Behind the Corporate Veil: How Business Groups Arbitrage ESG Disclosure Mandates

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April 2025

Abstract

We examine how ESG disclosure mandates introduced in the headquarters countries of business groups affect the ESG performance of both parent companies and their subsidiaries. Leveraging the staggered introduction of these mandates across numerous countries worldwide, we find that, following mandate adoption, parent companies improve their own ESG performance—but do so, in part, by shifting irresponsible ESG activities to their subsidiaries. Subsidiaries of parents subject to disclosure mandates experience a significant increase in the occurrence and frequency of ESG incidents, particularly in countries where weaker institutions make stakeholder monitoring more challenging and where parent companies are less likely to be liable for subsidiary torts. We further show that business groups respond to ESG disclosure mandates along both the intensive margin—via increased asset and employee utilization in subsidiaries—and the extensive margin, through divestitures of non-synergistic subsidiaries that pose excessive ESG risks. Collectively, our findings highlight the unintended consequences of uneven ESG disclosure regulation and underscores the need for cross-country coordination in regulatory design.

Keywords: CSR; ESG; Business groups; Multinational corporations; Disclosure regulation; Sustainability reporting; Regulatory arbitrage

JEL Classification: G18, G38, M14, M41, M48

We appreciate the helpful comments and suggestions of Stefano Alderighi, Amir Amel-Zadeh, Thomas Bourveau, Alper Darendeli, Peter Fiechter, Tom Gosling, June Huang, Stefan Huber (discussant), Jeroen Koenraadt, Nico Lehmann, Daniele Macciocchi, Jens Müller, Gaizka Ormazabal, Daniel Reimsbach, Rafael Rogo, Crystal Shi (discussant), Christian Sofilkanitsch, Oscar Timmermans, seminar participants at the University of Bath, University of Cambridge, University of Texas at Dallas, Durham University, Leicester University, Henley Business School, Paderborn University, University of Padova, United Kingdom Endorsement Board (UKEB), and conference participants at CRED-HEC Law, Economics, and Regulation Conference, Cyprus University of Technology Accounting and Finance Workshop, FARS Midyear Meeting, and Notre Dame Accounting Conference.

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1. Introduction

In recent years, several countries have implemented Environmental, Social, and Governance (ESG) disclosure mandates. These mandates aim to address environmental and social externalities by requiring firms to produce and disclose information on environmental policies, employee relations, community impact, and governance. A growing literature finds that such mandates and other forms of transparency regulation can improve firm-level ESG outcomes by enhancing transparency and accountability (Downar et al. 2021; Fiechter, Hitz, and Lehmann 2022; Bonetti, Leuz, and Michelon 2023; Tomar 2023).

In this paper, we study the response of business groups to the introduction of mandatory ESG disclosure in their headquarters countries. Business groups are ubiquitous and account for almost one-third of the world's GDP (OECD, 2018). As pivotal players in the global economy, they wield significant influence over ESG outcomes worldwide. A 2023 report by the World Bank suggests the direct activities and supply chains of 157 large multinational corporations jointly account for nearly 60% of global emissions (Steenbergen and Saurav 2023). Therefore, understanding how business groups respond to ESG disclosure mandates is critical to evaluate the effectiveness of these regulations.

Business groups often operate through complex ownership structures in which ultimate owners (i.e., parent companies) exert control over legally independent subsidiaries spread across jurisdictions with varying regulatory regimes and enforcement quality (LaPorta, Lopez de Silanes, and Shleifer 1999; Classens, Djankov, and Lang 2000; Faccio and Lang 2002). As such, they have the organizational flexibility to strategically navigate fragmented regulatory environments to their advantage and engage in *regulatory arbitrage*. While business groups can align with regulatory expectations by improving the ESG performance across all the entities in their corporate structure, they can also undermine the intent of such mandates by

shifting irresponsible ESG activities to subsidiaries where such activities are less likely to be disclosed, uncovered, or result in reputational or legal costs for the group as a whole.[1]

Although equity ownership enables parent companies to control their subsidiaries, parents often do not fully internalize the costs of those subsidiaries' business operations because they enjoy limited liability protection (Akey and Appel 2021). Shipping companies, for example, frequently incorporate each vessel as a legally independent subsidiary to compartmentalize risk and to insulate parent companies from the social and environmental responsibilities arising from individual vessels' activities (Vuillemey 2020). Similarly, oil companies often structure each drilling site as a legally independent subsidiary such that, in cases of human or environmental damages, parent companies' legal responsibilities are limited to the value of that subsidiary.[2] The ability of business groups to engage in asset partitioning to compartmentalize their risk exposure has the potential unintended consequence of incentivizing business groups to take on more ESG risks and externalize tort liabilities for personal and environmental damages, particularly in less developed countries.

Although limited liability remains a cornerstone of corporate law, recent court rulings have pierced the corporate veil, holding parent companies liable for their subsidiaries' torts. *Veil piercing*, a judicially imposed exception to limited liability principle, introduces uncertainty into how far legal risks can be compartmentalized within business groups (Erens et al. 2008; Mevorach 2025).

We take advantage of the staggered rollout of ESG disclosure mandates in a large number of countries around the world to investigate whether parent-level regulation leads to

[1] Recently, the Italian competition watchdog probed luxury fashion groups Armani and Dior over alleged labor exploitation placing their manufacturing subsidiaries under judicial administration. The prosecutors found that two subsidiaries—wholly-owned by their respective parent companies—relied on subcontractors that were abusing their employees, mostly foreign workers from China (see *Financial Times* at: https://www.ft.com/content/f2a0f98b-0f3a-48b6-bcde-cbcff714b959).

[2] Roe (1986) discusses how tobacco and asbestos corporations insulate their liabilities from tort lawsuits by incorporating their products into separate legal entities under their full control. Similarly, Schlissel, Peterson, and Biewald (2002) show how energy companies tend to incorporate each of their nuclear plants as subsidiaries to limit their responsibilities in case of an environmental disaster.

meaningful group-wide improvements in ESG performance—or, instead, triggers the strategic reallocation of ESG-risky activities across subsidiaries. Our identification strategy compares changes in the occurrence and frequency of ESG incidents for subsidiaries whose parent companies are headquartered in countries that adopt ESG disclosure mandates (treatment group) with those for subsidiaries located in the same country but whose parents are headquartered in countries that have not (yet) introduced such mandates (control group).

We find that, following the introduction of ESG disclosure mandates, the occurrence and frequency of ESG incidents increase at the subsidiary level and decline at the parent entity level, suggesting that business groups shift irresponsible ESG activities within the corporate structure.[3] Although overall ESG incidents at the consolidated group level decline, such regulatory arbitrage undermines the intended effects of disclosure mandates and produces unintended consequences in the countries where subsidiaries operate.

We conduct cross-sectional tests to examine heterogeneity in treatment effects. We find that the increase in the occurrence and frequency of subsidiary incidents is primarily driven by subsidiaries of financially constrained business groups. For these groups, improving ESG performance is often prohibitively costly—or even infeasible—making regulatory arbitrage a more appealing response to ESG disclosure mandates (De Haas et al. 2024).

Further, consistent with parent companies seeking to minimize ESG risk exposure in subsidiaries closer to final consumers, we find that manufacturing subsidiaries experience a larger increase in ESG incidents than retailer subsidiaries. In addition, subsidiaries located in countries with weaker rule of law, lower government effectiveness, weaker environmental preferences, and where the risk of veil piercing is lower are disproportionally affected by the unintended effects of ESG disclosure mandates. This evidence is consistent with parent

[3] Evidence from prior studies suggests that firms frequently exploit regulatory loopholes or take advantage of limited regulatory oversight to minimize compliance costs. For instance, Zou (2021) finds that companies strategically reduce emissions on days when air quality is actively monitored by regulators, only to increase emissions on non-monitored days.

companies weighing the relative costs of ESG incidents in different subsidiaries and exploiting regulatory arbitrage opportunities arising from cross-country differences in institutional quality.

We then investigate the mechanism underlying the shift of ESG irresponsible activities to subsidiaries. We show that business groups respond to ESG disclosure mandates along both the intensive and extensive margins. On the *intensive margin*, we observe increased asset and employee utilization at the subsidiary level—consistent with parent companies reallocating production to existing capacity in less visible parts of the group that are less likely to fall under the radar screens of regulators. Notably, this effect is once again concentrated among subsidiaries of financially constrained business groups. On the *extensive margin*, we examine the effects of ESG disclosure mandates on the corporate structure of business groups and find that parent companies are more likely to divest from high-ESG-risk, low-synergy subsidiaries. These divestments suggest that, while some ESG-risky activities are reallocated within the group, others are externalized entirely to avoid severe incidents for which business groups would now face increased legal and reputational risk.

Our study contributes to the literature in several ways. First, it adds to the burgeoning literature examining the role of ESG disclosure mandates in addressing social and environmental externalities (Mésonnier and Nguyen 2022; Fiechter et al. 2022). Prior studies typically find that ESG mandates and other forms of transparency regulation improve firm-level ESG performance by increasing accountability and stakeholder scrutiny (Chen, Hung, and Wang 2018; Bolton and Kacperczyk 2021; Jouvenot and Krueger 2021; Bonetti et al. 2023; Tomar 2023). While these studies generally focus on standalone firms or implicitly assume that regulated entities operate independently, we instead highlight how corporate group structures affect the efficacy of mandatory ESG disclosure regulation. Specifically, we provide novel evidence that business groups actively leverage global regulatory fragmentation (Mahieux,

Sapra, and Zhang 2025) to manage ESG obligations strategically *within their boundaries*. They respond to parent-country ESG disclosure mandates by reallocating ESG-risky activities across subsidiaries located in jurisdictions with more lenient regulations, weaker enforcement, and lower reputational or legal exposure. We thereby identify regulatory arbitrage as an important limitation of ESG disclosure regulation and underscore the need for enhanced cross-country coordination in regulatory design. From a policy perspective, our findings emphasize the importance of establishing minimum ESG disclosure standards and the potential benefits of expanding the scope of mandates to a broader range of firms beyond public interest entities (Christensen, Hail, and Leuz 2021).

Second, our findings contribute to the stream of the disclosure literature that specifically focuses on the *unintended* consequences of disclosure regulation, particularly the shifting of ESG-related risks and activities in response to increased transparency. Prior work has shown that firms may respond to regulatory or stakeholder pressure by reallocating environmentally or socially harmful activities to unaffiliated entities—often private firms within supply chains or jurisdictions with weaker oversight (e.g., Christensen 2022; Darendeli et al. 2022; Yang, Muller, and Liang 2023; Lu et al. 2023; Fiechter, Hitz, and Lehmann 2024). These patterns represent forms of *asset leakage* that takes place *outside* the firm's boundaries (Dai et al. 2024; Ecker and Keeve 2024; Christensen et al. 2025; Duchin, Gao, and Xu 2025). In contrast, we mainly focus on how business groups respond to ESG mandates *within* their boundaries—by responding to ESG regulatory interventions not only through *markets*, but also through *hierarchies* (Coase 1937). Specifically, we show that business groups engage in ESG-risk shifting along both the *intensive margin* (by reallocating production across existing subsidiaries) and the *extensive margin* (by divesting—partially or in full—from high-risk, non-synergistic subsidiaries). The dual margin response that we document reveals how ESG

disclosure mandates influence both firm behavior and firm boundaries, with consequences for the aggregate effectiveness of sustainability regulation.

