor and learn from the external information environment in the EU, where the NFRD has introduced stricter CSR disclosure requirements. We also find that the spillover effect of NFRD is more pronounced for US firms with superior prior CSR performance and with more established ESG policies, consistent with these firms being better positioned to learn through their subsidiaries.

Next, we investigate the role of subsidiary salience to the US parent in amplifying the NFRD spillover effect. We conduct cross-sectional analyses using various measures of subsidiary salience, including the subsidiary size, the subsidiary-to-parent asset ratio, and industry similarity. Our findings show that higher subsidiary salience significantly amplifies the post-period effects on CSR transparency and performance. This suggests that the NFRD spillover effects are greater when the subsidiaries attract more parent attention due to these key factors.

We conduct several robustness tests to validate our results. First, we exclude U.S. firms cross-listed in the EU, which reinforces our main conclusions. The continued improvement in CSR practices among U.S. firms with EU subsidiaries, even after removing those affected by EU cross-listing, reinforces our main conclusion that these enhancements are primarily driven by the

NFRD's spillover effects. Second, we conduct a placebo test showing insignificant effects for multinational U.S. firms with non-EU subsidiaries, reinforcing that the CSR performance improvements are specifically driven by exposure to the EU's regulatory environment under the NFRD, rather than broader global CSR trends. Third, we employ alternative CSR data, which further confirms our findings.

Our paper makes several contributions to existing literature. First, it offers new insights into the real effects of CSR reporting mandates (Christensen et al., 2021). Prior studies have focused on the direct impacts of CSR mandates on regulated firms, such as improvements in reporting and practices (Ioannou & Serafeim, 2017; Christensen et al., 2017; Chen et al., 2018; Fiechter et al., 2022), investment and financing policies (Gibbons, 2023), and enhanced supply chain due diligence (She, 2022). We show that the real effects of the CSR reporting mandate can be indirect, spilling over to firms in other jurisdictions.

Second, our study contributes to the literature on the role of subsidiary locations in shaping MNCs' practices. Prior studies have found that U.S. firms with subsidiaries in strong rule of law countries have less earnings management (Dyreng et al. 2012), and that firms with subsidiaries in countries with strong legal and political institutions tend to exhibit higher CSR ratings (Attig et al. 2016). Our findings suggest that the presence of subsidiaries in the EU triggers the attention of US MNCs, motivating them to learn and improve their CSR practices following the mandated NFRD reporting in the EU. Moreover, while Cascino et al. (2024) show how multinational groups shift irresponsible ESG practices to subsidiaries in weaker enforcement jurisdictions, our study finds positive spillover effects due to subsidiary presence in more stringent jurisdictions.

Third, we contribute to the literature on regulatory spillovers by providing evidence of the indirect effect of a CSR reporting mandate through subsidiaries. While prior studies emphasize

how ESG disclosure regulations for banks generate transmission effects through lending relationships (Wang, 2023) and how directors' exposure to sustainability regulations abroad enhances the sustainability performance of U.S. firms through the importation of expertise (Iliev & Roth, 2023), we demonstrate how the EU's sustainability disclosure requirements spill over to unregulated U.S. multinational firms through subsidiaries. Our findings are particularly important for U.S. firms and investors as they navigate ongoing turbulence and uncertainty in domestic CSR regulation. The SEC's recent pullback from its climate-related disclosure rule highlights this regulatory volatility, especially amid changes in administrations. Such shifts risk increasing divergence between U.S. and global standards regarding CSR. Our results suggest that U.S. multinationals respond to EU regulations, indicating that foreign mandates and emerging global standards can help reduce uncertainty stemming from domestic regulatory instability for U.S. firms and their stakeholders.

2. Background and hypotheses development

2.1. Institutional background: CSR reporting regulation in the EU and the U.S.

In the EU, the non-financial reporting directive (NFRD, 2014/95) was the first major step towards mandatory CSR reporting. The directive contributed to achieving the United Nations' Sustainable Development Goals and staying within the framework of the Paris Agreement. The NFRD was passed in 2014, and the member states had time until the end of 2016 to transpose the directive into their national legislation with enforcement mechanisms similar to those for financial reporting. The NFRD mandated that public interest entities with more than 500 employees and with either more than EUR 20 million in total assets or more than EUR 40 million in sales must prepare non-financial disclosures annually starting with fiscal year 2017. The first mandatory NFRD reports were therefore published in 2018.

The NFRD required that companies publish annual, governance-approved CSR reports[4], which address policies, key risks, and outcomes related to environmental issues, social and employee matters, human rights, anti-corruption efforts, and board diversity. Although the NFRD did not prescribe a specific reporting standard, both the directive and the EU Commission's non-binding guidelines encouraged the use of established frameworks to facilitate compliance and meet reporting requirements. Among the frameworks recommended in these guidelines is the Global Reporting Initiative (GRI) standards.

The GRI Standards are a globally recognized framework for sustainability reporting, offering guidance on disclosing a wide range of ESG topics. There is a close alignment with the NFRD and GRI, for instance, both emphasizing a "double materiality" perspective, meaning companies should report on how ESG factors affect their business (financial materiality) and how their business impacts the environment and society (impact materiality). GRI standards align with this concept by encouraging companies to identify and report on their most significant impacts.

In the U.S., CSR reporting has been largely voluntary and driven by market demand, with an emphasis on the investor perspective and financial materiality (Christensen et al. 2021). Regulation is limited to specific disclosures, such as those mandated under the Dodd-Frank Wall Street Reform and Consumer Protection Act (2010), which requires reporting on mine safety and conflict minerals (Sections 1502 and 1503), and the U.S. Environmental Protection Agency (2009) mandate for greenhouse gas emissions disclosure for certain industries.

During the sample period of this study, a divergence between U.S. and EU approaches to CSR policy frameworks became evident after June 1, 2017, when U.S. President Donald J. Trump

[4] The NFRD also increased executives' responsibility for corporate sustainability reporting by requiring disclosures to be included in the Board of Directors' report or a separate statement signed by the board and CEO.

announced the United States' decision to withdraw from the 2015 Paris Agreement[5] on climate change mitigation. Trump argued that the agreement would undermine the U.S. economy and create a permanent disadvantage. The Paris Agreement, however, is a cornerstone of the EU's actions for sustainable economies, referenced in both the EU Guidelines on non-financial reporting and the NFRD review documents[6], highlighting a substantial difference in transatlantic CSR policies and political objectives during the Trump administration and the overlapping sample period (2017-2020).

2.2. Hypotheses development

MNCs are influenced by the institutional and regulatory environments of their foreign subsidiaries[7] (Attig et al., 2016; Dyreng et al., 2012), as their global operations often require adapting to diverse stakeholder expectations and compliance standards. To remain competitive and in line with institutional norms, MNCs actively monitor regulatory developments in the jurisdictions where their subsidiaries operate (Christmann, 2004; Marano & Kostova, 2016). In addition, they can benefit from the transparency of the external information environment in those regions, that is, the quality and quantity of information produced by competitors, supply chain partners, analysts, and the media (Shroff et al. 2014).

The EU's CSR information environment was enhanced with the introduction of the NFRD in 2014, which came into force in 2018. This directive elevated expectations for CSR transparency and accountability, potentially redefining industry norms. Fiechter et al. (2022) report that EU

[5] The Paris Agreement is an international treaty focused on climate change mitigation, adaptation, and finance, negotiated by 196 parties at the 2015 UN Climate Change Conference near Paris. Under the agreement, each country must determine, plan, and regularly report on its contributions.

[6] Consultation document review of the non-financial reporting directive (2020) states that non-financial matter "environment" in Article 19a of the Accounting Directive could possibly be further disaggregated to include "Alignment with Paris Agreement".

[7] Firms with subsidiaries in countries with strong legal and political institutions tend to exhibit higher CSR ratings (Attig et al., 2016) and demonstrate less earnings management compared to those operating in weaker institutional environments (Dyreng et al., 2012).

firms subject to the NFRD started adapting even before enforcement, resulting in gradual improvements in CSR reporting and activities, with stronger impacts observed already starting from 2016.

US firms with significant EU subsidiaries may have reacted to these developments. When faced with uncertainty, firms are inclined to strategically mimic their peers viewed as more legitimate or successful (e.g., DiMaggio and Powell 1983). In the CSR context, Cao et al. (2019, p. 5487) suggest that *"a firm's adoption of CSR policies can affect peer firms' "utilities" in competition, leading the peers to respond strategically by adopting more CSR practices*". This type of mimicking may extend across borders, as MNCs voluntarily adopt CSR practices to stay aligned with international competitors facing stricter regulatory requirements (Marano and Kostova 2016). As a result, subsidiaries' presence may increase attention to institutional and regulatory environments in host countries, encouraging and facilitating imitation of peers governed by more demanding CSR mandates.

US firms having EU subsidiaries may have acquired procedural knowledge concerning how CSR is disclosed in practice, allowing them to strategically imitate. This includes formats, content choices and disclosure practices, as observed from peer firms operating under the mandate. Prior research indicates that public disclosures serve as valuable resources for corporate learning and peer imitation (e.g., Bernard et al. 2020; Badertscher et al. 2013). The NFRD led EU firms subject to its requirements to significantly enhance CSR transparency and engagement by providing more detailed disclosures on environmental, social, and governance factors (Fiechter et al., 2022), improving the overall CSR information environment. This created opportunities for U.S. companies to learn from and adopt these practices.

Additionally, US firms can observe not just peer disclosures but also the reactions they elicit, such as investor responses, media coverage, NGO scrutiny. Prior research (e.g., She, 2022) underscores the role of external stakeholder pressure in amplifying the real effects of CSR mandates[8]. The increased CSR transparency in the EU has likely intensified public scrutiny, compelling firms to enhance their sustainability practices (Fiechter et al., 2022; Christensen et al., 2017). This, in turn, creates feedback loops (Christensen, 2021), where stakeholder reactions influence corporate CSR performance and reputation, fostering greater accountability[9]. Through exposure to the EU's CSR reporting mandate via subsidiaries, U.S. firms may thus be motivated to gain insights into evolving stakeholder priorities, enabling them to monitor industry trends, anticipate reputational risks, and align with societal expectations. This can ultimately drive refinement in CSR strategies, ensuring firms remain competitive and responsive to shifting global sustainability standards, and aligned with a broader stakeholder audience (Attig et al., 2016; Chen et al., 2023).

While stakeholder demands in the U.S. for CSR may be less stringent than in the EU, and hence, firms might perceive the costs of CSR investments as outweighing the benefits, based on the above discussion, it may be that EU subsidiary presence enhances the US MNC's capacity and incentive to strengthen CSR transparency, particularly after 2018 in response to the NFRD. Based on this, we propose the following hypothesis:

H1: U.S. firms with EU subsidiaries increased CSR transparency relative to U.S. firms without EU subsidiaries following the start of mandated NFRD reporting in 2018.

[8] According to She (2022), the real effects of the CSR mandate are more pronounced when firms face greater pressure from NGOs and socially conscious shareholders, when customers have stronger incentives to use the disclosed information, and when the regulation enhances information comparability.

[9] According to Christensen et al. (2021), firms are expected to adjust their CSR activities when stakeholders leverage newly disclosed information to apply pressure, such as through reduced consumption, divestment, or activism.

The aim of the NFRD was to enhance transparency without explicitly mandating additional investments in CSR activities or performance. As a result, U.S. firms with EU subsidiaries might prioritize enhancing CSR disclosures over improving CSR activities, as the former is less costly (Wickert et al. 2016). However, stakeholder reactions to disclosed information can drive greater engagement and a shift of resources toward CSR investments (Christensen et al., 2021; She, 2022). Evidence from EU firms supports this, with the NFRD shown to drive meaningful improvements in CSR activities (Fiechter et al., 2022). Hence, we predict:

H2: U.S. firms with EU subsidiaries enhanced CSR performance relative to U.S. firms without EU subsidiaries following the start of mandated NFRD reporting in 2018.

Greater exposure to the EU market can also drive closer monitoring of subsidiaries and the use of external information. Thus, we propose:

H3: The spillover effect of NFRD on U.S. firms with EU subsidiaries was greater for firms with greater exposure to the EU market.

The impact of the NFRD mandate on U.S. firms with EU subsidiaries may depend on the U.S. parent company's prior ESG performance and ESG policies. We do not offer a directional prediction. On one hand, U.S. firms with weaker ESG records and limited ESG infrastructure may face greater pressure under NFRD and have more room for improvement. On the other hand, U.S. firms with stronger ESG performance and more established ESG policies may be better positioned to engage with the evolving information environment in the EU. Through their subsidiaries, these firms may more effectively absorb knowledge about ESG disclosure practices and stakeholder responses, and translate that knowledge into improvements at the parent level.

H4: The spillover effect of NFRD on U.S. firms with EU subsidiaries was greater for firms with superior prior ESG performance and more established ESG policies.

Finally, the regulatory spillover on U.S. multinationals may depend on the subsidiary salience for the US parent. If the EU subsidiary that is exposed to the regulatory change is more salient and attracts greater attention from the parent's perspective, it would facilitate a larger NFRD spillover effect. We expect that more salient subsidiaries are larger and operate in similar business as the parent firm. Hence, we expect that the spillover effects on US firms are greater when their EU subsidiaries are more salient for them.

H5: The spillover effect of NFRD on U.S. firms with EU subsidiaries was greater for firms with EU subsidiaries that are more salient.

3. Data and methodology

3.1. Data and sample

We obtain CSR performance and reporting data from LSEG ESG. The database provides comprehensive and granular metrics of firms' CSR reporting and performance that are used broadly in prior research (e.g., Fiechter et al., 2021; Iliev & Roth, 2023; Wang, 2023). The financial data used in the main analyses of this study are from Compustat and I/B/E/S, while subsidiary data is from Wharton Research Data Service (WRDS). Additional ESG data for robustness tests are obtained from MSCI. In addition to the main tests, we perform cross-sectional analyses using the EU subsidiaries data from Orbis.[10]

Our initial sample consists of all publicly listed U.S. firms from 2015 to 2020. Panel A of Table 1 outlines the sample selection process. Subsequently, upon incorporating the EU subsidiaries indicator, we discard observations that do not align with the available subsidiary data. Following

[10] Through the Orbis database, we identified subsidiaries of parent firms using the parent's ISIN. The subsidiary IDs were then used to collect financial and organizational data on the subsidiaries for the years 2015–2020. We acknowledge that the data slightly differs from WRDS data on subsidiaries, as the WRDS classification relies on a parent firm's identification of significant subsidiaries in SEC filings, such as the 10-K and 10-Q, primarily through Exhibit 21.

this, we further refine the dataset by excluding observations where the EU subsidiary indicator displays inconsistency within the sampled period. Finally, we exclude firm-years that are missing the necessary data for the variables used in our analysis. After these exclusions, we are left with a sample of 9,040 firm-years. From this sample, we identify 5,525 treatment firm-years and 3,515 control firm-years.

We use a difference-in-differences research design to compare changes in CSR reporting transparency and CSR performance between treatment and control firms during our sample period. This period begins in 2015, three years prior to the enforcement of the NFRD, and concludes in 2020, three years after the mandated firms began reporting. The post-period starting from 2018 marks a significant development in the EU's sustainability reporting landscape, as it encompasses the introduction of mandated sustainability disclosures and the increased availability of sustainability information in the EU market.

To test the impact of NFRD on U.S. firm reporting and performance through our hypothesized spillover mechanism, we define treated firms as U.S. entities with at least one subsidiary in the EU[11] consistently across both the pre- and post-periods. To ensure accurate effect measurement, we exclusively select firms with constant EU subsidiaries during both periods by removing those with inconsistency within the sampled period. As our benchmark group, we consider U.S. firms without EU subsidiaries, those with global and/or domestic subsidiaries. We employ entropy balancing to harmonize the samples between the treatment and control groups, with a more detailed explanation provided in Section 3.2.

Table 1 presents the distribution of treatment and control firms by year and sector. Panel B shows that in our sample, the number of treatment firm-years ranges from 702 in 2015 to 945 in

[11] The treatment group includes the United Kingdom since it was part of the EU during the sample period.

2020, reflecting an increase in the number of firms receiving environmental and social scores and reporting performance over time. The corresponding firm-year observations for the control group range from 329 in 2015 to 659 in 2020, indicating even greater growth. Panel C provides the distribution of treatment and benchmark firms by sector (Fama–French 12 industry groups). Treated firms have a significant representation in the computers, software, and electronic equipment industry (25%), while the control group is predominantly represented by the finance industry (34%).

[Insert Table 1 here]

3.2. Variables and descriptive statistics

Our choice of the two main outcome variables is based on Fiechter et al. (2022). The first dependent variable, *CSR Transparency*, examines the impact of the NFRD on firms' sustainability reporting practices. *CSR Transparency* is an aggregate measure of five indicators: an indicator for firms providing a standalone CSR report (*CSR Report*), an indicator for providing CSR reports that cover global operations (*Report Scope*), an indicator for providing CSR reports that adopts the Global Reporting Initiative (*GRI Report*) standards, an indicator for providing CSR reports that adopt the reporting guidelines developed by the Organization for Economic Co-operation and Development (*OECD Report*), and an indicator for providing CSR reports that are reviewed by independent third-party (*Assurance*). While the individual indicators provide valuable information, the overall *CSR Transparency* score offers a comprehensive understanding of firms' CSR reporting practices.

Our second dependent variable, *CSR Performance*, combines environmental performance (*ENV Score*) and social performance scores (*SOC Score*), which represent the firm's relative

performance in sustainability, commitment, and effectiveness[12]. The *ENV Score* includes the categories of resource use, emissions, and innovation, while the *SOC Score* covers workforce, human rights, community, and product responsibility (LSEG Data & Analytics, 2024). While the individual environment and social scores offer insights into specific aspects of an entity's performance relative to others in each domain, the overall CSR Performance score provides a more comprehensive performance in corporate social responsibility, encapsulating the firm's collective CSR efforts.

The indicator variable, *EU*, distinguishes between treated and control U.S. firms. Firms with at least one subsidiary in the EU are assigned a value of 1, while firms without EU subsidiaries are assigned a value of 0.

We control for factors that are potentially associated with the decision to report CSR or to increase CSR activities in our analyses. We control for firm size (*TA*) and the number of employees (*EMP*), as larger firms typically face greater external pressure and have more resources to enhance their CSR practices (e.g., Wang, 2023). Furthermore, as suggested by prior literature (Fiechter et al., 2022; Wang, 2023), financial constraints may limit a firm's engagement in CSR activities. Therefore, we include the following financial control variables: leverage (*LEV*), cash from operations (*CFO*), asset turnover (*ATO*), dividends per share (*DPS*), asset structure (*PPE*), growth opportunities (*LNTQ*), and operating profitability (*ROA*). We also control the total number of analysts following a firm, as analysts can potentially serve as intermediaries for the effects of CSR disclosure mandates, thereby driving increased CSR performance and reporting. Detailed descriptions of all variables can be found in the appendix.

[12] LSEG Data & Analytics. Environmental, social, and governance (ESG) data, "ESG Scores." Accessed [2024]. https://www.lseg.com/en/data-analytics/sustainable-finance/esg-scores.

We use the covariates mentioned above as well as industry membership (Fama–French 12 industry groups), as matching parameters for entropy balancing. To account for time-invariant, unobservable differences in firm characteristics and year-specific trends in CSR reporting and performance, we include firm-fixed effects and year-fixed effects, respectively, in our analyses.

Table 2 presents the descriptive statistics for our firm-year-level variables. As seen in Panel A, the mean CSR Transparency is 1.19 for the treatment firms and 0.60 for the control firms. The mean CSR Performance during our sample period is 39.76 for the treatment firms and 26.45 for the control firms. To better understand the baseline for treated and control firms before the NFRD took effect, we present CSR Transparency and CSR Performance statistics for both the pre- and post-periods. In Panel B, before the reporting mandate came into force in the EU in 2018, the mean *CSR Transparency* score was 1.00 for the treatment group and 0.49 for the control group, whereas the mean *CSR Performance* score was 37.62 for the treatment group and 26.14 for the control group.

The descriptive statistics for firm characteristics in Panel D present the results before entropy balancing, while Panel E shows the statistics after balancing the treatment and control firms' covariates.

Table 3 provides additional summary statistics for the variables used in cross-sectional analyses. A median treated firm had 10 EU subsidiaries in the pre-period. Consistent with the observation in Table 2, treated firms, on average, have more environmental and social policies than control firms.

[Insert Table 2 here]

[Insert Table 3 here]

Table 4 presents the Pearson correlation coefficients among the main variables. Notably, there is a strong correlation (0.73) between environmental performance (*ENV Score*) and social performance (*SOC Score*). Additionally, we observe a high correlation between having a CSR report (*CSR Report*) and environmental performance (*ENV Score*) (0.76), as well as between the global scope of the report (*Reporting Scope*) and the environmental performance (*ENV Score*) (0.73).

[Insert Table 4 here]

4. NFRD's regulatory spillover effects on U.S. multinationals

4.1. Effect on CSR Transparency

To examine the impact of mandated NFRD reporting on U.S. firms with EU subsidiaries, compared to the control group, we estimate the following OLS regression model:

$$\boldsymbol{CSR\ Transparency/Performance = \beta_0 + \beta_1(Post\ 2018 \times EU) + \sum \beta_i Controls_i + Year\ fixed\ effect + Firm\ fixed\ effect + \epsilon.} \quad (1)$$

In the regression model, *CSR Transparency* is regressed on the interaction between a post-period dummy variable (*Post 2018*) and an indicator for U.S. firms with EU subsidiaries (*EU*), along with controls for firm characteristics. We include firm and year fixed effects. Our findings confirm that the mandated NFRD reporting in the EU has significantly increased CSR reporting for U.S. firms with EU subsidiaries as measured by the comprehensive *CSR Transparency* score, relative to U.S. firms without EU subsidiaries. Specifically, Panel A (column 1) of Table 5 shows that the interaction term ($Post\ 2018 \times EU$) is statistically significant at the 1% level, with a coefficient of 0.255 (t = 3.22), indicating a larger increase in *CSR Transparency* in the post-period for US firms with EU subsidiaries. This effect remains consistent in magnitude and significance

even when incorporating industry-year fixed effects (column 2) or when not applying entropy balancing (results untabulated). These results support that NFRD had spillover effects on the CSR disclosure practices of U.S. firms with EU subsidiaries.

The yearly treatment effects, visualized in Figure 1, further support this conclusion. The estimates, along with 95% confidence intervals, reveal that the effect on *CSR Transparency* is statistically significant from 2018 to 2020. To illustrate the contrast with U.S. firms without EU subsidiaries, Figure 2 presents the fitted values for CSR Transparency scores over time, showing a clear divergence starting in 2018.

Breaking down CSR Transparency into its components in Panel B, the analysis further shows positive and statistically significant effects on specific CSR reporting areas. For instance, the NFRD mandated reporting led to an incremental increase of 0.086 in *CSR Report* (t = 3.16) and 0.082 in *Reporting Scope* scores (t = 3.01) for the treated U.S. firms, both significant at the 1% level. *OECD Report* saw a slight increase with a coefficient of 0.016 (t = 4.59), while *Assurance* experienced a modest increase of 0.038 (t = 2.97), both significant at the 1% level. The effect on *GRI Report*, with a coefficient of 0.044 (t = 1.62), is not significant.