Third, we contribute to the economics and finance literature that examines the bright and dark sides of business groups (e.g., Stein 1997; Johnson et al. 2000; Bertrand, Mehta, and Mullainathan 2002; Khanna and Yafeh 2005). By showing that ESG disclosure mandates induce business groups to restructure their operations by divesting from non-synergistic, ESG-risky subsidiaries, we document an important real effect of ESG disclosure regulation—a change in the boundaries of the business group.

Lastly, by pinpointing the "location" of ESG activities within the boundaries of business groups and its determinants, we contribute to prior studies that investigate how institutional factors both at the country- and at the firm-level influence reporting behavior and engender real effects (Beuselinck et al. 2019; Beaver et al. 2019; 2024). Our findings suggest that current ESG mandates may unintentionally exacerbate externalities when firms can displace harm across jurisdictions or entities that are less visible or accountable. This underscores the potential value of reforms that impose greater due diligence obligations at the group level and reconsider the legal insulation of parent firms from their subsidiaries' ESG actions.

2. Prior Literature and Theoretical Underpinnings

2.1. ESG Disclosure Mandates

Transparency is generally perceived as less intrusive and more politically expedient than other policy tools aimed at addressing environmental and social externalities (Christensen et al. 2021). Consequently, several countries have implemented ESG disclosure mandates. These mandates require firms to produce and disclose information on policies, risks, and outcomes related to the environment, employees, local community impact, and internal governance, either in their annual reports or in separate sustainability reports. The goal is to counteract

firms' incentives to withhold negative ESG information and to enhance stakeholder monitoring of firms' ESG performance.

ESG disclosure mandates are typically issued by government bodies, financial market regulators, and stock exchanges (Krueger et al. 2024). They primarily apply to listed firms, although very large private firms may also be required to comply in some cases. Notable examples of ESG disclosure mandates include the European Union (EU) Non-Financial Reporting Directive (NFRD), which requires large public-interest companies to include a non-financial statement with ESG information in their annual reports, and the Singapore Stock Exchange's requirement that all listed issuers prepare an annual sustainability report (SGX-ST, Note 7.6). Typically, the focus of these mandates is at the consolidated group level as they require parent companies to provide a comprehensive view of the group's ESG activities, risks, and/or performance. This broad scope contrasts with other policy tools, which sometimes apply only to individual legal entities, thereby limiting the incentive of parent companies to shift irresponsible ESG activities to subsidiaries.[4]

Prior literature suggests that ESG disclosure mandates can influence firms' real activities and improve ESG performance through three main channels. First, firms may uncover areas for improvement when preparing to comply with ESG disclosure regulation (Fiechter et al. 2022). Second, firms may enhance their ESG performance in response to pressure from stakeholders who now have more information. These stakeholders include investors (El Ghoul et al. 2011; Chava 2014; Plumlee et al. 2015; Bolton and Kacperczyk 2021; Broccardo, Hart, and Zingales 2022; Krueger et al. 2024), customers (Flammer 2015; Houston et al. 2022; Agarwal et al. 2023; Christensen et al. 2023; Dube, Lee, and Wang 2023; Meier et al. 2023;

[4] In other words, ESG disclosure mandates typically follow an *enterprise approach* considering the entire group as an individual entity, whereas other policy tools follow an *entity approach*, treating each group company as a separate unit. The EU NFRD, for example, requires the disclosure of the "*group's business model*," the "*policies pursued by the group*," and "*the principal risks (...) linked to the group's operations*" (Szabo and Sorensen 2018). For a discussion of the entity and enterprise approaches to regulation, please refer to Blumberg (1993).

Beyer et al. 2024; Leonelli et al. 2025), employees (Turban and Greening 1997, and Balakrishnan, Sprinkle, and Williamson 2011; Choi, Li, and Macciocchi 2024; Colonnelli et al. 2024), the media, non-governmental organizations (NGOs) (Brendel et al. 2024), and society in general. Third, ESG disclosure may induce peer benchmarking effects, with firms striving to avoid underperforming relative to their peers (Keeve 2023; Tomar 2023).

Consistent with disclosure mandates producing real effects, Fiechter et al. (2022) document that firms within the scope of the EU NFRD initiated new ESG projects and improved their ESG infrastructure and performance even before the directive became effective. Similarly, Chen et al. (2018), Downar et al. (2021), and Tomar (2023) find that the introduction of emission disclosure mandates led to reduced emissions in China, the United Kingdom, and the United States, respectively. Mésonnier and Nguyen (2022) document a decline in financial institutions' holdings of fossil energy securities following the introduction of mandatory climate-related disclosure on investments. Collectively, these studies suggest that disclosure mandates discipline firms' behavior. Additional documented real effects of ESG disclosure mandates include a shift towards long-term innovative projects and equity financing (Gibbons 2024), and an improvement in firm performance (Martinez and Vasquez 2024). ESG disclosure has also been shown to have spillover effects along the supply chain (Schiller 2018; Thorlakson, Zegher, and Lambin 2018), through banks (Wang 2023), via board connections (Iliev and Roth 2023), and through labor mobility (Zhang, Shang, and Liu 2018).

Recent studies also find evidence consistent with *asset leakage*, wherein firms shift assets to jurisdictions or firms out of the scope of regulation. For example, Ecker and Keeeve (2024) find that the introduction of corporate emission disclosures in the United Kingdom prompted companies to transfer legal ownership of high emissions assets to firms not subject to the regulation. Li, Peng, and Yu (2024) show that, after the introduction of ESG disclosure mandates, firms sell (buy) assets with weak (superior) ESG performance. Similarly,

Christensen et al. (2025) show that public firms responded to mandated mine-safety disclosures in SEC filings by selling high-risk mines to privately held, unregulated companies. These finds align with Duchin et al. (2025) who document that firms sell pollutive plants in response to environmental pressures more broadly and that these divestments do not result in a reduction in pollution.

Despite a growing body of evidence on the effects of ESG disclosure mandates, their impact on business groups remains poorly understood. In particular, we know little about whether—and how—these groups leverage their complex corporate structures to redistribute ESG-risky activities across affiliated firms within the boundaries of the group.

2.2. Business Groups

Business groups are often the focus of the ESG regulatory debate. This focus is unsurprising considering that, in 2021, the combined revenues of the top 100 multinational business groups exceeded the combined GDP of Germany, France, Italy, and Spain (Pilgrim and Wahlgren 2023). These groups often have intricate ownership structures, where ultimate owners control legally independent subsidiaries located in countries with varying regulatory environments and enforcement quality (LaPorta et al. 1999; Classens et al. 2000; Faccio and Lang 2002). Multinational business groups actively exploit differences in regulation and enforcement quality across jurisdictions to earn rents (Houston, Lin, and Ma 2012; Beuselinck et al. 2019).

As significant actors in the global economy, business groups hold substantial power to influence global ESG outcomes. While they can conform to regulatory expectations by imposing stronger ESG standards and encouraging clean technology transfers within and beyond their firm boundaries, they also have the capacity to obstruct and actively resist change. ESG disclosure mandates can lead to increased stakeholder pressure to improve ESG performance. If the net perceived benefits of this improvement are negative or unclear, business

groups may respond strategically by engaging in regulatory arbitrage. This means that they can exploit their organizational structure to shift irresponsible ESG activities to subsidiaries where it is less likely they can be scrutinized (Surroca, Tribo, and Zahra 2013; Bu, Xu, and Tang 2023) and leave tort victims without the possibility of recourse for personal and/or environmental damages.

In the context of environmental pollution, these two perspectives on multinational firm behavior are often referred to as the *pollution haven* and *pollution halo* hypotheses (Steenbergen and Saurav 2023). The pollution haven hypothesis, originally proposed by Copeland and Taylor (1994) in the context of North-South trade relations, posits that multinational business groups strategically relocate production to subsidiaries operating in countries—or subnational regions—with weak environmental regulations. The literature primarily focuses on carbon leakage in response to carbon taxes or carbon emissions reporting to regulators and documents mixed results (Ben-David et al. 2021, Bartram, Hou, and Kim 2022, Kanzig, Marenz, and Olbert 2024; Yang et al. 2025). Conversely, the pollution halo hypothesis emphasizes the dissemination of greener technologies and practices to subsidiaries in countries with weak environmental regulations and to other non-affiliated local firms.[5] When assessing the effectiveness of ESG disclosure mandates, it is thus essential to consider not only how they contribute to reshaping corporate boundaries (e.g., through asset leakage or divestitures), but also how they influence behavior *within* organizational boundaries (e.g., strategic reallocations of ESG-risky activities across business group entities).

[5] Consistent with this "halo" effect, Zheng, Luo, and Maksimov (2015) and Zhou and Wang (2020) find that multinational business groups strengthen corporate social responsibility at the foreign subsidiary level to mitigate reputational risks in their headquarters countries. Moreover, Hu, Li, and Liao (2024) show that regulation changes in Chinese firms' foreign subsidiaries countries improve green inventions and air quality domestically. Spillovers from multinationals to host-country firms have also been documented in other contexts (Javorcik 2004, Poole 2013; Albuquerque et al. 2018).

2.3. Conceptual Underpinnings

To illustrate the effects of parent-country ESG disclosure mandates on the ESG performance of business groups, we develop a stylized model, which we discuss in Section 1 of the Online Appendix. The model builds on the standard multi-plant industrial organization model of Tirole (1988). In our setting, business group firms produce output that entails a certain level of irresponsible ESG activity. The group parent allocates production between itself and its subsidiaries based on their relative marginal production costs. Although group firms are separate legal entities, parent companies exert substantial influence over subsidiaries' operating, investment, and financing decisions (Aylmer 1970; Ghoshal and Bartlett 1990; Robinson and Stocken 2013), and, thereby, also on their ESG performance.

ESG disclosure mandates introduce additional monitoring and reporting costs across group firms. They also increase the visibility of irresponsible ESG practices to external stakeholders and regulators, heightening reputational and legal risks. As a result, these mandates increase the *local costs* of managing or engaging in irresponsible ESG activities for both parents and subsidiaries.

In addition to these local costs, ESG disclosure mandates may also increase *spillover costs*—that is, indirect costs for the parent company originated by irresponsible ESG activities of subsidiaries. Recent court cases have underscored growing legal exposure for parent firms over ESG incidents at their foreign subsidiaries through *veil piercing*, a legal exception to limited liability (Varvastian and Kalunga 2020; Spotorno 2024). For example, in *Vedanta v. Lungowe* and *Okpabi v. Shell*, the U.K. Supreme Court determined that a multinational parent company may owe a duty of care under tort law to third parties affected by the activities of its subsidiaries when it (i) issues group wide ESG policies, (ii) provides defective advice to subsidiaries causing harm to third parties, or (iii) portrays itself, in ESG disclosures, as

exercising close oversight over its subsidiaries.[6] Enterprise-level ESG disclosure can thus increase the risk of veil piercing, enhancing the accountability of parent companies for the corporate social irresponsibility of subsidiaries. Even in the absence of legal penalties, parent companies may face reputational costs deriving from the subsidiary ESG irresponsibility, particularly when such activities are exposed by NGOs (Hatte and Koenig 2020).

Faced with these rising costs, the business group parent may choose to reduce the level of irresponsible ESG activities involved in production at the parent and subsidiary levels—through investments in green technologies, training programs, codes of conduct, review mechanism, whistleblower arrangements, or subsidiary-level CSR committees.

However, these actions are costly. When deciding whether to invest in ESG improvements, parent firms weigh their cost against their effectiveness at reducing both local and spillover costs associated with ESG disclosure mandates. Business groups with sufficient financial resources may find it optimal to implement these improvements and align with the spirit of the mandates. In contrast, financially constrained groups may find such improvements infeasible or prohibitively expensive, making regulatory arbitrage a more attractive response.

While ESG disclosure mandates increase the costs of ESG irresponsibility at both the parent and subsidiary levels, we argue that these costs increase disproportionately at the parent level. This shift in cost structure creates an incentive to reallocate irresponsible ESG activities to subsidiaries.

Several factors contribute to this asymmetry. First, complex and layered corporate control chains often shield parent companies from reputational damage (Lee and Bansal 2024)

[6] In *Vedanta v. Lungowe* [Vedanta Resources PLC v. Lungowe [2019] UKSC 20], a group of Zambian citizens filed a claim against Vedanta Resources PLC, alleging that the toxic discharges of its Zambian subsidiary (Konkola Copper Mines PLC) had polluted the water they used for drinking and irrigation. In *Okpabi v. Shell* [Okpbabi and others v. Royal Dutch Shell and another [2021] UKSC 3], a Nigerian fishing and farming community filed a claim against Royal Dutch Shell PLC, alleging that oil leaks in the pipelines operated by its Nigerian subsidiary (Shell Petroleum Development Company of Nigeria) had also rendered water sources unsuitable for drinking, fishing, and washing purposes.

and legal liability (Erens et al. 2008; Belenzon et al. 2019, 2023; Akey and Appel 2021) related to subsidiary-level ESG incidents. These structures obscure the extent of parent company involvement, making it difficult for stakeholders and regulators to assign responsibility.

Second, the location of ESG incidents matters. Stakeholders tend to react less negatively to ESG incidents that occur abroad compared to those in the parent company's home country (Groen-Xu and Zeume 2021; Nardella, Surdu, and Bramer 2023). Prior evidence suggests that investors and employees discount the severity of events in foreign subsidiaries (e.g., Templer 2010; Sialm, Sun, and Zheng 2020). This behavioral pattern is mirrored by managers of multinational groups, who often exhibit a home-country bias in decision-making (Birkenshaw, Bouquet, and Ambos 2007; Michailova et al. 2017; Fischer et al. 2022). Such biases—rooted in social identity theory—imply stronger reactions to threats to the "ingroup" (i.e., the "home country") than to those affecting the "outgroup" (i.e., a "foreign country").

Third, the quality of ESG information disclosed across entities within the same business group likely varies significantly. While consolidated financial statements require standardized aggregation of individual subsidiary accounts, ESG disclosures often lack similar rigor. Many subsidiaries—particularly those in countries with weaker institutions—may not prepare individual ESG reports and, when they do, such reports are typically voluntary and incomplete. As a result, parent firms may lack the detailed subsidiary-level information necessary for comprehensive group-wide ESG disclosures.[7]

Finally, in countries with weak institutional oversight and limited societal emphasis on corporate social responsibility, ESG violations are less likely to be detected or penalized, lowering the perceived and actual costs of irresponsible ESG activities.

[7] Szabo and Sorensen (2018) provide a good example of these challenges. DSV A/S, a global transport and logistics firm listed in Denmark states that it is "*challenging to collect data in a large, geographically dispersed organization like DSV that operates in very different business culture and statutory frameworks*."

Consequently, ESG disclosure mandates are likely to increase the parent firm's marginal cost of production more than that of its subsidiaries. This leads to a new equilibrium in which production is reallocated toward subsidiaries, until marginal costs are aligned (See Figures OA-2 and OA-3 of the Online Appendix). The extent of this reallocation depends on the trade-off between the parent's higher local production costs and the combination of local and spillover costs associated with subsidiary production. Moreover, ESG mandates may alter the relative cost ranking across subsidiaries, prompting business groups to exploit cross-country differences in enforcement intensity and social norms when deciding where to locate production and irresponsible ESG activities within the corporate structure.

If the combined local subsidiary costs and spillover costs associated with ESG disclosure mandates outweigh the synergies of subsidiary ownership—such as access to resources, markets, or distribution networks—divestment may become the optimal strategic response. In such cases, parent firms may choose to exit industries or geographic markets where irresponsible ESG activities are more likely to occur (Wang and Li 2019), reallocating production either to other firms within the group or to external suppliers (Barney, Edwards, and Ringleb 1992; Berry, Kaul, and Lee 2021; Dai et al. 2024; Ecker and Keeve 2024; Duchin et al. 2025; Christensen et al. 2025).[8] This represents a shift along the *extensive margin*—the decision to alter the boundaries of the firm by shedding high-risk subsidiaries altogether. By contrast, reallocating ESG-risky activities to existing subsidiaries within the group reflects an *intensive margin* adjustment, whereby business groups reoptimize production and compliance strategies without changing their overall corporate footprint.

Our empirical predictions can thus be summarized as follows. ESG disclosure mandates increase the marginal cost of irresponsible ESG activities. While financially unconstrained

[8] Fiechter et al. (2024) and Lu et al. (2024) document changes in the type of external suppliers used, towards private suppliers and suppliers in countries with opaque information environments.

business groups may choose to invest in ESG improvements, financially constrained groups may lack this option and instead reallocate irresponsible ESG activities to subsidiaries where the relative increase in cost is lower. However, not all subsidiaries are affected equally. Within the group, parents are likely to shift irresponsible ESG activities to subsidiaries in countries with weaker enforcement, where incidents are less likely to be detected, disclosed, or punished—and where legal or reputational spillovers are minimal. Through this reallocation, business groups not only determine their overall level of ESG performance but also strategically hedge ESG risks across group firms.[9] When the costs associated with maintaining a high-risk subsidiary exceed the benefits—particularly when the subsidiary provides limited synergies to the group—divestment may become the optimal response.[10]

3. Data and Summary Statistics

3.1. Business Group Ownership and Financial Data

We obtain data on listed business groups and their subsidiaries from Orbis Historical, a database published by Bureau van Dijk Electronic Publishing (BvDEP), now part of Moody's Analytics, that provides ownership and financial data for a large cross-country sample of private and public firms. Orbis Historical compiles several vintages of Orbis data and offers three main advantages over Orbis: (i) it provides point-in-time ownership information, (ii) it allows us to build a time series of financial data that extends beyond the ten years available in each Orbis vintage, and (iii) it helps us address potential survivorship biases resulting from companies being dropped from Orbis after roughly 10 years of inactivity.

[9] Similar regulatory arbitrage opportunities have also been documented in other settings, including in the context of financial reporting (Beuselinck et al. 2019), tax avoidance (Hanlon and Heitzman 2010), and the insurance industry (Koijen and Yogo 2016).

[10] For some business groups, outsourcing is not an option when production involves high value of technical knowledge and significant transaction costs (Brewster 2002). For example, energy extraction companies cannot outsource their activities to independent contractors. In this case, firms may choose to reduce ownership (partial divestiture). Reduced ownership might mitigate the legal and reputational costs faced by the parent following subsidiary ESG incidents.

3.2. ESG Incident Data

We obtain information on ESG incidents from the RepRisk database, following prior literature (e.g., Kölbel, Busch, and Jancso 2017; Burke, Hoitash, Hoitash 2019; Li and Wu 2020; Burke 2022; Christensen et al. 2023; Abraham, Olbert, and Vasvari 2024). RepRisk tracks negative ESG-related news coverage from over 100,000 public sources, including print, online, and social media, blogs, regulator and think-tank websites, and newsletters. It classifies news articles based on their main topics and provides measures of their severity (low, medium, or high), reach (limited, medium, or high), and novelty (i.e., whether it is the first time a firm is exposed to a specific type of risk).

From RepRisk, we obtain information on the number, type, and severity of ESG incidents. RepRisk categorizes these incidents into three main areas: "Environment," "Social," and "Governance." Environmental incidents concern a firm's environmental impact (e.g., local pollution, ecosystem disruption, waste management, and animal mistreatment). Social incidents involve the firm's interactions with employees and the broader community, covering issues like forced or child labor, employment discrimination, occupational health and safety, poor employment conditions, human rights abuses, and social discrimination. Governance incidents relate to corporate governance, potentially involving corruption, bribery, money laundering, misleading disclosures, fraud, and tax evasion. Some issues are cross-cutting and thus fall into multiple categories.

RepRisk offers two significant advantages for our study. First, its event-driven approach provides comprehensive coverage of listed as well as private companies, in contrast to other ESG databases that often only cover public companies.[11] Second, RepRisk does not rely on companies' self-reported information. As such, RepRisk captures actual outcomes as opposed

[11] Sustainalytics, Refinitiv ESG, S&P ESG Trucost, and MSCI ESG, for example, cover less than 15,000 companies.

to firms' own portrayal of their ESG performance. Importantly, RepRisk deliberately excludes firms' sustainability disclosures as a data source. This aspect is particularly relevant to our study, as it alleviates concerns that changes in incidents at the parent and subsidiary levels are mechanically driven by mandated ESG disclosures rather than caused by actual changes in firm behavior.

While RepRisk has notable advantages compared to other ESG databases, it also has potential disadvantages. Its reliance on media coverage and other public sources may introduce geographic or industry biases. Furthermore, RepRisk might be more likely to capture incidents involving large, listed parent companies than those involving private subsidiaries. In Section 5.1, we discuss how our research design alleviates these potential concerns.

We develop a multi-stage algorithm to match RepRisk to Orbis, using firm name, headquarter country, website, and ISIN identifier information. This algorithm builds on Li and Wu (2020) and Abraham et al. (2024) but combines different metrics of textual similarity with weights based on out-of-sample classification tests. We describe this algorithm in detail in Section 2 of the Online Appendix.

3.3. ESG Disclosure Mandates

We compile information on ESG disclosure mandates from Wang (2023), Gibbons (2024), and Krueger et al. (2024). We supplement these data with information from *Carrots & Sticks* and the *Sustainable Stock Exchanges* initiative, and with an extensive web search. Table OA-1 of the Online Appendix provides details on the ESG disclosure mandates introduced by the countries in our sample. For each country that adopted ESG disclosure mandates during our sample period, we report the name of the corresponding regulation, the year the regulation

was passed, the scope of the regulation (i.e., the type of firms that it applies to), and the issuer of the regulation (e.g., government body or stock exchange).[12]

3.4. Sample Selection and Descriptive Statistics

In Table 1, Panel A, we outline the sample selection criteria. We begin by identifying all listed parent companies in the Orbis Historical database. We focus on listed parents only because ESG disclosure mandates apply almost exclusively to listed companies (see Table OA-1 of the Online Appendix). For each listed parent company, we collect ownership and financial information on directly-held (level 1) and indirectly-held (levels 2, 3, 4, and 5) subsidiaries (Shroff, Verdi, and Yu 2014; Beaver et al. 2019, 2024; Beuselinck et al. 2019). We constrain the sample to subsidiaries in which listed parents hold, directly or indirectly, at least 25% of their control rights.