Overall, these results confirm that the start of mandated NFRD reporting in the EU had a positive and statistically significant impact on the CSR transparency of U.S. firms with EU subsidiaries. Mostly so in areas such as the number of standalone CSR reports disclosed and the scope of reports regarding global activities.

[Insert Table 5 here]

[Insert Figure 1 here]

[Insert Figure 2 here]

4.2. Effect on CSR Performance

To examine whether the mandated NFRD reporting in the EU impacted the CSR performance of U.S. firms with EU subsidiaries, we estimate Equation (1), but with *CSR Performance* as the outcome variable. Table 6 presents the results. Our findings suggest that the mandated NFRD reporting has positively influenced the CSR practices of U.S. firms with EU subsidiaries, including both environmental and social performance. Column 1 in Table 6 shows a statistically significant interaction between the post-period and EU subsidiaries at the 1% level, with a coefficient of 2.521 for the *CSR Performance* (t = 2.90). Similarly to CSR transparency, the effect remains consistent in magnitude and significance with industry-year fixed effects (column 2) and without entropy balancing (results untabulated).

The yearly treatment effects, presented in Figure 3, reinforce this finding, with estimates and 95% confidence intervals indicating statistically significant effects from 2018 to 2020. Additionally, to highlight the difference compared to U.S. firms without EU subsidiaries, Figure 4 presents the fitted values for CSR Performance scores over time, showing a clear divergence starting in 2017, but the effects become statistically significant only from 2018 onward.

Breaking down the CSR Performance score into its components, Panel B of Table 6 reveals that the NFRD led to a significant increase in environmental performance (*ENV Score*) for treated U.S. firms, with a coefficient of 2.670 (t = 2.70), significant at the 1% level, representing a meaningful enhancement in firms' environmental initiatives. The social performance score (*SOC Score*) also improved significantly more for the treated firms, with a coefficient of 2.371 (t = 2.46), significant at the 5% level, though slightly smaller in magnitude compared to environmental performance.

These results indicate that the start of the mandated NFRD reporting in the EU led to improvements in both environmental and social performance among treated firms. The increase in

environmental performance is particularly notable, contrasting with previous findings by Fiechter et al. (2022), who observed that the NFRD primarily impacted social activities of EU firms within the NFRD scope.[13]

[Insert Table 6 here]

[Insert Figure 3 here]

[Insert Figure 4 here]

4.3. The moderating effect of greater EU exposure

To further examine the role EU subsidiaries play in encouraging and facilitating regulatory spillover, we examine whether the magnitude of parents' EU exposure, measured by the number of EU subsidiaries, moderates the spillover effect. If the spillover effects are indeed driven by increased attention to the jurisdiction in which the subsidiaries are located, we would expect this attention to intensify with multiple subsidiaries. We employ the following OLS model to test whether the impact of mandated NFRD reporting on US firms' CSR reporting and performance is more pronounced for firms with greater exposure to the EU.

$$\boldsymbol{CSR\ Transparency/Performance = \beta_0 + \beta_1(EU \times Post\ 2018 \times High\ Exposure) + \beta_2(Post\ 2018 \times EU) + \beta_3(EU \times High\ Exposure) + \sum \beta_i Controls_i + Year\ fixed\ effect + Firm\ fixed\ effect + \epsilon.} \quad (2)$$

In the regression model, we use the same post-period (*Post 2018*) dummy as in Equation 1. We define *High Exposure* as an indicator that equals one for firms with the number of EU subsidiaries equal to or greater than pre-period median (10). Control variables, firm fixed effects,

[13] However, we note that the investigation period in Fiechter et al. (2022) ends in 2018.

and year fixed effects are included in the regression, as in Equation 1. Out of the total sample of 9,040 observations, 2,772 have a number of EU subsidiaries above the median.

The results in Table 7, Panel A show the moderating effect of high EU exposure on the spillover effect of NFRD on U.S. MNCs' CSR transparency and its components. The interaction term for high EU exposure and the post-2018 period (*EU x Post 2018 x High Exposure*) shows a significant positive effect on *CSR Transparency* at the 5% level, with a coefficient of 0.123 (t = 2.190). For specific reporting practices, treated firms with high EU exposure had a larger increase in the likelihood of adherence to GRI standards. Similarly, there are larger growth in OECD aligned reporting for treated firms with high EU exposure. In contrast, we do not observe a significant moderating effect of EU exposure when *CSR report* and *Reporting Scope* are used as outcome variables. The results indicate that the mandated NFRD reporting had a greater effect on U.S. firms with higher EU exposure, especially in terms of improving GRI-aligned reporting, supporting the role of subsidiaries in facilitating the regulatory spillover effect.

Next, we re-estimate Equation 2 using CSR Performance as the outcome variable to assess whether the high level of exposure to the EU influences firms' sustainability initiatives and CSR activities following the implementation of the mandated NFRD reporting. The estimated results in Table 7, Panel B highlight the effect of the NFRD on CSR performance based on U.S. parents' EU exposure. The interaction term for high EU exposure and the post-2018 period (*EU x Post 2018 x High Exposure*) has a significant positive effect at the 1% level on *CSR Performance*, with a coefficient of 2.045 (t = 3.248). For the environmental performance (column 2), the high exposure interaction term is positive and significant at the 1% level, with a coefficient of 3.591 (t = 4.343). This indicates that firms with greater exposure to the EU show greater improvements in their environmental performance post 2018. In contrast, the result for social scores (column 3) is not

statistically significant. Taken together, these results suggest that the mandated NFRD reporting had a more pronounced impact on U.S. firms with higher exposure to the EU, particularly in enhancing environmental performance.

[Insert Table 7 here]

4.4. The moderating effect of prior ESG performance and ESG policies

The magnitude of the NFRD's spillover effect, or the degree of learning and imitation from U.S. multinational firms, may differ based on the prior ESG performance and established ESG policies of the U.S. parent. On one hand, firms with poor prior ESG performance and limited ESG policies may have more to learn from foreign developments and have greater room for improvement until they reach the global standards. However, U.S. parents with superior ESG performance and well-established ESG policies may be better positioned to learn from the evolving regulatory and information environment in the EU, with strong ESG-related policies facilitating knowledge transfer and improvements in their ESG performance. Therefore, without directional prediction, we explore the role of parents' prior CSR performance and ESG policies in moderating the spillover effects of NFRD.

To estimate the effect of parents' prior ESG performance, we estimate the following:

$$\boldsymbol{CSR\ Transparency/Performance = \beta_0 + \beta_1(EU \times Post\ 2018 \times HighPriorCSR) + \beta_2 (Post\ 2018 \times EU) + \beta_3(Post\ 2018\ x\ HighPriorCSR) + \sum \beta_i Controls_i + Year\ fixed\ effect + Firm\ fixed\ effect + \epsilon.} \quad (3)$$

HighPriorCSR is a dichotomous indicator that takes the value of 1 if the pre-period (2015) CSR performance score is equal to or above the median, and 0 otherwise. The number of observations is slightly smaller (5,797) due to fewer firms with CSR scores in 2015.

Panel A of Table 8 show that the triple interaction term (*EU x Post 2018 x HighPriorCSR*) has a significant positive effect on CSR transparency at the 10% level, with a coefficient of 0.359 (t = 1.740). This suggests that U.S. firms with superior CSR performance in the pre-period experienced greater improvement in CSR transparency following the implementation of the NFRD in 2018. This effect—larger spillover effect for firms with better prior CSR performance—is concentrated on *GRI Report* (coefficient of -0.155, p<0.05), *OECD Report* (coefficient of -0.025, p<0.01), and *Assurance* (coefficient of -0.084, p<0.05), as shown in columns 2-6.

Panel B reports the results for CSR performance. We do not find a significant moderating effect of prior CSR performance for the NFRD spillover effect on CSR performance, potentially due to the conflicting economics forces discussed above. Overall, the results suggest that the regulatory spillover effect and related learning are greater for U.S. parents that already had stronger CSR performance.

[Insert Table 8 here]

To examine how parents' ESG policies influence the regulatory spillover effect for U.S. firms with EU subsidiaries, we conduct a cross-sectional analysis using parents' ESG policies as moderating variables. The regression model used for this analysis is as follows:

$$\boldsymbol{CSR\ Transparency/Performance = \beta_0 + \beta_1(EU \times Post\ 2018 \times Policies) + \beta_2 (Post\ 2018 \times EU) + \beta_3(Post\ 2018 \times Policies) + \beta_4(Policies) + \beta_5 (EU \times Policies) + \sum \beta_i Controls_i + Year\ fixed\ effect + Firm\ fixed\ effect + \epsilon.} \quad (4)$$

Policies is the sum of environmental policies (*ENV Policies*) and social policies (*SOC Policies*).

The results in Panel A, Table 9 indicate that the interaction term *EU x Post 2018 x Policies* has a statistically significant effect at the 1% level for *CSR Transparency*, with a coefficient of 0.069 (t = 3.715). Moreover, when examining the effect of environmental and social policies separately (columns 2 and 3), we observe that both environmental and social policies increase the spillover effects on the treated firms.

In Panel B, for CSR performance, the interaction term *EU x Post 2018 x Policies* is statistically significant at the 10% level, with a coefficient of 0.331 (t = 1.677). This suggests that U.S. MNCs with stronger ESG policies experience a greater impact of NFRD on CSR performance post-2018. However, when the effect is disaggregated into environmental and social policies, neither environmental nor social policies shows a significant moderating effect. These findings support that U.S. parents with superior ESG policies are better at learning from regulatory developments in foreign jurisdictions.

[Insert Table 9 here]

4.5. The moderating effect of subsidiary salience

We predict that the regulatory spillover effects on US firms are greater when their EU subsidiaries are more prominent to the parent firm. To test this, we define four binary variables to indicate above-median subsidiary salience: subsidiary size (*High LNTA*), the subsidiary-to-parent asset ratio (*High TA Ratio*), total subsidiary revenue (*High Revenue*), and operational similarity (*High Similarity*), which measures the extent to which EU subsidiaries operate in the same industry as the parent company. High levels refer to values equal to or greater than the median. These subsidiary characteristic variables are constructed using the Orbis database. By merging Orbis data

to our main U.S. firm dataset, we obtain a sample of 8,233 firm-year observations, with 807 firm-years excluded compared to the main analysis.[14]

Table 10, Panel A presents the results for the effect subsidiary size (*High LNTA*) in moderating the spillover effect of NFRD. The effect of *EU x Post 2018 x High LNTA* is statistically significant for CSR transparency at the 1% level (coefficient = 0.172, t = 2.932), suggesting that U.S. firms with larger EU subsidiaries experience greater improvements in transparency post-NFRD. However, the same interaction term is not significant for CSR performance, implying that subsidiary size has a more direct influence on CSR transparency than performance.

Panel B examines the effect of subsidiary-to-parent asset ratio (*High TA Ratio*). The interaction term (*EU x Post 2018 x High TA Ratio*) has significant effect on CSR transparency at the 10% level (coefficient = 0.056, t = 0.940) and on CSR performance at the 1% level (coefficient = 1.842, t = 2.765). These results indicate that U.S. firms with larger EU subsidiaries (relative to the parents' size) saw larger improvements in both transparency and performance after 2018.

Panel C explores the effect of total subsidiary revenue (*High Revenue*). The interaction term *EU x Post 2018 x High Revenue* is significant for CSR transparency at the 1% level (coefficient = 0.173, t = 2.872) and for CSR performance at the 10% level (coefficient = 1.245, t = 1.857), highlighting the positive impact of higher subsidiary revenue on facilitating NFRD spillover effects.