We exclude firms (both parents and subsidiaries) whose Orbis legal form is labelled as "*Other legal form*," as well as firms with SIC codes 6000-6999 (financial firms) and 8000-9999 (museums and educational services, private households, membership organizations, and public services).[13] Additionally, we exclude firms that do not have at least U.S. $10,000 in assets and turnover. After excluding business groups without consolidated financial statements, those without information that allows us to perform a match with RepRisk, and after removing "always treated observations" (parent companies domiciled in countries that adopted ESG disclosure mandates before the beginning of our sample period and their subsidiaries) and observations with missing data for our main analysis, we are left with 149,301 unique

[12] We re-estimate our main analysis in Table OA-3 of the Online Appendix using only the ESG disclosure mandate information from Krueger et al. (2024). In this restricted sample, all parent companies are located in countries classified as either treatment or control in Krueger et al. (2024). We continue to find a significant increase in the occurrence and number of subsidiary ESG incidents following the introduction of ESG disclosure mandates in the parent's country. The magnitude and significance of these increases are comparable to those reported in our main analysis.

[13] We exclude financial firms from our sample for two main reasons. First, they are exposed to a different set of environmental, social, and governance risks than non-financial firms. Second, the financial industry is heavily regulated, and therefore financial institutions are often subject to additional ESG disclosure requirements, that are hard to reliably identify in a large cross-country setting.

subsidiaries and 14,551 unique parents, corresponding to 830,614 subsidiary-year observations and 113,084 parent-year observations over the period 2007-2022. Our sample period starts in 2007 because RepRisk data are only available from this year onwards.

Table OA-2 of the Online Appendix presents the by-country, by-year, and by-industry distributions of parent and subsidiary firm-year observations. Our sample includes 142 countries, with China, France, Italy, Japan, Malasia, Spain, and United Kingdom accounting for nearly 50% of the subsidiary firm-year observations. The number of parent- and subsidiary-firm-year observations has increased over time, possibly reflecting improved coverage in the Orbis database. Approximately 32% of our sample subsidiaries are in the manufacturing sector (one-digit SIC codes 2 and 3), 27% are in the wholesale and retail trade sectors (one-digit SIC code 5), and 19% are in the service sector (one-digit SIC code 7).

Table 1, Panel B, presents descriptive statistics for our treatment variable ($Mandatory\ ESG\ Disclosure_{p,t}$), as well as for our ESG incident variables at the individual parent, aggregate group, and subsidiary levels, and our control variables. Approximately 50% (46%) of the subsidiary-years (parent-years) in our sample are treated. ESG incidents occur in approximately 11.7% (12.9%) of our parent-year and group-year observations, but only in 0.6% of our subsidiary year observations. This possibly reflects lower coverage of private subsidiary ESG incidents by the media and hence also by RepRisk.

4. Empirical Analysis

4.1. Do Business Groups Arbitrage ESG Disclosure Mandates?

4.1.1. Subsidiary ESG Incidents

In this section, we investigate how the ESG performance of subsidiaries changes in response to the implementation of ESG disclosure mandates in the countries of their parents. We employ a staggered difference-in-differences (DiD) research design, where we exploit the

staggered rollout of ESG disclosure mandates across different parent company countries for identification. Accordingly, we estimate several specifications of the following model:

$$\begin{aligned} ESG\ Incidents_{s,t+1} &= \beta_0 + \beta_1 Mandatory\ ESG\ Disclosure_{p,t} + \partial' Controls_{s,t} + \delta_s \\ &+ \delta_{sc} \times \delta_t + \delta_{si} \times \delta_t + \varepsilon_{s,t+1}. \end{aligned} \quad (1)$$

The dependent variable, $ESG\ Incidents_{s,t+1}$, is either the natural logarithm of the number of ESG incidents for subsidiary s in year t+1 ($Ln\big(1 + Number\ of\ ESG\ Incidents_{s,t+1}\big)$) or an indicator variable set equal to one if subsidiary s has at least one incident in year $t + 1$, and zero otherwise ($Occurrence\ of\ ESG\ Incidents_{s,t+1}$). $Mandatory\ ESG\ Disclosure_{p,t}$ is an indicator variable set equal to one after the subsidiary's parent country introduced mandatory ESG disclosure regulations, and zero otherwise.[14] $Controls_{s,t}$ is a vector of control variables, including the following time-varying subsidiary-level characteristics: $Profitability_{s,t}$, $Size_{s,t}$, $Leverage_{s,t}$, $Sales\ Growth_{s,t}$, and $Sales\ Volatility_{s,t}$.[15] Detailed variable definitions are provided in the Appendix.

Model (1) includes subsidiary fixed effects (δ_s) to control for time-invariant firm-level factors potentially affecting ESG performance. It also includes subsidiary-country×year ($\delta_{sc} \times \delta_t$), and subsidiary-industry×year ($\delta_{si} \times \delta_t$) fixed effects to control for country- and industry-level time-varying heterogeneity in ESG performance, potentially resulting from changes in macroeconomic conditions, technological advancements, or other regulations in the country of the subsidiary. Because ESG disclosure mandates are introduced at the parent country level, we draw statistical inferences based on standard errors clustered at the parent-country×year level.[16]

[14] We set $Mandatory\ ESG\ Disclosure_{p,t}$ equal to one in the year following the passage of ESG disclosure mandates to account for different adoption dates within a year.

[15] These are the control variables typically used in the prior literature examining the occurrence and number of ESG incidents (see, for example, Li and Wu (2020), Fiechter et al. (2022), and Cumming, Ji, and Tarsalewska (2023)).

[16] As a robustness test, in Table OA-4 of the Online Appendix, we cluster standard errors at the parent-country level. Our estimates are insensitive to this alternative design choice.

Our primary coefficient of interest, β_1, captures the effect of parent-country ESG disclosure mandates on the number of subsidiary ESG incidents. Our identification stems from the comparison of the change in the occurrence and number of ESG incidents for: (i) a *treatment* group of subsidiaries whose parents are headquartered in countries that introduce ESG disclosure mandates, and (ii) a *control* group of subsidiaries located in the same country, but whose parents are headquartered countries that have not (yet) introduced ESG disclosure mandates. In our DiD model, the fact that subsidiaries have parents in different countries and the staggered nature of ESG disclosure adoptions effectively allow us to difference out time-varying subsidiary-country-level confounders. If parent country ESG disclosure mandates result in improved ESG performance of subsidiary firms, β_1 should be negative. Conversely, if business group parents engage in regulatory arbitrage by shifting irresponsible ESG activities to their subsidiaries in response to ESG disclosure mandates, β_1 should be positive.

Table 2, Panel A, presents the results of this analysis. In Columns (1) to (4), the dependent variable is the natural logarithm of one plus the number of ESG incidents in the following year ($Ln(1 + Number\ of\ ESG\ Incidents_{s,t+1})$), whereas in Column (5), the dependent variable is the inverse hyperbolic sine of the number of incidents ($IHS(Number\ of\ ESG\ Incidents_{s,t+1})$). We begin by estimating a linear probability model with parent-country and year fixed effects (Column (1)), then sequentially add subsidiary-level controls (Column (2)), replace the year fixed effects by subsidiary-country×year and subsidiary-industry×year fixed effects (Column (3)), and, finally, include subsidiary fixed effects (Columns (4) and (5)). Column (6) instead displays the results of a Poisson regression.[17] Estimating a Poisson regression with fixed effects effectively limits the sample to subsidiaries that have at least one ESG incident during the sample period. In Columns (7) and (8), the

[17] We use these alternative estimation approaches as the log-transformation of the dependent variable may introduce biases and render hard to interpret treatment effects when the treatment affects the extensive margin (Santos Silva and Tenreyro 2006; Cohn, Liu, and Wardlaw 2022; Chen and Roth 2024).

dependent variable is $Occurrence\ of\ ESG\ Incidents_{s,t+1}$, an indicator variable set equal to one if the subsidiary experiences at least one ESG incident in the following year, and zero otherwise.[18] For parsimony, we only report the results of the estimation including parent-country and year fixed effects (Column (7)), and the full set of control variables and fixed effects (Column (8)). Across all specifications, we observe a significant increase in subsidiary ESG incidents following the introduction of ESG disclosure mandates in parent countries. The likelihood of occurrence of an ESG incident increases by 0.1%. This effect is economically meaningful, representing a 17% increase relative to the sample average. This finding is consistent with the hypothesis that parent companies engage in regulatory arbitrage, shifting irresponsible environmental and social activities to their subsidiaries.

A key identifying assumption underlying our DiD design is that, in the absence of parent country ESG disclosure mandates, the ESG performance of treated and control subsidiaries would have moved in parallel. We gauge the validity of this assumption by examining pre-treatment trends, specifically by estimating model (1) by replacing our main variable of interest ($Mandatory\ ESG\ Disclosure_{p,t}$) with a series of event-time indicators.

In Figure 1, we map out event-time ESG disclosure mandate effects on the number of incidents at the subsidiary level and test for differences in pre-treatment trends. We estimate model (1) but replace the $Mandatory\ ESG\ Disclosure_{p,t}$ indicator with separate event-time dummies, each marking a period relative to the introduction of ESG disclosure mandates in the parent country (except for the year before the introduction of ESG disclosure mandates (i.e., $t = -1$), which serves as the benchmark). Our findings indicate that the treatment effect that we document in Table 2 does not build up in the pre-treatment period. In fact, prior to the

[18] While the dependent variable in Columns (7) and (8) ($Occurrence\ of\ ESG\ Incidents_{s,t+1}$) is binary, we do not estimate logistic regressions for two main reasons. First, the inclusion of such an extensive set of covariates and fixed effects would likely induce an incidental parameter problem (Neyman and Scott 1948; Lancaster 2000), biasing the coefficient on $Mandatory\ ESG\ Disclosure_{p,t}$. Second, using a logit estimation with firm fixed effects would limit the sample to subsidiaries with a least one ESG incident during the sample period.

adoption of ESG disclosure mandates, the treatment effect magnitudes are statistically indistinguishable from zero, supporting the parallel-trends assumption. Subsidiary ESG incidents experience a sharp increase following the adoption of ESG disclosure mandates.

4.1.2. Parent Individual and Group Aggregate ESG Incidents

If parent companies shift irresponsible ESG activities to their subsidiaries, the increase in ESG incidents at the subsidiary level should be accompanied by a reduction in the number of incidents involving the parent company directly. Accordingly, in this section, we analyze the effect of ESG disclosure mandates on the ESG performance of parent companies. Our focus is on incidents that involve parent companies directly ($ESG\ Incidents_{p,t+1}$). Accordingly, we estimate the following model:

$$ESG\ Incidents_{p,t+1} = \beta_0 + \beta_1 Mandatory\ ESG\ Disclosure_{p,t} + \partial' Controls_{p,t} + \delta_p + \delta_{pi} \times \delta_t + \varepsilon_{p,t+1}. \quad (2)$$

$ESG\ Incidents_{p,t+1}$ is either the natural logarithm of the number of ESG incidents for parent company p in year $t+1$ ($Ln(1 + Number\ of\ ESG\ Incidents_{p,t+1})$) or an indicator variable set equal to one if parent company p has at least one incident in year $t+1$, and zero otherwise ($Occurrence\ of\ ESG\ Incidents_{p,t+1}$). The vector of control variables ($Controls_{p,t}$) captures time-varying parent-level characteristics ($Profitability_{p,t}$, $Size_{p,t}$, $Leverage_{p,t}$, $Sales\ Growth_{p,t}$, and $Sales\ Volatility_{p,t}$). The model includes parent fixed effects (δ_p), as well as parent-industry×year fixed effects ($\delta_{pi} \times \delta_t$) to control for time-invariant parent-company-specific heterogeneity, as well as time-varying industry factors, respectively. Our coefficient of interest, β_1, captures the effect of parent country ESG disclosure mandates on ESG incidents involving the parent company directly. We expect β_1 to be negative if parent companies improve the group's ESG performance following the introduction of ESG disclosure mandates or engage in regulatory arbitrage by transferring irresponsible ESG activities to their subsidiaries.

The results of this analysis, based on the estimation of equation (2), are presented in Table 2, Panel B. We document a significant reduction in the number of ESG incidents involving the parent directly, supporting the regulatory arbitrage hypothesis.[19]

Having examined the effect of ESG disclosure mandates on parent and subsidiary ESG performance, we next turn to the consolidated group level. Our finding that group parents shift irresponsible ESG activities to their subsidiaries raises concerns about the effectiveness of ESG disclosure mandates as a policy tool to address environmental and social externalities. To understand the overall net impact of ESG disclosure policies on business groups, we re-estimate equation (2) replacing the dependent variable by $ESG\ Incidents_{g,t+1}$, which aggregates all ESG incidents involving all group firms (i.e., the parent company and all its subsidiaries).

The results of this analysis, reported in Table 2, Panel C, indicate that the frequency of incidents at the group level declines following the introduction of ESG disclosure mandates in the parent country. This suggests that the mandates are effective in achieving their intended goal of improving the ESG performance of business groups. However, this improvement may understate the full potential of such regulations. In particular, while group-level ESG performance improves on average, the effect could have been even stronger *in the absence of regulatory arbitrage*. Further, some caveats are in order. First, we cannot observe the economy-wide effects of ESG disclosure mandates. For example, if these mandates induce business groups to improve their overall ESG performance through outsourcing rather than investment in greener technologies, the broader policy objective of mitigating ESG-related externalities may be only partially realized. Second, if the RepRisk coverage of subsidiary incidents is

[19] In untabulated tests, we document a significant decrease in the frequency of environmental, social, and governance incidents, and a decrease the frequency of serious incidents.

incomplete or uneven, aggregating subsidiary and parent incidents may obscure important variation, complicating the interpretation of group-level trends.

4.1.3. ESG Incidents by Type and Severity

One potential concern with our subsidiary-level analysis is the possibility of substitution across different types of ESG irresponsible behavior—namely, environmental, social, and governance incidents (Huang, Li, and Zhou 2025). While there is no strong ex-ante reason to expect such substitution in response to ESG disclosure mandates, we examine this possibility in Table 3, Panel A, where we separately examine the number and occurrence of environmental, social, and governance incidents. We document a significant increase in the likelihood and frequency of environmental and social incidents (but not governance incidents) following the adoption of ESG disclosure mandates.

Another potential concern is that the observed increase in subsidiary-level incidents may not be consequential. To address this, in Table 3, Panel B, we separately examine the number and occurrence of severe and non-severe incidents. Severe incidents are those classified by RepRisk as having medium or high severity, while non-severe incidents are classified as low severity. RepRisk's severity classification reflects the consequences of the incident, the scale of its impact, and whether it was caused by negligence or intent. We document a significant increase in both severe and non-severe incidents following the adoption of ESG disclosure mandates, with consistent effects across all incident categories. Importantly, the fact that the effect holds for severe incidents indicates that our findings are not driven by trivial, frivolous, or inconsequential events. Rather, they point to a meaningful deterioration in ESG performance at the subsidiary level, consistent with the regulatory arbitrage explanation.

4.2. Why Do Business Groups Arbitrage ESG Disclosure Mandates?

In the absence of financial constraints, business groups may view ESG disclosure mandates as an opportunity to undertake costly initiatives that enhance ESG performance

across their affiliated firms. Financially unconstrained groups are better positioned to invest in compliance, innovation, and sustainability measures that align with regulatory expectations. In contrast, financially constrained groups may lack the resources to pursue such improvements. For them, meeting ESG standards across all entities may be unfeasible or prohibitively expensive (De Haas et al. 2024), making regulatory arbitrage a more attractive—or even necessary—strategy. To test this conjecture, we compare the impact of ESG disclosure mandates introduced in parent countries on the number and occurrence of subsidiary ESG incidents across financially constrained and unconstrained business groups. We measure financial constraints using the Size-Age (SA) index developed by Hadlock and Pierce (2010) and classify a group as financially constrained if its SA index is above the sample median. Table 4 presents the results of this analysis. We document a significant increase in subsidiary ESG incidents following the introduction of ESG disclosure mandates in their parent countries—but only for subsidiaries of financially constrained groups.

4.3. Where Do Business Groups Shift Irresponsible ESG Activities?

In managing ESG risks within the business group, parent companies must weigh the relative costs associated with irresponsible ESG activities carried out by their subsidiaries. Specifically, they are likely to consider both the probability that such activities will be detected and the extent of reputational, regulatory, or financial costs such detection could impose on the group as a whole. To capture this dynamic, we examine treatment effect heterogeneity by exploring cross-sectional variation in the likelihood that subsidiary ESG issues will be detected, and the potential costs such detection may impose on the group as a whole. We argue that these costs are shaped by several factors: the subsidiary's position in the value chain (i.e., manufacturing vs. retail), the level of enforcement, prevailing social norms, and monitoring intensity in the subsidiary country, and the likelihood that the parent company may be held liable for subsidiary torts.

Consumers are among the stakeholders whose behavior is most likely affected by media coverage of ESG incidents (Li and Wu 2020). Therefore, parent companies may be more hesitant to shift irresponsible ESG activities to subsidiaries that are closer to final consumers (e.g., retailers) compared to those that are manufacturers. If parent companies engage in regulatory arbitrage, manufacturer subsidiaries should be disproportionally affected. In Table 5, Panel A, we compare the effect of ESG disclosure mandates on retail and manufacturing subsidiaries. Following Li and Wu (2020), we classify subsidiaries with SIC codes 2000-3999 as manufacturers and those with SIC codes 5200-5999 as retailers. Manufacturing subsidiaries (Columns (1) and (3)) experience a stronger increase in the number and occurrence of ESG incidents than retail subsidiaries (Columns (2) and (4)) (with *p*-values ranging from 0.040 to 0.059). In fact, retail subsidiaries experience no significant increase in ESG incidents.

Next, we investigate whether subsidiary-country characteristics play a role in the parent company decision to shift ESG irresponsible activities to its subsidiaries. We expect weaker enforcement in the subsidiary country to provide business group parents with greater opportunities to shift irresponsible ESG activities to local subsidiaries. Conversely, we expect stronger enforcement in the subsidiary country (Leuz and Wysocki 2016) to constrain such behavior and limit the potential for regulatory arbitrage by the parent company. Our analysis considers both formal and informal enforcement mechanisms (e.g., Guiso, Sapienza, and Zingales 2006; Fisman and Miguel 2007; Wysocki 2011).

Following Krueger et al. (2024), we rely on two measures of formal enforcement strength: rule of law and government effectiveness (Kaufmann, Kraay, and Mastruzzi 2010). Rule of law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, specifically focusing on the quality of contract enforcement, property rights, and the courts. Government effectiveness captures perceptions of the quality of public services and their degree of independence. We obtain both measures from the World Bank

database. To measure informal enforcement strength, we use a proxy for country-level social norms regarding environmental issues—the Environmental Performance Index (EPI) from the Yale Center for Environmental Law (Yale University). The EPI measures countries' environmental performance across different categories, including climate change, environmental health, and ecosystem vitality (Dyck et al. 2019).[20] We anticipate that, in response to ESG disclosure mandates, parent companies will shift irresponsible ESG activities to subsidiaries domiciled in countries with weaker enforcement quality and where investors and other stakeholders have weaker ESG preferences.

NGOs often play a crucial role in monitoring the irresponsible ESG activities of the foreign subsidiaries of multinational business groups. We conduct an additional cross-sectional test examining the role of NGOs in mitigating multinational regulatory arbitrage. This test leverages cross-country variation in the extent to which subsidiary countries restrict, repress, or shut down civil society organizations. We use the measure proposed by Chaudhury and Heiss (2023) which accounts for the number of legal barriers to non-governmental organization (NGO) advocacy, entry, and funding, including restrictions on engaging in political activities, burdensome registration processes, and the requirement of prior approval to receive foreign funding.

Finally, in some countries, courts adopt an "enterprise" perspective on business groups and often pierce the corporate veil, disregarding the separate legal identities of affiliated firms and holding parent companies liable for torts committed by their subsidiaries as if these torts were their own. To examine whether parent companies are less likely to shift irresponsible ESG activities to subsidiaries when their exposure to subsidiary legal liability is higher, we draw on

[20] Since the weights of different performance indicators change over time, EPI indices are not comparable across years. Therefore, for the purpose of our analysis, we use the 2022 EPI indices.

a measure developed by Belenzon et al. (2023), which captures the tendency of courts to pierce the corporate veil across 16 countries.

In Table 5, Panels B and C, we partition our sample based on the subsidiary-country rule of law, government effectiveness, EPI, barriers to NGO activity, and the likelihood of veil piercing. We then compare the magnitude of the coefficient on $Mandatory\ ESG\ Disclosure_{p,t}$ across the different subsamples to assess how irresponsible ESG activities are redistributed within business groups following the introduction of ESG mandates in the parent country. To do so, we rank subsidiaries within the same business group based on these institutional metrics. For example, a subsidiary is classified as operating under high rule of law if its country's rule of law score is above the median of countries in which the group's other subsidiaries are located. This within-group ranking approach allows us to isolate how institutional variation across subsidiary countries shapes the strategic allocation of ESG activities within business groups. In Panel B, we find that subsidiaries located in countries with high rule of law, government effectiveness, and EPI experience significantly higher increases in the number of ESG incidents following the introduction of ESG disclosure mandates in parent countries. While these differences are also in the predicted direction when the dependent variable is the occurrence of ESG incidents (Panel C), they are not statistically significant. We find no significant relationship between barriers to NGO activity and the treatment effect. However, subsidiaries in countries with a lower likelihood of veil piercing exhibit a significantly higher increase in ESG incidents, suggesting that the upholding of the limited liability rule encourages ESG risk shifting.

Taken together, our findings suggest that business groups engage in regulatory arbitrage by shifting irresponsible ESG activities to subsidiaries where such activities are less likely to generate costs for the group.