Finally, Panel D investigates operational similarity (*High Similarity*), proxied by the number of EU subsidiaries operating in the same industry as the parent company. The interaction term *EU*

[14] Note that the Orbis and WRDS subsidiary data do not fully align. WRDS includes subsidiaries considered significant in SEC filings, while Orbis captures subsidiaries with available financial data, regardless of significance. Due to the absence of subsidiary IDs in WRDS, which prevents data integration, we use both datasets independently, while acknowledging their differences. However, our results remain consistent, showing that the exposure measures from WRDS (number of subsidiaries) and Orbis (financial characteristics) yield similar outcomes.

x Post 2018 x High Similarity is significant for CSR transparency at the 5% level (coefficient = 0.123, t = 1.985) and for CSR performance at the 1% level (coefficient = 1.812, t = 2.638). These findings suggest that U.S. firms with EU subsidiaries operating in the same industries experience a stronger regulatory spillover effect on both CSR transparency and performance, potentially because knowledge transfer is easier if parents and subsidiaries have similar operations.

Overall, these results show that EU subsidiary size, subsidiaries' relative size to the parent, revenue, and operational similarity amplify the regulatory spillover effect of the NFRD on CSR outcomes for U.S. firms with EU subsidiaries, both in terms of transparency and performance.

[Insert Table 10 here]

Applying the principal component analysis (PCA)[15], we combine the above four binary subsidiary variables into an aggregate subsidiary salience variable (*Salience*). To construct the *Salience* variable, we take the first principal component (Component 1), which explains 73.21% of the total variance, as indicated by its Eigenvalue of 2.92842. The loadings for Component 1 reveal that all four variables—the size of subsidiaries (*High LNTA*), the subsidiary-to-parent asset ratio (*High TA Ratio*), total revenue of subsidiaries (*High Revenue*), and operational similarity (*High Similarity*)—contribute positively, with loadings of 0.5291, 0.4946, 0.5132, and 0.4604, respectively. This is consistent with larger subsidiaries and subsidiaries operating in similar businesses attracting greater attention from the parents. Scaling is performed to ensure that the PCA variable reflects the standardized contributions of these factors, with Component 1 being a linear combination of the variables weighted by their eigenvector coefficients.

[15] Summing the four subsidiary salience factor variables instead of using PCA yields similar results.

We test the moderating effect of EU subsidiary salience to U.S. parent on the impact of the mandated NFRD reporting on U.S. firms. Table 11 presents the results. The interaction term *EU x Post 2018 x Salience* is statistically significant at the 1% level for CSR transparency (0.046, t = 2.682) and at the 5% level for CSR performance (0.478, t = 2.455). Notably, the EU subsidiary salience significantly increases the effect of NFRD on U.S. firms' likelihood of adherence to the GRI framework. In terms of CSR performance, treated firms with more salient EU subsidiaries had a larger impact of NFRD on environmental performance, but not on social performance. These findings suggest that higher subsidiary salience amplifies the positive spillover effects of the NFRD on CSR outcomes for U.S. firms.

[Insert Table 11 here]

5. Robustness Tests

5.1. Robustness test excluding U.S. firms cross-listed in the EU

We conduct a robustness test by excluding U.S. firms that are cross-listed in the EU to better isolate the spillover effect of the NFRD on U.S. firms with EU subsidiaries. Cross-listed firms are subject to additional regulatory and reporting requirements in the EU, which could independently influence their CSR practices. By excluding these firms, we can more accurately assess whether the observed changes in CSR behavior among U.S. firms with EU subsidiaries are attributable to the NFRD spillover effect, rather than the direct impact of cross-listing. This approach ensures that our results reflect the influence of the NFRD on firms that are not directly regulated by EU reporting standards.

As shown in column 1 of Table 12, Panel A, the results remain robust and positive. The interaction term *Post 2018 x EU* is statistically significant at the 1% level for the overall *CSR Transparency* score (coefficient = 0.215; t = 2.76). These findings align with the main analysis,

reinforcing the positive link between the mandated NFRD reporting and CSR transparency for US firms with EU subsidiaries.

Panel B of Table 12 reports significant spillover effects of NFRD on U.S. parents' *CSR Performance* after excluding cross-listed firms. The interaction term *Post 2018 x EU* is statistically significant at the 1% level for overall *CSR Performance* (coefficient = 2.680; t = 3.19), Environmental Score (coefficient = 2.602; t = 2.60), and Social Score (coefficient = 2.758; t = 3.01). These results again support that NFRD had spillover effects on U.S. firms through their subsidiaries.

[Insert Table 12 here]

5.2. Placebo test: the effect of non-EU subsidiaries

To examine whether multinational firms behave differently from purely domestic U.S. firms, we conduct a placebo test by comparing U.S. multinational firms with EU subsidiaries to those with foreign non-EU subsidiaries (Table 13). In both cases, the control group consists of U.S. firms with only domestic subsidiaries.

To isolate the intended effect, we exclude non-EU firm-year observations that include subsidiaries in European countries outside the EU, as these nations likely have close economic and strategic agreements with the EU. Additionally, we include only observations that consistently fall within the defined treatment and control groups (EU, Non-EU, or US-only). This results in a sample of 5,525 firm-year observations for U.S. firms with EU subsidiaries (column 1) and 863 firm-year observations for U.S. multinational firms with non-EU subsidiaries (column 2).

In the CSR transparency results reported in Table 13, Panel A, the interaction term for *Post 2018 x EU* is positive and significant at the 5% level (0.239, t = 2.30), whereas the interaction term for *Post 2018 x Non-EU* is not significant. This indicates no measurable effect for U.S. firms with

non-EU subsidiaries around NFRD, yet substantial improvements in CSR transparency for U.S. firms with EU subsidiaries following the mandated NFRD reporting.

The inferences are similar from the results of the CSR performance model (Table 13, Panel B). Specifically, the interaction term for *Post 2018 x EU* is positive and significant at the 1% level (2.897, t = -2.89), while the interaction term for *Post 2018 x Non-EU* is insignificant (0.267, t = -0.25). These results confirm that improvements in CSR transparency and performance are specifically driven by exposure to the EU's regulatory environment under the NFRD, rather than broader global CSR trends or unrelated factors.

[Insert Table 13 here]

5.3. Validation using alternative data

We utilize MSCI ESG Ratings data to test the robustness of our results and apply it in the regression analysis following Equation 1. MSCI ESG Ratings consist of three pillars: Environment, Social, and Governance. Our focus is on the Environment and Social Pillars, which include the following eight themes: climate change, natural capital, pollution and waste, environmental opportunities, human capital, product liability, stakeholder opposition, and social opportunities. Both regressions include 7,528 observations.

Our findings indicate that the mandated NFRD reporting had a positive impact on environmental performance (*ENV Pillar*) for the treated firms. In column 1 of Table 14, we find that the interaction term between the post period and U.S. firms with EU subsidiaries (*Post 2018 x EU*) is statistically significant at 5% level, with a coefficient of 0.199 and a t-value of 2.47, suggesting a significant positive impact on their environmental performance. However, in column 2, the effect of NFRD on treated firms' social performance (*SOC Pillar*) is not statistically significant.

[Insert Table 14 here]

6. Conclusion

This study examines the regulatory spillover effects of the European Union's Non-Financial Reporting Directive (NFRD) on U.S. multinational corporations with subsidiaries in the EU. The NFRD, which mandated large EU public interest entities to disclose their ESG matters starting in 2018, marked a significant shift in the EU's sustainability information environment. Our findings provide evidence that U.S. firms with non-mandated EU subsidiaries voluntarily improved both their CSR transparency and performance following its implementation. The NFRD spillover effects on U.S. firms are larger for U.S. parents with greater exposure to the EU market (proxied by a higher number of EU subsidiaries), with superior prior ESG performance, with more ESG policies, and with EU subsidiaries that are more salient to the parents (because of their size and similarity in operations). The NFRD spillover effect was particular led to improvements in treated U.S. firms' CSR transparency, adoption of the GRI framework and environmental performance.

Our contributions to the literature are threefold. First, we extend the understanding of CSR disclosure mandates by providing novel evidence of their real effects. For example, while Cascino et al. (2024) examine how multinational business groups may engage in regulatory arbitrage by shifting irresponsible ESG practices to subsidiaries in countries with weaker enforcement, our study takes a different angle. We explore how CSR practices from highly regulated environments, such as the EU, are absorbed by multinational firms. Second, we contribute to the literature on the role of subsidiaries shaping MNCs' practices (e.g., Dyreng et al. 2012) by showing how significant foreign subsidiaries may serve as catalysts, facilitating parents' learning from subsidiaries' regulatory and institutional environment and allowing the parents to adapt to evolving stakeholder expectations and demands from global markets. Third, we contribute to cross-jurisdictional

regulatory spillovers (e.g., Iliev and Roth 2023; Wang 2023), showing that CSR disclosure mandates do not operate in isolation but have far-reaching effects. Due to parent-subsidiary relationships, sustainability practices diffuse across borders, influencing firms in less-regulated markets.

These findings carry important implications for policymakers and practitioners. From a policy perspective, our results highlight the effects of sustainability regulations like the NFRD, even beyond their immediate jurisdiction. As the EU transitions to the stricter Corporate Sustainability Reporting Directive (CSRD), understanding these dynamics becomes crucial for anticipating global regulatory impacts. By aligning with global sustainability standards, firms can not only mitigate reputational risks but also gain a competitive edge in increasingly sustainability-conscious markets.

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APPENDIX A. Variable definitions

Variable name	Definition	Source
Dependent variable		
CSR Performance	CSR Performance Score is based on LSEG Environmental Score (enscore) and Social Score (soscore).	Constructed based on LSEG
ENV Score	Environmental Score (enscore)	LSEG
SOC Score	Social Score (soscore)	LSEG
CSR Transparency	CSR Transparency Score assigns a score of 1 for each of the following: CSR report available (cgvsdp026), CSR report covering global activities (cgvsdp029), GRI report (cgvsdp028) available or OECD report (socodp013) available, and CSR report audited (cgvsdp030). The score ranges from 0 (low CSR reporting) to 4 (high CSR reporting).	Constructed based on LSEG
CSR Report	Indicates (1/0) whether CSR report is published (cgvsdp026).	LSEG
GRI Report	Indicates (1/0) whether CSR report is compliant with GRI reporting guidelines (cgvsdp028).	LSEG
OECD Report	Indicates (1/0) whether CSR report is compliant with OECD reporting guidelines for multinational enterprises (socodp013).	LSEG
Reporting Scope	Indicates (1/0) whether CSR report covers global activities (cgvsdp029).	LSEG
Assurance	Indicates (1/0) whether CSR report is audited (cgvsdp030).	LSEG
ENV Pillar	ENV Pillar Score is the annual average of the monthly Environmental Pillar Scores provided by MSCI.	MSCI
SOC Pillar	SOC Pillar Score is the annual average of the monthly Social Pillar Scores provided by MSCI.	MSCI
Independent variable		
EU	Indicates (1/0) whether U.S. firm has EU subsidiaries.	Compustat
Post 2018	Indicator that equals one for the period after NFRD implementation (2018-2020) and zero otherwise.	
Non-EU	Indicates (1/0) whether a U.S. firm has international subsidiaries located outside of the European Union (EU).	Compustat
Cross-sectional variable		
High Exposure	Indicates (1/0) whether the number of EU subsidiaries is greater than or equal to the.	Compustat
ESG Policies	ESG Policies Score is an aggregated score combining the environmental policies (ENV Policies) and social policies (SOC Policies) scores, with a max score of 12.	Constructed based on LSEG
ENV Policies	ENV Policies is a total count of environmental policies with a score of 1 for Energy Efficiency (enrrdp0122),	Constructed based on LSEG