4.4. How Do Business Groups Shift Irresponsible ESG Activities?

Our analysis thus far suggests that, in response to ESG disclosure mandates, parent companies shift irresponsible ESG activities to their subsidiaries—particularly when the business group faces financial constraints and when the extent of reputational, regulatory, or financial costs associated with the detection of such ESG activities is expected to be low.

To further investigate how this redistribution occurs, we now turn to the underlying economic mechanism. Specifically, we posit that the shift in ESG activities is facilitated through increased asset utilization, whereby parent companies intensify the use of their subsidiaries' installed productive capacity to carry out operations involving heightened ESG risks. Following the introduction of ESG disclosure mandates in the parent country, the *relative marginal cost* of production in subsidiaries may fall. Consequently, business groups may find it optimal to redirect production to subsidiaries, making more intensive use of their existing physical and human capital. To pin down this mechanism, we compute asset utilization and employee utilization as the industry-adjusted ratios of subsidiary sales to total assets and cost of employees, respectively. We expect both measures to increase following the introduction of ESG disclosure mandates—particularly among subsidiaries of financially constrained business groups. We report the results of this analysis in Table 6. Consistent with our prediction, we find that ESG disclosure mandates in parent countries lead to increases in both asset and employee utilization at the subsidiary level (Columns (1) and (4)). As expected, these effects are more pronounced among subsidiaries of financially constrained groups (Columns (2) and (5)). The increase in subsidiary asset and employee utilization that we document reinforces the idea that business groups actively shift production to their subsidiaries. As such, this mitigates the potential concern that evidence of ESG performance deterioration at the subsidiary level is purely driven by a diversion of resources to improve ESG performance at the parent level.

4.5. Extensive Margin: Partial and Full Subsidiary Divestiture

The evidence presented thus far is consistent with a pattern of ESG risk shifting from the parent company to its subsidiaries within business groups. This form of within-group reallocation represents an *intensive margin* response to ESG disclosure mandates, as parent companies redistribute risky activities across existing entities within the boundaries of the group. However, when the costs associated with irresponsible ESG activities at the subsidiary level become sufficiently high—due to stronger legal liability, regulatory enforcement, or reputational risk—business groups may respond along the *extensive margin* by divesting from high ESG-risk subsidiaries altogether, especially those that lack strong strategic or operational synergies with the rest of the group. We argue that such divestments serve as a risk mitigation strategy, enabling parent companies to insulate themselves from uncontrolled legal and reputational exposure.

To test this conjecture, we partition subsidiaries based on two key dimensions: their exposure to ESG risk and the extent of strategic or operational synergies they provide relative to other subsidiaries within the same business group. This classification allows us to examine whether divestiture—partial or full—is more likely to occur among subsidiaries that are both high in ESG risk and have a limited ability to generate synergies for the group. We re-estimate model (1) replacing the dependent variable by: $Full\ Divestiture_{s,[t+1,t+3]}$, an indicator variable set equal to one if the parent company fully divests from the subsidiary within the following three years, and zero otherwise; $Partial\ Divestiture_{s,[t+1,t+3]}$, an indicator variable set equal to one if the parent company reduces the level of equity ownership in the subsidiary below the 50% threshold within the following three years, and zero otherwise (this variable is only defined for subsidiaries that are not fully divested); and $Divestiture\ Intensity_{s,[t+1,t+3]}$, a categorical variable set equal to 1 if the parent company partially divests (i.e., if $Partial\ Divestiture_{s,[t+1,t+3]}$ is equal to one), 2 if the parent company fully divests (i.e., if

$Full\ Divestiture_{s,[t+1,t+3]}$ is equal to one), and zero otherwise. We expect the coefficient on $Mandatory\ ESG\ Disclosure_{p,t}$ to be larger in the subsample of subsidiaries that are both ESG-risky and have a limited ability to generate synergies within the business group. Importantly, the divestiture intensity variable allows us to capture the escalating nature of divestment decisions: as subsidiaries become increasingly risky and less synergistic, business groups are more likely to progress from no divestiture, to partial divestiture, and ultimately to full divestiture. This sequential structure reflects a gradient of responses to rising ESG risk and diminishing strategic value.

We classify a subsidiary as ESG-risky if its ESG risk exceeds the median ESG risk among all subsidiaries within the same business group. ESG risk is proxied by the ESG incident rate in the subsidiary country. Subsidiaries are defined as synergistic if their return on assets is above the group median, reflecting a greater potential to contribute to the group's overall performance.

Our findings, reported in Table 7, indicate that, following the introduction of ESG disclosure mandates, parent companies are significantly more likely to divest from subsidiaries that are both ESG-risky and non-synergistic—compared to those that are synergistic and exhibit low ESG risk. These effects are robust across all three dependent variables, with *p*-values ranging from <0.001 to 0.090. Notably, we find no evidence of an increased likelihood of divestment for subsidiaries that are both synergistic and low in ESG risk, reinforcing the view that business groups divest strategically in response to ESG-related regulatory pressure.

5. Additional Analyses

5.1. Addressing Potential Alternative Explanations

The changes in corporate ownership structure documented in the previous section raise a potential concern: the observed increase in the occurrence and frequency of subsidiary-level ESG incidents may reflect structural changes within business groups, rather than a reallocation

of irresponsible ESG activities. To assuage this concern, in Table 8, Panel A, we restrict our sample to a two-year window surrounding the introduction of an ESG disclosure mandate in the parent country. We construct a strongly balanced panel with five consecutive annual observations for each subsidiary, which allows us to abstract from ownership changes and isolate the effects of the disclosure mandate. In addition, focusing on a narrower time window helps mitigate concerns that the estimated treatment effects are confounded by unrelated contemporaneous events. Even within this restricted sample, we continue to find a significant increase in the occurrence and number of subsidiary ESG incidents following the introduction of the mandate—consistent with the regulatory arbitrage hypothesis.

Another potential concern with our findings is that ESG disclosure mandates in the parent country may increase the likelihood that subsidiary-level ESG incidents are captured by the RepRisk database and, consequently, included in our analysis. A key strength of RepRisk, however, is that it is event-driven rather than company-driven, meaning it does not rely on firm-level ESG disclosures to identify incidents. Nonetheless, mandated disclosures at the parent level may facilitate media detection of subsidiary-level incidents and increase their visibility—particularly when the subsidiary is linked to a high-profile parent firm. Media outlets, driven by incentives to attract public attention, may be more likely to report incidents involving subsidiaries of well-known multinational business groups. Likewise, regulators may use ESG disclosures at the parent level to guide the allocation of monitoring and enforcement resources, thereby increasing the likelihood that violations at the subsidiary level are uncovered and reported. [21]

[21] A broader concern is that RepRisk might not capture all incidents involving private companies. Our fixed effect structure, which includes subsidiary-firm, subsidiary-country×year, and subsidiary-industry×year fixed effects, helps mitigate this concern. Nonetheless, to address the potential concern that some zeroes in our data may reflect a lack of media coverage rather than the true absence of ESG incidents (i.e., may not be "true zeroes"), we conduct additional (untabulated) tests in which we restrict the sample to firms that experienced at least one ESG incident during the sample period. Even within this restricted sample, we continue to find evidence of an increase in ESG incidents following the introduction of ESG disclosure mandates in parent countries. As noted by Raghunandan (2021), this approach might limit the external validity of our findings but enhances internal validity by mitigating potential biases related to incident observability.

Our empirical findings cannot be fully attributed to increased media coverage or heightened regulatory targeting of subsidiaries following the enactment of ESG disclosure mandates in the parent country. First, we observe a rise in *serious* ESG incidents (Table 3, Panel B)—defined as those involving severe consequences, affecting a large number of individuals, and typically stemming from intentional or systemic issues. These types of incidents are inherently more visible to a broad range of stakeholders and are therefore likely to attract media attention and regulatory scrutiny regardless of whether the subsidiary's link to the parent company is publicly known.

Second, the heterogeneity in treatment effects we document is difficult to reconcile with the alternative explanation of increased media coverage or regulatory targeting. One might argue that institutional characteristics—such as the rule of law—are correlated with press freedom, and that ESG disclosure mandates may enable international media to uncover incidents in subsidiaries located in weak rule of law countries, which were previously underreported in the local press and thus not captured by RepRisk. However, this logic does not extend to variation in the likelihood of corporate veil piercing. We find that subsidiaries in countries with a low likelihood of veil piercing experience *larger* increases in reported incidents. Importantly, these countries include Belgium, Canada, Denmark, South Korea, Sweden, and United Kingdom—jurisdictions with high levels of press freedom. This pattern is inconsistent with the idea that increased media visibility alone drives our results and instead supports the interpretation of strategic ESG risk shifting by parent companies.

Third, we observe an increase in ESG incidents among manufacturing subsidiaries, but not among retail subsidiaries. Retail subsidiaries are typically more consumer-facing and have direct interactions with end customers, making them more likely to attract media coverage when incidents occur. If increased media attention were the primary driver of our results, we would expect stronger effects among retail subsidiaries. However, the fact that the increase is

concentrated among manufacturers—entities that are generally less visible to the public—further undermines the media coverage explanation and supports the interpretation of deliberate ESG risk reallocation within business groups.

Fourth, we document a decline in excess capacity (i.e., an increase in asset and employee utilization) among subsidiaries of financially constrained parent firms following the introduction of the ESG disclosure mandate. This pattern is consistent with a real reallocation of production activity to these subsidiaries, rather than a spurious increase in incident reporting due to heightened media coverage. The reduction in unused productive capacity suggests that parent companies are actively leveraging these subsidiaries to shift operations—potentially those carrying higher ESG risk—rather than simply being subject to greater external scrutiny.

While our empirical results are unlikely to be driven by increased media coverage—for the reasons outlined above—we nevertheless conduct an additional test, whose results are reported in Table 8, Panel B, to further address this concern. Specifically, we leverage RepRisk's *incident reach* classification, which distinguishes between high-reach incidents—those reported by global media outlets—and limited-reach incidents, which are covered only by local media, smaller NGOs, local government bodies, or social media platforms. If heightened media attention were driving our results, we would expect a disproportionate increase in high-reach incidents following the introduction of ESG disclosure mandates in the parent country. Instead, we find that the increase is greater for limited-reach incidents, with *p*-values of 0.050 and 0.026, respectively. This pattern is inconsistent with a media-driven reporting bias and further supports the interpretation of a real shift in ESG risk within business groups.

Collectively, the evidence from our empirical tests is inconsistent with the interpretation that our findings are driven by increased media coverage. Instead, the results point to a genuine

rise in subsidiary-level ESG incidents that is consistent with the regulatory arbitrage explanation.

Finally, to address the potential concern that other unobservable factors may be driving our results, we follow the bounding methodology developed by Oster (2019) to assess the stability of our treatment effects and thus their robustness to omitted variable bias. The results of this analysis, presented in Table OA-6 of the Online Appendix, suggest that the unobservables would have to be 8 (7) times as important as the observables to produce a treatment effect of zero on the number (occurrence) of subsidiary ESG incidents.[22]

5.2. Addressing Potential Treatment Effect Heterogeneity Bias

Our baseline empirical specification assumes homogeneous treatment effects—meaning that the effects of ESG disclosure mandates are similar across cohorts of subsidiaries treated at different times and remain constant within each cohort over time. If this assumption is violated, the estimated treatment effects may be biased (De Chaisemartin and D'Haultfeuille 2020; Callaway and Sant'Anna 2021; Goodman-Bacon 2021; Sun and Abraham 2021).

To allay this concern, we conduct additional sensitivity tests, which we discuss in Section 3 of the Online Appendix. First, we perform the Goodman-Bacon (2021) decomposition of average treatment effects. Reassuringly, we find that the treatment effect that we document is mainly driven by a comparison of treated and never-treated subsidiaries and that heterogenous treatment effects, if anything, bias our estimates downwards. Nevertheless, we also implement the Callaway and Sant'Anna (2021) estimator—both with and without time-varying covariates—following Baker, Larcker, and Wang (2022). This method ensures that all control

[22] The exact values of delta—the relative degree of selection on observed and unobserved control variables for which the treatment effect would be zero—are -8.3620 (-7.1523) for the number (occurrence) of incidents. We obtain these estimates by assuming a value for R^{max} (the R^2 from a hypothetical regression of the number and occurrence of ESG incidents and both observed and unobserved control variables) of equal to 1.3 multiplied by the within-R^2 of a regression that includes all control variables. We calculate delta based on the within-R^2 following Breuer et al. (2018) because our objective is to gauge the role of unmodelled (unobservable) time-varying factors.

observations are either never treated or not yet treated at the time of comparison, thereby avoiding potential bias from using already-treated units as controls. The magnitude of our treatment effects remains similar—or increases—once we allow for heterogeneity in treatment timing and effects, further strengthening the credibility of our findings.

6. Conclusion

We investigate how business groups respond to the introduction of ESG disclosure mandates in the parent country. Using data from Orbis Historical and RepRisk, we find that parent companies improve their individual ESG performance once ESG disclosure becomes mandatory. However, our evidence suggests that part of this improvement can be attributed to the shifting of irresponsible ESG activities to group subsidiaries, as evidenced by an increase in the occurrence and frequency of ESG incidents at the subsidiary level. Although the consolidated ESG performance of business groups shows an overall improvement—consistent with the intended aims of disclosure mandates—this regulatory arbitrage generates negative externalities for the countries where subsidiaries are domiciled.

This regulatory arbitrage is more pronounced among financially constrained business groups, where investing in ESG improvements may be prohibitively expensive or otherwise impractical. Additionally, manufacturing subsidiaries experience a greater increase in ESG risk compared to retail subsidiaries, reflecting the parent companies' strategic consideration of the relative costs associated with ESG incidents, which are typically higher for entities closer to final consumers. Our findings further indicate that parent firms exploit cross-country variation in institutional quality by relocating irresponsible ESG activities to subsidiaries domiciled in jurisdictions characterized by weaker rule of law, lower government effectiveness, weaker environmental preferences, and legal environments that strongly uphold limited liability protection. They do so by increasing the use of subsidiaries' existing productive capacity. Specifically, we document increases in both asset and employee utilization at the subsidiary

level following the introduction of parent-level ESG disclosure mandates—consistent with a reallocation of ESG-risky production to subsidiaries where the marginal cost of such activities is lower.

In closing, a few caveats are in order. First, our assessment of ESG performance relies on RepRisk data, which, although comprehensive, may exhibit biases towards publicly listed companies or specific industries and geographical regions. Nevertheless, our fixed effect structure mitigates this potential concern. Second, RepRisk focuses on negative ESG incidents, potentially overlooking ESG performance improvements. Third, our analysis focuses primarily on ESG incidents at the consolidated group level and thus cannot fully capture broader economic effects arising from ESG disclosure regulations. For instance, we do not examine ESG outcomes for subsidiaries divested by parent companies. Such subsidiaries might be liquidated, continue independently, or become part of other business groups, potentially leading to either deterioration in ESG performance or displacement by competitors operating under laxer ESG regulations.

With these caveats in mind, our findings may be helpful to policy makers when designing ESG disclosure regulations. First, they emphasize the importance of enforcing an enterprise approach to disclosure. Second, they highlight the unintended negative consequences of uneven disclosure regulation (Breuer and Breuer 2022) and suggest that, if not accompanied by an improvement in the institutional quality of subsidiary countries, ESG disclosure mandates can transfer undesirable social and environmental impacts to these countries (Mahieux et al. 2025).

References

Abraham, J. K., M. Olbert, and F. P. Vasvari (2024). ESG disclosures in the private equity industry. Working paper. Available at SSRN: https://ssrn.com/abstract=4265171.

Agarwal, S., Q. Gu, J. He, and Qi Zhang (2023). Corporate ESG Profiles and Consumption. Working paper. Available at SSRN: https://ssrn.com/abstract=4437793.

Akey, P., and I. Appel (2021). The limits of limited liability: Evidence from industrial pollution. *The Journal of Finance* 76 (1): 5-55.

Albuquerque, R., L. Brandão-Marques, M. A. Ferreira, and P. Matos. International corporate governance spillovers: Evidence from cross-border mergers and acquisitions. *The Review of Financial Studies* 32 (2): 738-770.

Aylmer, R. J. (1970). Who makes marketing decisions in the multinational firm?" *Journal of Marketing* 34 (4): 25-30.

Baker, A. C., D. F. Larcker, and C. Wang. How much should we trust staggered difference-in-differences estimates? *Journal of Financial Economics* 144 (2): 370-395.

Balakrishnan, R., G. B. Sprinkle, and M. G. Williamson (2011). Contracting benefits of corporate giving: An experimental investigation. *The Accounting Review* 86 (6): 1887-1907.

Barney, J. B., F. L. Edwards, and A. H. Ringleb (1992). Organizational responses to legal liability: Employee exposure to hazardous materials, vertical integration, and small firm production. *Academy of Management Journal* 35 (2): 328-349.

Bartram, S.M., K. Hou, and S. Kim (2022). Real effects of climate policy: Financial constraints and spillovers. *Journal of Financial Economics* 143 (2): 668-696.

Beaver, W. H., S. Cascino, M. Correia, and M. McNichols (2019). Group affiliation and default prediction. *Management Science* 65 (8): 3559-3584.

Beaver, W. H., S. Cascino, M. Correia, and M. McNichols (2024). Bankruptcy in groups. *Review of Accounting Studies* 29 (4): 3449-3496.

Belenzon, S., N. Hashai, and A. Patacconi (2019). The architecture of attention: Group structure and subsidiary autonomy. *Strategic Management Journal* 40 (10): 1610-1643.

Belenzon, S., H. Lee, and A. Patacconi (2023). Managing risk in corporate groups: Limited liability, asset partitioning, and risk compartmentalization. *Strategic Management Journal* 44 (12): 2888-2921.

Ben-David, I., Y. Jang, S. Kleimeier, and M. Viehs (2021). Exporting pollution: where do multinational firms emit CO2? *Economic Policy* 36 (107): 377-437.

Berry, H., A. Kaul, and N. Lee (2021). Follow the smoke: The pollution haven effect on global sourcing. *Strategic Management Journal* 42 (13): 2420-2450.

Beuselinck, C., S. Cascino, M. Deloof, and A. Vanstralen (2019). Earnings management in multinational corporations. *The Accounting Review* 94 (4): 45-76.

Bertrand, M., P. Mehta, and S. Mullainathan (2002). Ferreting out tunneling. An application to Indian business groups. *Quarterly Journal of Economics* 117 (1): 121-148.

Beyer, B., R. Chaskel, S. Euler, J. Gassen, A-K Groβkopf, and T. Sellhorn (2024). How does carbon footprint information affect consumer choice? A field experiment. *Journal of Accounting Research* 62 (1): 101-136.

Birkinshaw, J., C. Bouquet, and T. Ambos (2007). Managing executive attention in the global company. *MIT Sloan Management Review*.

Blumberg, P. I. (1993). The multinational challenge to corporation law: the search for a new corporate personality. Oxford University Press.

Bolton, P. and M Kacperczyk (2021). Do investors care about carbon risk? *Journal of Financial Economics* 142 (2): 517-549.

Bonetti, P., C. Leuz, and G. Michelon (2024). Internalizing externalities through public pressure: transparency regulation for fracking, drilling activity, and water quality. NBER working paper 30842.

Breuer, M., and P. Breuer (2022). Uneven regulation and economic reallocation: Evidence from transparency regulation. Working paper. Available at SSRN: https://ssrn.com/abstract= 3683033.

Breuer, M., K. Hombach, and M. A. Müller (2018). How does financial reporting regulation affect firms' banking? *Review of Financial Studies* 31 (4): 1265-1297.

Brewster, R. (2022). Enabling ESG accountability: Focusing on the corporate enterprise. *Wisconsin Law Review* 1367-1406.

Broccardo, E., O. Hart, and L. Zingales (2022). Exit versus voice. *Journal of Political Economy* 130 (12): 3101-3145.

Bu, M., L, Xu, and R. W. Tang (2023). MNEs' transfer of socially irresponsible practices: A replication with new extensions. *Journal of World Business* 58 (2): 101384.

Burke, J. J. (2022). Do boards take environmental, social, and governance issues seriously? Evidence from media coverage and CEO dismissals. *Journal of Business Ethics* 176: 647-671.

Burke, J. J., R. Hoitash, and U. Hoitash (2019). Auditor response to negative media coverage of client environmental, social, and governance practices. *Accounting Horizons* 33 (3): 1-23.

Callaway, B. and P. Sant'Anna (2021). Difference-in-differences with multiple time periods. *Journal of Econometrics* 225 (2): 200-230.

Chava, S. (2014). Environmental externalities and cost of capital. *Management Science* 60 (9): 2223-2247.

Chaudhry, S., and A. Heiss (2023). NGO repression as a predictor of worsening human rights abuses. In Human Rights on the Edge. Routledge.

Chen, Y., M. Hung, and Y. Wang (2018). The effect of mandatory CSR disclosure on firm profitability and social externalities: Evidence from China. *Journal of Accounting and Economics* 65 (1): 169-190.

Chen, J., and J. Roth (2024). Logs with zeros? Some problems and solutions. *The Quarterly Journal of Economics* 139 (2): 891-936.

Choi, J. H., D. Li, and D. Macciocchi (2024). Human Capital Disclosure and Labor Market Outcomes: Evidence from Regulation SK. Available at SSRN: https://ssrn.com/abstract=4991944.

Christensen, H. B., L. Hail, and C. Leuz (2021). Mandatory CSR and sustainability reporting: Economic analysis and literature review. *Review of Accounting Studies* 26 (3): 1176-1248.

Christensen, H. B (2022). Is corporate transparency the solution to political failure on our greatest problems? A discussion of Darendeli, Fiechter, Hitz, and Lehmann. *Journal of Accounting and Economics* 74 (2-3): 101542.

Christensen, H. B., E. T. De George, A. Joffre, and D. Macciocchi (2023). Consumer responses to corporate social irresponsibility. Working paper. Available at SSRN: https://ssrn.com/abstract=4496599.