	Emission (enerdp0051), and Water Efficiency (enrrdp0121) policies, with a max score of 3.	
SOC Policies	SOC Policies is the total count of policies scored 1 for Customer Health and Safety (soprdp0121), Data Privacy (soprdp0124), Responsible Marketing (soprdp0126), Fair Trade (soprdp0128), Diversity (sododp0081), Child Labor (sohrdp0102), Forced Labor (sohrdp0103), Human Rights (sohrdp0105), and Employee Health (sohsdp0121), with a max score of 9.	Constructed based on LSEG
HighPriorCSR	2015 CSR score is derived from the social score (SOSCORE) and environmental score (ENSCORE), with a value of 1 assigned to firms with scores equal to or above the median, indicating superior prior CSR performance.	Constructed based on LSEG
High LNTA	Indicates (1/0) whether the size of EU subsidiaries is above the median (log of total assets).	Orbis
High TA Ratio	Indicates (1/0) whether the EU subsidiary-to-parent asset ratio is above median.	Orbis and Compustat
High Revenue	Indicates (1/0) whether the operating revenue of EU subsidiaries is above median.	Orbis
High Similarity	Indicates (1/0) whether the number of EU subsidiaries in same industry as parent is above median based on the two-digit NAICS code.	Orbis and Compustat
Salience	Aggregated subsidiary salience variable constructed using High LNTA, High TA Ratio, High Revenue and High Similarity through Component Principal Analysis.	Orbis and Compustat
Firm characteristics		
LN(TA)	Log of fiscal year's total assets	Compustat
LEV	Total liability to total assets	Compustat
CFO	Cash from operations (Operating Activities - Net Cash Flow) to total assets	Compustat
ATO	Net sales divided by total assets	Compustat
DPS	Dividends per share divided by earnings per share	Compustat
PPE	Net property, plant & equipment divided by total assets	Compustat
LN(TQ)	Log of market value calculated by: (total assets + (common shares outstanding * prcc_f) – common / ordinary equity) divided by total assets	Compustat
ROA	Net income divided by total assets	Compustat
LN(EMP)	Log of number of employees	Compustat
LN(AF)	Log of number financial analyst following a firm	I/B/E/S

TABLE 1 – Sample Description

Panel A: Sample selection

Compustat data for U.S. firms, 2015-2020	62,934
After cleaning and removing observations without subsidiary data	19,548
After removing observations with missing values	10,406
After removing inconsistencies in the EU indicator	9,040

Panel B: Sample distribution per year

	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**Total**
Treated U.S. firms	702	901	974	1,029	974	945	5,525
Control U.S. firms	329	514	626	675	712	659	3,515

Panel C: Sample distribution per industry

	Treated U.S. Firms		Control U.S. Firms	
	Firm-Years	Percentage (%)	Firm-Years	Percentage (%)
(1) Consumer Non-Durables	296	5.36	81	2.30
(2) Consumer Durables	206	3.73	27	0.77
(3) Manufacturing	839	15.19	165	4.69
(4) Oil, Gas, and Coal Extraction (Energy)	118	2.14	239	6.80
(5) Chemicals and Allied Products	285	5.16	20	0.57
(6) Computers, Software, and Electronic Equipment	1,374	24.87	138	3.93
(7) Telephone and Television Transmission	91	1.65	67	1.91
(8) Utilities	32	0.58	289	8.22
(9) Wholesale, Retail, and Some Services	460	8.33	459	13.06
(10) Healthcare, Medical Equipment, Drugs	690	12.49	286	8.14
(11) Finance	535	9.68	1,180	33.57
(12) Other (e.g., Hotels, Entertainment)	599	10.84	564	16.05
Total	**5,525**	**100.00**	**3,515**	**100.00**

TABLE 2 – Descriptive statistics for the main regression analysis

Panel A: CSR statistics

	Treated U.S. Firms (N = 5,525)			Control U.S. Firms (N = 3,515)		
	Mean	Mdn	S.D.	Mean	Mdn	S.D.
CSR Performance						
CSR Performance	39.76	35.46	23.22	26.45	20.39	18.32
ENV Score	31.11	24.81	28.67	17.60	6.84	22.73
SOC Score	48.42	46.72	21.23	35.31	32.01	17.40
CSR Transparency						
CSR Transparency	1.19	0.00	1.50	0.60	0.00	1.16
CSR Report	0.42	0.00	0.49	0.23	0.00	0.42
Report Scope	0.39	0.00	0.49	0.22	0.00	0.42
GRI Report	0.25	0.00	0.43	0.11	0.00	0.31
OECD Report	0.02	0.00	0.15	0.00	0.00	0.05
Assurance	0.13	0.00	0.33	0.04	0.00	0.20

Panel B: CSR statistics for pre period

	Treated U.S. Firms (N =2,577)			Control U.S. Firms (N = 1,469)		
	Mean	Mdn	S.D.	Mean	Mdn	S.D.
CSR Performance						
CSR Performance	37.62	32.41	22.81	26.14	21.11	17.64
ENV Score	29.27	22.12	28.20	18.18	11.85	21.94
SOC Score	45.97	44.16	20.93	34.10	31.11	16.84
CSR Transparency						
CSR Transparency	1.00	0.00	1.45	0.49	0.00	1.10
CSR Report	0.35	0.00	0.48	0.18	0.00	0.38
Report Scope	0.33	0.00	0.47	0.18	0.00	0.38
GRI Report	0.22	0.00	0.42	0.10	0.00	0.30
OECD Report	0.02	0.00	0.13	0.00	0.00	0.04
Assurance	0.10	0.00	0.31	0.03	0.00	0.18

Panel C: CSR statistics for post period

	Treated U.S. Firms (N = 2,948)			Control U.S. Firms (N =2,046)		
	Mean	Mdn	S.D.	Mean	Mdn	S.D.
CSR Performance						
CSR Performance	41.64	37.81	23.42	26.68	19.75	18.80
ENV Score	32.72	28.26	28.99	17.18	4.81	23.27
SOC Score	50.55	48.85	21.27	36.18	32.90	17.74
CSR Transparency						
CSR Transparency	1.34	0.00	1.52	0.68	0.00	1.20
CSR Report	0.47	0.00	0.50	0.26	0.00	0.44
Report Scope	0.45	0.00	0.50	0.26	0.00	0.44
GRI Report	0.27	0.00	0.44	0.12	0.00	0.32
OECD Report	0.03	0.00	0.17	0.00	0.00	0.05
Assurance	0.14	0.00	0.35	0.05	0.00	0.21

Panel D: Firm characteristics without entropy balancing

	Treated U.S. Firms (N = 5,525)			Control U.S. Firms (N = 3,515)		
	Mean	Mdn	S.D.	Mean	Mdn	S.D.
Firm Characteristics						
ROA	0.02	0.04	0.16	0.00	0.02	0.18
LN(TA)	22.00	21.85	1.74	21.80	21.81	1.68
LEV	0.61	0.60	0.26	0.66	0.69	0.26
CFO	0.08	0.09	0.13	0.05	0.06	0.16
ATO	0.82	0.69	0.58	0.67	0.37	0.76
DPS	0.24	0.00	0.69	0.27	0.11	0.67
PPE	0.18	0.12	0.17	0.28	0.12	0.30
LN(TQ)	0.72	0.61	0.59	0.40	0.23	0.51
LN(EMP)	1.87	1.96	1.68	0.74	0.71	1.85
LN(AF)	2.25	2.30	0.80	1.92	1.95	0.85

Panel E: Firm characteristics with entropy balancing

	Treated U.S. Firms (N = 5,525)			Control U.S. Firms (N = 3,515)		
	Mean	Mdn	S.D.	Mean	Mdn	S.D.
Firm Characteristics						
ROA	0.02	0.04	0.16	0.02	0.05	0.15
LN(TA)	22.00	21.85	1.74	22.02	21.81	1.74
LEV	0.61	0.60	0.26	0.61	0.61	0.26
CFO	0.08	0.09	0.13	0.08	0.09	0.13
ATO	0.82	0.69	0.58	0.81	0.75	0.58
DPS	0.24	0.00	0.69	0.25	0.09	0.69
PPE	0.18	0.12	0.17	0.18	0.13	0.17
LN(TQ)	0.72	0.61	0.59	0.72	0.64	0.58
LN(EMP)	1.87	1.96	1.68	1.86	1.77	1.67
LN(AF)	2.25	2.30	0.80	2.26	2.40	0.80

TABLE 3 – Descriptive statistics for cross-sectional analysis

Panel A: Number of EU subsidiaries in treated U.S. firms (control U.S. firms have none)[16]

	Pre-period (N = 2,577)			Post-period (N = 2,948)		
	Mean	Mdn	S.D.	Mean	Mdn	S.D.
Treated U.S. Firms' EU subsidiaries	25.05	10.00	43.66	23.86	9.00	41.55

Panel B: ESG policies

	Treated U.S. Firms (N = 5,500)			Control U.S. Firms (N = 3,498)		
	Mean	Mdn	S.D.	Mean	Mdn	S.D.
ESG Policies						
ESG Policies (max=12)	5.583	6.000	3.000	3.608	3.000	2.543
Environmental Policies						
ENV Policies (max=3)	1.403	1.000	1.321	0.815	0.000	1.172
Energy Efficiency	0.535	1.000	0.499	0.304	0.000	0.460
Emission	0.464	0.000	0.499	0.286	0.000	0.452
Water Efficiency	0.404	0.000	0.491	0.225	0.000	0.417
Social Policies						
SOC Policies (max=9)	4.180	4.000	1.985	2.793	2.000	1.675
Customer Health and Safety	0.255	0.000	0.436	0.117	0.000	0.321
Data Privacy	0.934	1.000	0.249	0.911	1.000	0.284
Responsible Marketing	0.029	0.000	0.167	0.016	0.000	0.126
Fair Trade	0.011	0.000	0.105	0.013	0.000	0.111
Diversity	0.902	1.000	0.297	0.756	1.000	0.430
Child Labor	0.472	0.000	0.499	0.177	0.000	0.382
Forced Labor	0.509	1.000	0.500	0.186	0.000	0.389
Human Rights	0.371	0.000	0.483	0.115	0.000	0.320
Employee Health	0.697	1.000	0.460	0.502	1.000	0.500

[16] WRDS subsidiaries data, source SEC filings

TABLE 4 – Correlation coefficients among firm-level variables (N = 9,040 firm-years)

And	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1 EU	1																
2 ENV Score	0.241***	1															
3 SOC Score	0.307***	0.727***	1														
4 CSR Rep.	0.194***	0.758***	0.630***	1													
5 Rep. Scope	0.176***	0.729***	0.604***	0.965***	1												
6 GRI Rep.	0.170***	0.662***	0.572***	0.681***	0.647***	1											
7 OECD Rep.	0.086***	0.152***	0.201***	0.123***	0.121***	0.150***	1										
8 ASSUR.	0.142***	0.506***	0.451***	0.441***	0.439***	0.529***	0.142***	1									
9 ROA	0.055***	0.198***	0.119***	0.142***	0.138***	0.103***	0.034**	0.086***	1								
10 LN(TA)	0.057***	0.582***	0.508***	0.502***	0.491***	0.439***	0.101***	0.385***	0.298***	1							
11 LEV	-0.107***	0.110***	0.107***	0.089***	0.080***	0.095***	0.007	0.093***	-0.050***	0.320***	1						
12 CFO	0.091***	0.190***	0.107***	0.146***	0.146***	0.104**	0.035***	0.076***	0.770***	0.207***	-0.057***	1					
13 ATO	0.106***	0.027*	-0.025*	-0.012	-0.010	-0.029**	-0.003	-0.043***	0.215***	-0.213***	-0.066***	0.293***	1				
14 DPS	-0.022*	0.123***	0.094***	0.095***	0.084***	0.100***	0.025*	0.073***	0.110***	0.132***	0.091***	0.080***	-0.019	1			
15 PPE	-0.190***	0.197***	-0.001	0.187***	0.189***	0.151***	0.008	0.053***	0.014	0.077***	-0.009	0.170***	0.078***	0.010	1		
16 LN(TQ)	0.264***	-0.003	0.117***	-0.011	-0.010	-0.002	0.011	0.036***	0.003	-0.294***	-0.147***	0.077***	0.154***	0.003	-0.142***	1	
17 LN(EMP)	0.299***	0.563***	0.496***	0.441***	0.427***	0.375***	0.104***	0.312***	0.360***	0.647***	0.180***	0.358***	0.325***	0.055***	0.129***	-0.042***	1
18 LN(AF)	0.191***	0.464***	0.462***	0.394***	0.389***	0.350***	0.076***	0.284***	0.136***	0.585***	0.058***	0.184***	-0.035***	0.033**	0.111***	0.181***	0.502***

This table presents the Pearson correlation coefficients between various variables. The variable EU serves as the independent indicator for EU subsidiaries. Variables 2-8 represent the outcome variables for *CSR Transparency* and *CSR Performance*. The control variables include *LN(TA)* (firm size), *LEV* (leverage), *CFO* (cash flow from operations), *ATO* (asset turnover), *DPS* (dividends per share), *PPE* (asset structure), *LN(TQ)* (growth opportunities), *ROA* (operating profitability), *LN(EMP)* (number of employees), and *LN(AF)* (analyst following/recommendations). These covariates along with industry membership (using Fama–French 12 industry groups) are used as matching parameters for entropy balancing. The reported correlations are weighted accordingly.

TABLE 5 – Effect of the CSR Directive on firms' CSR transparency

Panel A: Aggregated CSR Transparency Score

	(1) *CSR Transparency*	(2) *CSR Transparency*
Post 2018 x EU	0.255***	0.254***
	(3.219)	(3.214)
Control variables	Included	Included
Firm FE	Included	Included
Year FE	Included	Not included
Industry Year FE	Not included	Included
Entropy balanced	Yes	Yes
N	9040	9040
adj. R^2	0.788	0.791

Panel B: Components of CSR Transparency Score

	(1) *CSR Report*	(2) *Reporting Scope*	(3) *GRI Report*	(4) *OECD Report*	(5) *Assurance*
Post 2018 x EU	0.086***	0.082***	0.044	0.016***	0.038***
	(3.163)	(3.012)	(1.621)	(4.588)	(2.966)
Control variables	Included	Included	Included	Included	Included
Firm FE	Included	Included	Included	Included	Included
Year FE	Included	Included	Included	Included	Included
Industry Year FE	Not included	Not included	Not included	Not included	Not included
Entropy balanced	Yes	Yes	Yes	Yes	Yes
N	9040	9040	9040	9040	9040
adj. R^2	0.702	0.686	0.731	0.708	0.798

This table reports results from estimating the difference-in-difference model (Eq. 1) with *CSR Transparency* and its components, including, *CSR Report* (firms that prepared a CSR report), *Reporting Scope* (CSR report with a global reporting scope), *GRI Report*, *OECD Report*, and *Assurance* as the dependent variables. *Post 2018* variable indicates the years between 2018 and 2020. Control variables comprise *LN(TA)* (firm size), *LEV* (leverage), *CFO* (cash from operations), *ATO* (asset turnover), *DPS* (Dividends per share), *PPE* (asset structure), *LN(TQ)* (growth opportunities), *ROA* (operating profitability), *LN(EMP)* (number of employees), *LN(AF)* (analysts following/recommendations). These covariates along with industry membership (Fama–French 12 industry groups) are used as matching parameters for Entropy balancing. The t-values, reported below coefficients, are based on robust standard errors clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

TABLE 6 – Effect of the CSR Directive on firms' CSR performance

Panel A: CSR Performance

	(1) *CSR Performance*	(2) *CSR Performance*
Post 2018 x EU	2.521***	2.396***
	(2.896)	(2.760)
Control variables	Included	Included
Firm FE	Included	Included
Year FE	Included	Not included
Industry Year FE	Not included	Included
Entropy balanced	Yes	Yes
N	9040	9040
adj. R^2	0.915	0.918

Panel B: Components of CSR Performance

	(1) *ENV Score*	(2) *SOC Score*
Post 2018 x EU	2.670***	2.371**
	(2.701)	(2.456)
Control variables	Included	Included
Firm FE	Included	Included
Year FE	Included	Included
Industry Year FE	Not included	Not included
Entropy balanced	Yes	Yes
N	9040	9040
adj. R^2	0.908	0.879

This table reports results from estimating the difference-in-difference model (Eq. 1) with *CSR Performance* and its components including *ENV Score*, and *SOC Score* as the dependent variables. *Post 2018* variable indicates the years between 2018 and 2020. Control variables comprise *LN(TA)* (firm size), *LEV* (leverage), *CFO* (cash from operations), *ATO* (asset turnover), *DPS* (Dividends per share), *PPE* (asset structure), *LN(TQ)* (growth opportunities), *ROA* (operating profitability), *LN(EMP)* (number of employees), *LN(AF)* (analysts following/recommendations). These covariates along with industry membership (Fama–French 12 industry groups) are used as matching parameters for Entropy balancing. The t-values, reported below coefficients, are based on robust standard errors clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

TABLE 7 – Moderating effect of high EU market exposure

Panel A: Effect on CSR Transparency

	(1) *CSR Transparency*	(2) *CSR Report*	(3) *Reporting Scope*	(4) *GRI Report*	(5) *OECD Report*	(6) *Assurance*
EU x Post 2018 x High Exposure	0.123**	0.031	0.024	0.045**	0.011*	0.020
	(2.190)	(1.439)	(1.130)	(2.477)	(1.719)	(1.321)
EU x Post 2018	0.188**	0.068**	0.068**	0.020	0.010***	0.028**
	(2.303)	(2.406)	(2.383)	(0.719)	(2.970)	(1.965)
EU x High Exposure	0.049	0.038	0.022	0.013	-0.002	-0.023
	(0.757)	(1.466)	(0.800)	(0.660)	(-0.313)	(-1.568)
Control variables	Included	Included	Included	Included	Included	Included
Firm FE	Included	Included	Included	Included	Included	Included
Year FE	Included	Included	Included	Included	Included	Included
Entropy balanced	Yes	Yes	Yes	Yes	Yes	Yes
N	9040	9040	9040	9040	9040	9040
adj. R^2	0.788	0.702	0.687	0.731	0.708	0.799

TABLE 7 – Moderating effect of high EU market exposure (*Continued*)

Panel B: CSR Performance

	(1) *CSR Performance*	(2) *ENV Score*	(3) *SOC Score*
EU x Post 2018 x High Exposure	2.045***	3.591***	0.499
	(3.248)	(4.343)	(0.768)
EU x Post 2018	1.383	0.709	2.057**
	(1.537)	(0.688)	(2.044)
EU x High Exposure	1.132	0.681	1.583**
	(1.590)	(0.751)	(1.964)
Control variables	Included	Included	Included
Firm FE	Included	Included	Included
Year FE	Included	Included	Included
Entropy balanced	Yes	Yes	Yes
N	9040	9040	9040
adj. R^2	0.915	0.908	0.880

The tables report results from estimating the difference-in-difference model (Eq. 2) using *CSR Transparency* (Panel A) and *CSR Performance* (Panel B) and their components as dependent variables. The *High Exposure* indicator variable identifies U.S. firms with EU subsidiaries where the number of such subsidiaries is greater than the median. *Post 2018* variable indicates the years between 2018 and 2020. Control variables comprise *LN(TA)* (firm size), *LEV* (leverage), *CFO* (cash from operations), *ATO* (asset turnover), *DPS* (Dividends per share), *PPE* (asset structure), *LN(TQ)* (growth opportunities), *ROA* (operating profitability), *LN(EMP)* (number of employees), *LN(AF)* (analysts following/recommendations). These covariates along with industry membership (Fama–French 12 industry groups) are used as matching parameters for Entropy balancing. The t-values, reported below coefficients, are based on robust standard errors clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

TABLE 8 – Moderating effect of U.S. parents' prior CSR performance

Panel A: CSR Transparency

	(1) *CSR Transparency*	(2) *CSR Report*	(3) *Reporting Scope*	(4) *GRI Report*	(5) *OECD Report*	(6) *Assurance*
EU x Post 2018 x HighPriorCSR	0.359*	0.055	0.064	0.155**	0.025***	0.084**
	(1.740)	(0.837)	(0.975)	(2.104)	(3.417)	(2.327)
EU x Post 2018	0.596***	0.180***	0.186***	0.151***	0.029***	0.072**
	(4.252)	(3.699)	(3.759)	(3.178)	(4.138)	(2.456)
Post 2018 x HighPriorCSR	-0.479**	-0.173***	-0.181***	-0.137*	-0.001	0.013
	(-2.409)	(-2.860)	(-2.970)	(-1.903)	(-0.656)	(0.403)
Control variables	Included	Included	Included	Included	Included	Included
Firm fixed effects	Included	Included	Included	Included	Included	Included
Year fixed effects	Included	Included	Included	Included	Included	Included
Entropy balanced	Yes	Yes	Yes	Yes	Yes	Yes
N	5797	5797	5797	5797	5797	5797
adj. R^2	0.801	0.713	0.697	0.746	0.705	0.813

Panel B: CSR Performance

	(1) *CSR Performance*	(2) *ENV Score*	(3) *SOC Score*
EU x Post 2018 x HighPriorCSR	-1.148	-0.970	-1.326
	(-0.534)	(-0.412)	(-0.524)
EU x Post 2018	2.707**	2.814*	2.601**
	(2.258)	(1.786)	(2.037)
Post 2018 x HighPriorCSR	-4.704**	-5.409**	-4.000*
	(-2.343)	(-2.547)	(-1.673)
Control variables	Included	Included	Included
Firm fixed effects	Included	Included	Included
Year fixed effects	Included	Included	Included
Entropy balanced	Yes	Yes	Yes
N	5797	5797	5797
adj. R^2	0.924	0.914	0.890

This table reports results from estimating the difference-in-difference model (Eq. 3) with CSR Transparency and Performance Scores as outcome variables. *HighPriorCSR* is a dichotomous variable indicating 1 if the 2015 *CSR Performance* is equal to or above the median. Control variables comprise *LN(TA)* (firm size), *LEV* (leverage), *CFO* (cash from operations), *ATO* (asset turnover), *DPS* (Dividends per share), *PPE* (asset structure), *LN(TQ)* (growth opportunities), *ROA* (operating profitability), *LN(EMP)* (number of employees), *LN(AF)* (analysts following/recommendations).. These covariates along with industry membership (Fama–French 12 industry groups) are used as matching parameters for Entropy balancing. The t-values, reported below coefficients, are based on robust standard errors clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

TABLE 9 – Moderating effect of U.S. parents' ESG policies

Panel A: The Impact of ESG Policies on CSR Transparency

Outcome variable	*CSR Transparency*		
	(1)	(2)	(3)
Policies =	*ESG Policies*	*ENV Policies*	*SOC Policies*
EU x Post 2018 x Policies	0.069***	0.102**	0.085***
	(3.715)	(2.184)	(3.043)
EU x Post 2018	-0.123*	0.063	-0.040
	(-1.896)	(1.346)	(-0.470)
Post 2018 x Policies	-0.021	0.019	-0.036
	(-1.284)	(0.454)	(-1.459)
EU x Policies	-0.080**	-0.047	-0.129***
	(-2.380)	(-0.530)	(-2.744)
Policies	0.282***	0.484***	0.292***
	(8.885)	(5.679)	(6.626)
Control variables	Included	Included	Included
Firm FE	Included	Included	Included
Year FE	Included	Included	Included
Entropy balanced	Yes	Yes	Yes
N	8,999	8,999	8,999
adj. R^2	0.825	0.827	0.805

Panel B: The Impact of ESG Policies on CSR Performance

Outcome variable	*CSR Performance*		
	(1)	(2)	(3)
Policies =	*ESG Policies*	*ENV Policies*	*SOC Policies*
EU x Post 2018 x Policies	0.331*	-0.226	0.552
	(1.677)	(-0.500)	(1.610)
EU x Post 2018	-0.342	2.060***	-0.363
	(-0.451)	(3.299)	(-0.338)
Post 2018 x Policies	-0.008	0.692*	-0.050
	(-0.046)	(1.719)	(-0.158)
EU x Policies	-0.395	0.289	-0.807
	(-1.235)	(0.302)	(-1.521)
Policies	4.380***	6.191***	5.165***
	(14.162)	(6.784)	(9.944)
Control variables	Included	Included	Included
Firm FE	Included	Included	Included
Year FE	Included	Included	Included
Entropy balanced	Yes	Yes	Yes
N	8,999	8,999	8,999
adj. R^2	0.958	0.942	0.944

This table reports results from estimating the difference-in-difference model (Eq. 4) with *CSR Transparency* and *CSR Performance* as outcome variables. The *ESG Policies* variable is constructed as the sum of *ENV Policies* and *SOC Policies*. Control variables comprise *LN(TA)* (firm size), *LEV* (leverage), *CFO* (cash from operations), *ATO* (asset turnover), *DPS* (Dividends per share), *PPE* (asset structure), *LN(TQ)* (growth opportunities), *ROA* (operating profitability), *LN(EMP)* (number of employees), *LN(AF)* (analysts following/recommendations).. These covariates along with industry membership (Fama–French 12 industry groups) are used as matching parameters for Entropy balancing. The t-values, reported below coefficients, are based on robust standard errors clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

TABLE 10 – Moderating effect of EU subsidiary salience

Panel A: Size of EU subsidiaries (Log of total EU subsidiary assets)

	(1) *CSR Transparency*	(2) *CSR Performance*
EU x Post 2018 x High LNTA	0.172***	0.764
	(2.932)	(1.131)
Post 2018 x EU	0.210**	2.466**
	(2.421)	(2.491)
EU x High LNTA	-0.138*	0.797
	(-1.735)	(0.957)
Control variables	Included	Included
Firm FE	Included	Included
Year FE	Included	Included
Entropy balanced	Yes	Yes
N	8,233	8,233
adj. R^2	0.789	0.919

Panel B: Subsidiary-to-parent asset ratio

	(1) *CSR Transparency*	(2) *CSR Performance*
EU x Post 2018 x High TA Ratio	0.056	1.842***
	(0.940)	(2.765)
Post 2018 x EU	0.272***	2.030**
	(3.091)	(2.041)
EU x High TA Ratio	-0.111	-2.595***
	(-1.455)	(-3.439)
Control variables	Included	Included
Firm FE	Included	Included
Year FE	Included	Included
Entropy balanced	Yes	Yes
N	8,233	8,233
adj. R^2	0.789	0.919

Panel C: Total revenue of EU subsidiaries

	(1) *CSR Transparency*	(2) *CSR Performance*
EU x Post 2018 x High Revenue	0.173***	1.245*
	(2.872)	(1.857)
Post 2018 x EU	0.209**	2.305**
	(2.427)	(2.353)
EU x High Revenue	0.031	0.103
	(0.348)	(0.110)
Control variables	Included	Included
Firm FE	Included	Included
Year FE	Included	Included
Entropy balanced	Yes	Yes
N	8,233	8,233
adj. R^2	0.790	0.919

TABLE 10 – Moderating effect of EU subsidiary salience (*Continued*)

Panel D: Number of EU subsidiaries with operational similarity (same industry as the parent)

	(1) *CSR Transparency*	(2) *CSR Performance*
EU x Post 2018 x High Similarity	0.123**	1.812***
	(1.985)	(2.638)
Post 2018 x EU	0.243***	2.190**
	(2.792)	(2.245)
EU x High Similarity	0.039	-1.359
	(0.409)	(-1.250)
Control variables	Included	Included
Firm FE	Included	Included
Year FE	Included	Included
Entropy balanced	Yes	Yes
N	8,233	8,233
adj. R^2	0.789	0.919

This table presents the results from estimating the difference-in-difference model with *CSR Transparency* and *CSR Performance* as dependent variables. The analysis focuses on four factors: the Log of Total EU Subsidiary Assets (*High LNTA*), the subsidiary-to-parent asset ratio, total revenue of EU subsidiaries (*High Revenue*), and the number of EU subsidiaries with operational similarity (*High Similarity*). Control variables include *LN(TA)* (firm size), *LEV* (leverage), *CFO* (cash from operations), *ATO* (asset turnover), *DPS* (dividends per share), *PPE* (asset structure), *LN(TQ)* (growth opportunities), *ROA* (operating profitability), *LN(EMP)* (number of employees), and *LN(AF)* (analysts following/recommendations). These covariates along with industry membership (Fama–French 12 industry groups) are used as matching parameters for Entropy balancing. The t-values, reported below coefficients, are based on robust standard errors clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

TABLE 11 – Moderating effect of EU subsidiary salience: Principal component for subsidiary salience

Panel A: CSR Transparency

	(1) *CSR Transparency*	(2) *CSR Report*	(3) *Reporting Scope*	(4) *GRI Report*	(5) *OECD Report*	(6) *Assurance*
EU x Post 2018 x Salience	0.046***	0.009	0.010	0.016***	0.003*	0.010**
	(2.682)	(1.326)	(1.526)	(2.895)	(1.697)	(2.263)
Post 2018 x EU	0.252***	0.091***	0.085***	0.039	0.013***	0.034**
	(3.014)	(3.154)	(2.919)	(1.353)	(3.931)	(2.455)
EU x Salience	-0.024	-0.004	0.000	-0.016	-0.002	-0.005
	(-0.732)	(-0.316)	(0.021)	(-1.592)	(-0.577)	(-0.529)
Control variables	Included	Included	Included	Included	Included	Included
Firm fixed effects	Included	Included	Included	Included	Included	Included
Year fixed effects	Included	Included	Included	Included	Included	Included
Entropy balanced	Yes	Yes	Yes	Yes	Yes	Yes
N	8,233	8233	8233	8233	8233	8233
adj. R^2	0.789	0.703	0.687	0.733	0.704	0.802

Panel B: CSR Performance

	(1) *CSR Performance*	(2) *ENV Score*	(3) *SOC Score*
EU x Post 2018 x Salience	0.478**	0.814***	0.142
	(2.455)	(3.143)	(0.734)
Post 2018 x EU	2.473***	2.325**	2.621**
	(2.607)	(2.180)	(2.482)
EU x Salience	-0.339	-0.506	-0.172
	(-0.974)	(-1.122)	(-0.474)
Control variables	Included	Included	Included
Firm FE	Included	Included	Included
Year FE	Included	Included	Included
Entropy balanced	Yes	Yes	Yes
N	8,233	8,233	8,233
adj. R^2	0.919	0.912	0.883

The description for this table is presented on the next page.

Table 11 presents the results from estimating the difference-in-differences model using *CSR Transparency* and *CSR Performance* as the outcome variables. The Salience variable is constructed using Principal Component Analysis (PCA) based on the principal component scores. The components used in the Salience PCA are listed in Table 15: *High LNTA, High TA Ratio, High Revenue, and High Similarity.* Control variables comprise *LN(TA)* (firm size), *LEV* (leverage), *CFO* (cash from operations), *ATO* (asset turnover), *DPS* (Dividends per share), *PPE* (asset structure), *LN(TQ)* (growth opportunities), *ROA* (operating profitability), *LN(EMP)* (number of employees), *LN(AF)* (analysts following). Apart from *LN(AF)*, these covariates along with industry membership (Fama–French 12 industry groups) are used as matching parameters for Entropy balancing. The t-values, reported below coefficients, are based on robust standard errors clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

To construct the Salience variable, we used the first principal component (Component 1), which explains 73.21% of the total variance, as indicated by its Eigenvalue of 2.92842. The loadings for Component 1 reveal that all four variables, the size of subsidiaries (*High LNTA*), the subsidiary-to-parent asset ratio (*High TA Ratio*), total revenue of subsidiaries (*High Revenue*), and operational similarity (*High Similarity*), contribute positively, with loadings of 0.5291, 0.4946, 0.5132, and 0.4604, respectively. Scaling is performed to ensure that the PCA variable reflects the standardized contributions of these factors, with Component 1 being a linear combination of the variables weighted by their eigenvector coefficients.

TABLE 12 – Effect of the CSR Directive excluding U.S. firms cross-listed in the EU

Panel A: CSR Transparency

	(1) *CSR Transparency*	(2) *CSR Report*	(3) *Reporting Scope*	(4) *GRI Report*	(5) *OECD Report*	(6) *Assurance*
Post 2018 x EU	0.215***	0.072***	0.067**	0.042	0.013***	0.029**
	(2.755)	(2.700)	(2.499)	(1.523)	(4.027)	(2.401)
Control variables	Included	Included	Included	Included	Included	Included
Firm fixed effects	Included	Included	Included	Included	Included	Included
Year fixed effects	Included	Included	Included	Included	Included	Included
Entropy balanced	Yes	Yes	Yes	Yes	Yes	Yes
N	8414	8414	8414	8414	8414	8414
adj. R^2	0.768	0.689	0.673	0.705	0.706	0.785

Panel B: CSR Performance

	(1) *CSR Performance*	(2) *ENV Score*	(3) *SOC Score*
Post 2018 x EU	2.680***	2.602***	2.758***
	(3.191)	(2.600)	(3.008)
Control variables	Included	Included	Included
Firm fixed effects	Included	Included	Included
Year fixed effects	Included	Included	Included
Entropy balanced	Yes	Yes	Yes
N	8414	8414	8414
adj. R^2	0.903	0.894	0.866

This table reports the results from estimating the difference-in-difference model (Eq. 1) after excluding firms cross-listed on EU exchanges. Panel A reports the CSR Transparency Score and its components, while Panel B focuses on CSR Performance and the respective components. Control variables comprise *LN(TA)* (firm size), *LEV* (leverage), *CFO* (cash from operations), *ATO* (asset turnover), *DPS* (Dividends per share), *PPE* (asset structure), *LN(TQ)* (growth opportunities), *ROA* (operating profitability), *LN(EMP)* (number of employees), *LN(AF)* (analysts following/recommendations).. These covariates along with industry membership (Fama–French 12 industry groups) are used as matching parameters for Entropy balancing. The t-values, reported below coefficients, are based on robust standard errors clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

TABLE 13 – Robustness test: U.S. multinational firms with EU subsidiaries and with non-EU subsidiaries

Panel A: Comparison of CSR transparency between MNCs

Outcome variable	*CSR Transparency*	
	(1) U.S. MNCs with EU subsidiaries	(2) U.S. MNCs without EU subsidiaries
Post 2018 x EU	0.239**	
	(2.304)	
Post 2018 x Non-EU		0.100
		(0.943)
LNTA_ACT	0.025	0.137
	(0.154)	(0.702)
LEV	-0.397**	-0.430*
	(-2.304)	(-1.923)
PPE	-0.430	0.227
	(-0.597)	(0.448)
ROA	-0.364	-0.320
	(-1.190)	(-1.484)
LNTQ	-0.032	-0.087
	(-0.329)	(-0.933)
ATO	-0.074	0.119
	(-0.356)	(0.720)
LNEMP	0.067	0.182
	(0.546)	(1.384)
CFO	0.228	-0.034
	(-0.484)	(-0.130)
DPS	-0.009	0.053
	(-0.332)	(1.450)
LNAF	-0.051	0.011
	(-0.621)	(0.160)
Control variables	Yes	Yes
Firm FE	Yes	Yes
Year FE	Yes	Yes
Entropy balanced	Yes	Yes
N	7771	3109
adj. R^2	0.809	0.713

TABLE 13 – Robustness test: U.S. multinational firms with EU subsidiaries and with non-EU subsidiaries (*continued*)

Panel B: Comparison of CSR performance between MNCs

Outcome variable	*CSR Performance*	
	(1) U.S. MNCs with EU subsidiaries	(2) U.S. MNCs without EU subsidiaries
Post 2018 x EU	2.897***	
	(2.886)	
Post 2018 x Non-EU		0.267
		(0.250)
LNTA_ACT	-0.923	0.575
	(-0.517)	(0.236)
LEV	-1.467	-2.190
	(-0.787)	(-0.911)
PPE	-2.612	-6.815
	(-0.385)	(-0.986)
ROA	0.269	0.045
	(0.088)	(0.019)
LNTQ	-0.096	1.044
	(-0.088)	(0.997)
ATO	-1.835	-1.043
	(-0.942)	(-0.568)
LNEMP	2.161**	3.310**
	(1.982)	(2.515)
CFO	-2.647	-1.964
	(-0.598)	(-0.637)
DPS	-0.308	0.136
	(-1.228)	(0.362)
LNAF	-0.344	0.246
	(-0.400)	(0.296)
Control variables	Yes	Yes
Firm FE	Yes	Yes
Year FE	Yes	Yes
Entropy balanced	Yes	Yes
N	7771	3109
adj. R^2	0.920	0.878

The tables present the results comparing *CSR Transparency* (Panel A) and *CSR Performance* (Panel B) between U.S. multinational corporations (MNCs) with EU subsidiaries and those with non-EU international subsidiaries. The difference-in-difference model is based on Equation 1. The control group consists of U.S. firms with only domestic subsidiaries. All models include control variables. These covariates along with industry membership (Fama–French 12 industry groups) are used as matching parameters for Entropy balancing. The t-values, reported below the coefficients, are based on robust standard errors clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. In Column 1, the sample consists of 5,525 observations for U.S. firms with EU subsidiaries. In Column 2, the sample for U.S. firms with non-EU subsidiaries includes 863 observations. Only observations that consistently fall within the defined treatment and control groups (*EU, Non-EU*, or *US-only*) are included. For the non-EU group, we excluded firms with subsidiaries in European countries that are not part of the EU but may maintain close economic and non-economic ties with the EU, such as economic agreements and strategic partnerships.

TABLE 14 – Robustness test: MSCI Environmental and Social Pillar Scores

Panel A: Environmental and Social Pillar Scores

	(1) *ENV Pillar*	(2) *SOC Pillar*
Post 2018 x EU	0.199**	0.097
	(2.469)	(0.827)
Control variables	Included	Included
Firm FE	Included	Included
Year FE	Included	Included
Entropy balanced	Yes	Yes
N	7528	7528
adj. R^2	0.889	0.814s

This table reports results from estimating the difference-in-difference model (Eq. 1) with outcome variables *ENV Pillar* and *SOC Pillar* derived from MSCI. Control variables comprise *LN(TA)* (firm size), *LEV* (leverage), *CFO* (cash from operations), *ATO* (asset turnover), *DPS* (Dividends per share), *PPE* (asset structure), *LN(TQ)* (growth opportunities), *ROA* (operating profitability), *LN(EMP)* (number of employees), *LN(AF)* (analysts following/recommendations). These covariates along with industry membership (Fama–French 12 industry groups) are used as matching parameters for Entropy balancing. The t-values, reported below coefficients, are based on robust standard errors clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

FIGURE 1 – CSR Transparency: Treatment effects over time

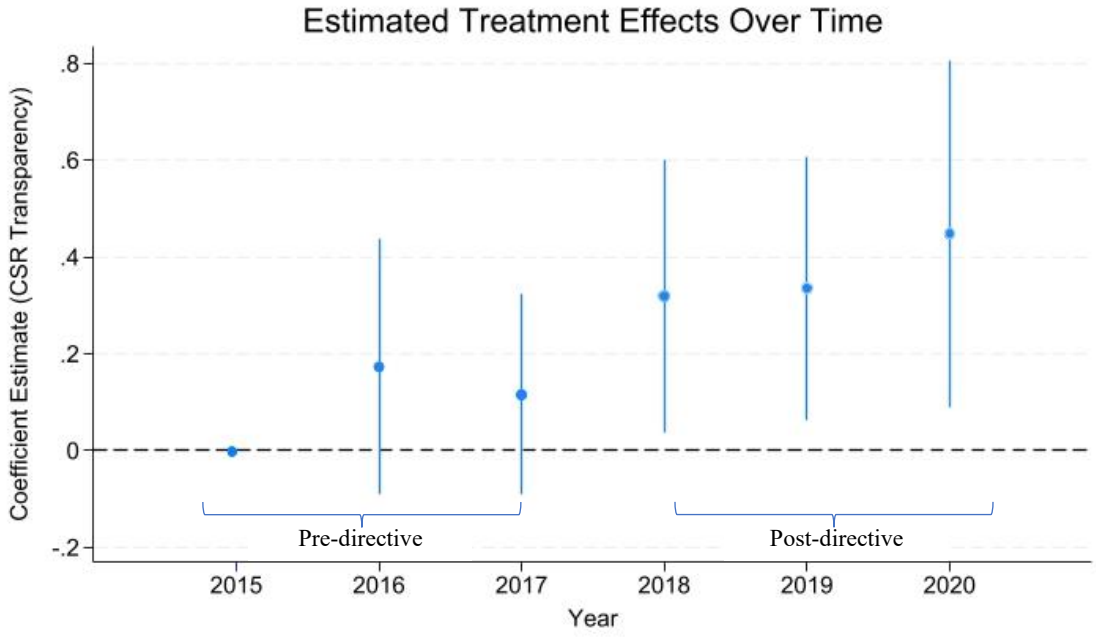

Figure 1 plots yearly treatment effects with 95% confidence intervals for total *CSR Transparency* as the outcome variable based on the regression model 1. The indicator 2015 × EU is omitted, with 2015 serving as the benchmark year. Treatment effects for the years 2018 to 2020 are statistically significant, while effects for earlier years are not.

FIGURE 2 – Impact of Treatment on CSR Transparency Over Time

Figure 2 shows the fitted values for *CSR Transparency* over time for treated and control firms from 2015 to 2020. The year 2015 is the benchmark year. Treatment effects for the years 2018 to 2020 are statistically significant, while effects for earlier years are not.

FIGURE 3 – CSR Performance: Treatment effects over time

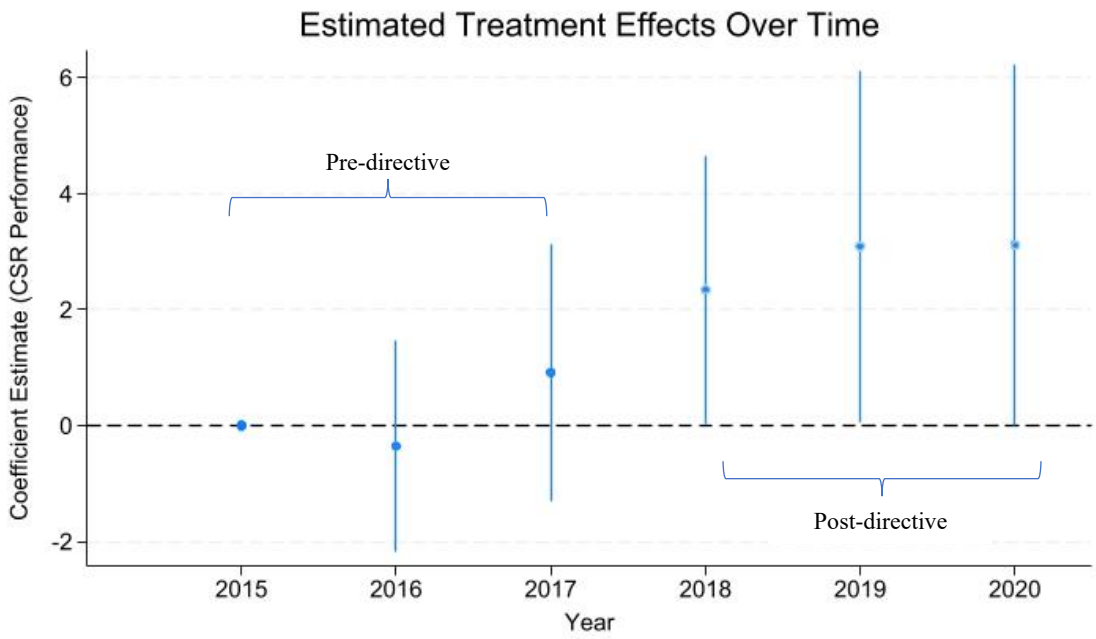

Figure 3 plots yearly treatment effects with 95% confidence intervals for total *CSR Performance* as the outcome variable based on the regression model 1. The indicator 2015 × EU is omitted, with 2015 serving as the benchmark year. Treatment effects for the years 2018 to 2020 are statistically significant, while effects for earlier years are not.

FIGURE 4 – Impact of Treatment on CSR Performance Over Time

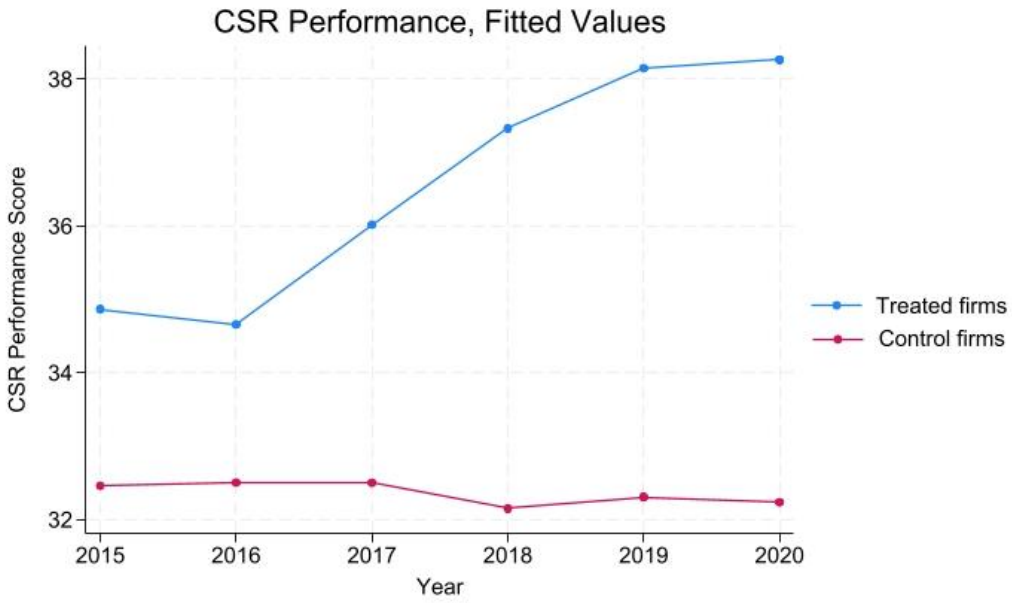

Figure 4 shows the fitted values for *CSR Performance* over time for treated and control firms from 2015 to 2020. The year 2015 is the benchmark year. Treatment effects for the years 2018 to 2020 are statistically significant, while effects for earlier years are not.