Christensen, H. B., L. Y. Liu, M. G. Maffett, and W. Wen (2025). Mandatory CSR Disclosures and Real Asset Regulatory Leakage. Available at SSRN: https://ssrn.com/abstract=5022104.

Claessens, S., S. Djankov, and L. Lang (2000). The separation of ownership and control in East Asian corporations. *Journal of Financial Economics* 58 (1-2): 81-112.

Coase, R. H. (1937). The Nature of the Firm. *Economica* 4 (November): 386–405.

Cohn, J.B., Z. Liu, and M.I. Wardlaw (2022). Count (and count-like) data in finance. *Journal of Financial Economics* 146 (2): 529-551.

Colonnelli, E., T. McQuade, G. Ramos, T. Rauter, and O. Xiong (2025). Polarizing Corporations: Does Talent Flow to" Good" Firms? NBER working paper w31913. Available at: https://ssrn.com/abstract=4652377.

Copeland, B. R., and M.S. Taylor (1994). North-south trade and the environment. *The Quarterly Journal of Economics* 109 (3): 755-787.

Cumming, D. J., S. Ji, and M. Tarsalewska (2023). Market Manipulation and ESG Incidents. Working paper. Available at SSRN: https://ssrn.com/abstract=4430217.

Dai, R., R. Duan, H. Liang, and L. Ng (2024). Outsourcing climate change. European Corporate Governance Institute–Finance Working Paper 723. Available at SSRN: https://ssrn.com/abstract=3765485.

Darendeli, A., P. Fiechter, J.-M. Hitz, and N. Lehmann (2022). The role of corporate social responsibility (CSR) information in supply-chain contracting: Evidence from the expansion of CSR rating coverage. *Journal of Accounting and Economics* 74 (2-3): 101525.

De Chaisemartin, C. and X. d'Haultfoeuille (2020). Two-way fixed effects estimators with heterogeneous treatment effects. *American Economic Review* 110 (9): 2964-2996.

De Haas, R., R. Martin, M. Muûls, and H. Schweiger (2024). Managerial and financial barriers to the green transition. *Management Science* (forthcoming).

Downar, B., J. Ernstberger, S. Reichelstein, S. Schwenen, and A. Zaklan (2021). The impact of carbon disclosure mandates on emissions and financial operating performance. *Review of Accounting Studies* 26 (3): 1137-1175.

Dube, S., H. S. G. Lee, and D. Wang (2023). Do consumers vote with their feet in response to negative ESG news? Evidence from consumer foot traffic to retail locations. Working paper. Available at SSRN: https://ssrn.com/abstract=4506950.

Duchin, R., J. Gao, and Q. Xu (2024). Sustainability or greenwashing: Evidence from the asset market for industrial pollution. *The Journal of Finance* 80 (2): 699-754.

Dyck, A., K. V. Lins, L. Roth, and H. F. Wagner (2019). Do institutional investors drive corporate social responsibility? International evidence. *Journal of Financial Economics* 131 (3): 693-714.

Ecker, F. and T. Keeve (2024). Managing corporate emission disclosures through divestitures. Working paper. Available at SSRN: https://ssrn.com/abstract=4517339.

El Ghoul, S., O. Guedhami, C. Kwok, and D. R. Mishra (2011). Does corporate social responsibility affect the cost of capital? *Journal of Banking & Finance* 35 (9): 2388-2406.

Erens, B. B., S. J. Friedman, and K. M. Mayerfeld (2008). Bankrupt subsidiaries: The challenges to the parent of legal separation. Emory Bankruptcy Developments Journal 25 (2008): 65:146.

Faccio, M., and L. Lang (2002). The ultimate ownership of Western European corporations. *Journal of Financial Economics* 65 (3): 365-395.

Fiechter, P., J.-M. Hitz, and N. Lehmann (2022). Real effects of a widespread CSR reporting mandate: Evidence from the European Union's CSR Directive. *Journal of Accounting Research* 60 (4): 1499-1549.

Fiechter, P., J.-M. Hitz, and N. Lehmann (2024). Do ESG disclosure mandates affect the competitive position of public and private firms? Available at: https://ssrn.com/abstract=4839091.

Fischer, P. M., K. P. Zeugner-Roth, C. S. Katsikeas, and M. Pandelaere (2022). Pride and prejudice: Unraveling and mitigating domestic country bias. *Journal of International Business Studies* 53 (3): 405-433.

Fisman, R., and E. Miguel (2007). Corruption, norms, and legal enforcement: Evidence from diplomatic parking tickets. *Journal of Political Economy* 115 (6): 1020-1048.

Flammer, C. (2015). Does corporate social responsibility lead to superior financial performance? A regression discontinuity approach. *Management Science* 61 (11): 2549-2568.

Ghoshal, S., and C. A. Bartlett (1990). The multinational corporation as an interorganizational network. *Academy of Management Review* 15 (4): 603-626.

Guiso, L., P. Sapienza, and L. Zingales (2006). Does culture affect economic outcomes? *Journal of Economic Perspectives* 20 (2): 23-48.

Gibbons, B. (2024) The financially material effects of mandatory nonfinancial disclosure. *Journal of Accounting Research* 62 (5): 1711-1754.

Goodman-Bacon, A. (2021). Difference-in-differences with variation in treatment timing. *Journal of Econometrics* 225 (2): 254-277.

Groen-Xu, M., and S. Zeume (2021). The Value of Corporate Social Responsibility, Home and Abroad. Available at SSRN: https://ssrn.com/abstract=3938925.

Hadlock, C. J. and J. R. Pierce (2010). New evidence on measuring financial constraints: Moving beyond the KZ index. *The Review of Financial Studies* 23 (5): 1909-1940.

Hanlon, M. and S. Heitzman (2010). A review of tax research. *Journal of Accounting and Economics* 50 (2-3): 127-178.

Hatte, S., and P. Koenig (2020). The geography of NGO activism against multinational corporations. *The World Bank Economic Review* 34 (1): 143-163.

Huang, Y., N. Li, and X. Zhou (2015). Substitution between CSR activities: Evidence from hiring and mistreating unauthorized workers and pollution. *Management Science* (forthcoming).

Houston, J. F., C. Lin, and Y. Ma (2012). Regulatory arbitrage and international bank flows. *Journal of Finance* 67 (5): 1845-1895.

Houston, J. F., C. Lin, H. Shan, and M. Shen (2022). How Does ESG Shape Consumption? Working paper. Available at SSRN: https://ssrn.com/abstract=4243071.

Hu, X., D. Li, and R. C. Liao (2021). The Propagation of ESG Practices through Multinational Companies. Working paper. Available at SSRN: https://ssrn.com/abstract=3934690.

Iliev, P., and L. Roth (2023). Director expertise and corporate sustainability. *Review of Finance* 27 (6): 2085-2123.

Javorcik, B. (2004). Does foreign direct investment increase the productivity of domestic firms? In search of spillovers through backward linkages. *American Economic Review* 94 (3): 605-627.

Johnson, S., R. LaPorta, F. Lopez-de-Silanes, and A. Shleifer (2000). Tunneling. *American Economic Review Papers and Proceedings* 90 (2): 22-27.

Jouvenot, V. and P. Krueger (2021). Mandatory corporate carbon disclosure: Evidence from a natural experiment. Available at: https://ssrn.com/abstract=3434490.

Känzig, D. R., J. Marenz, and M. Olbert (2024). Carbon Leakage to Developing Countries. Working paper. Available at SSRN: https://ssrn.com/abstract=4833343.

Kaufmann, D., A. Kraay, and M. Mastruzzi (2010). The worldwide governance indicators: Methodology and analytical issues. World Bank Policy Research working paper No. 5430. Available at SSRN: https://ssrn.com/abstract=1682130.

Keeve, T. (2024). Peer Effects in ESG Ratings: Evidence from Gender Pay Gap Disclosures. Working paper. Available at SSRN: https://ssrn.com/abstract=4536239.

Khanna, T., and Y. Yafeh (2005). Business groups and risk sharing around the world. *The Journal of Business 78* (1): 301-340.

Koijen, R. and M. Yogo (2016). Shadow insurance. *Econometrica* 84 (3): 1265-1287.

Kölbel, J.F., T. Busch, and L.M. Jancso (2017). How media coverage of corporate social irresponsibility increases financial risk. *Strategic Management Journal* 38 (11): 2266-2284.

Krueger, P., Z. Sautner, D. Y. Tang, and R. Zhong (2024). The effects of mandatory ESG disclosure around the world. *Journal of Accounting Research* 62 (5): 1795-1847.

Lancaster, T. (2000). The incidental parameter problem since 1948. *Journal of Econometrics* 95 (2): 391-413.

LaPorta, R., F. Lopez-de-Silanes, and A. Shleifer (1999). Corporate ownership around the world. *Journal of Finance* 54 (2): 471-517.

Lee, J. and P. Bansal (2024). Sweeping it under the rug: Positioning and managing pollution-intensive activities in organizational hierarchies. *Strategic Management Journal* 45 (6): 1151-1179.

Leonelli, S., M. Muhn, T. Rauter, and G. Sran (2024). How Do Consumers Use ESG Disclosure? Evidence from a Randomized Field Experiment with Everyday Product Purchases. Available at: https://ssrn.com/abstract=4687694.

Leuz, C., and P. D. Wysocki (2016). The economics of disclosure and financial reporting regulation: Evidence and suggestions for future research. *Journal of Accounting Research* 54 (2): 525-622.

Li, J., and D. Wu. (2020) Do corporate social responsibility engagements lead to real environmental, social, and governance impact? *Management Science* 66 (6): 2564-2588.

Lu, H., Q. Peng, J. Shin, and L. Yu (2023). Migration of Global Supply Chains: A Real Effect of Mandatory ESG Disclosure. Available at SSRN: https://ssrn.com/abstract=4581611.

Li, T., Q. Peng, and L. Yu (2024). ESG Considerations in Acquisitions and Divestitures: Corporate Responses to Mandatory ESG Disclosure. Available at SSRN: https://ssrn.com/abstract=4376676.

Mahieux, L., H. Sapra, and G. Zhang (2025). Measuring Greenhouse Gas Emissions: What Are the Costs and Benefits? *Journal of Accounting Research*.

Martinez, S. and A. B. Vazquez (2024). Mandatory ESG reporting and corporate performance. Working paper. Available at SSRN: https://ssrn.com/abstract=4358256.

Meier, J-M, H. Servaes, J. Wei, and S. C. Xiao (2023). Do consumers care about ESG? Evidence from barcode-level sales data. European Corporate Governance Institute–Finance Working Paper 926.

Mésonnier, J.-S. and B. Nguyen (2022). Showing off cleaner hands: mandatory climate-related disclosure by financial institutions and the financing of fossil energy. Available at: https://ssrn.com/abstract=3733781.

Mevorach, I. (2025). Environmental activism by parent companies: legal incentives and economic realities. *Journal of Corporate Law Studies*.

Michailova, S., R. Piekkari, M. Storgaard, and J. Tienari (2017). Rethinking ethnocentrism in international business research. *Global Strategy Journal* 7 (4): 335-353.

Nardella, G., S. Brammer, and I. Surdu (2023). The social regulation of corporate social irresponsibility: Reviewing the contribution of corporate reputation. *International Journal of Management Reviews* 25 (1): 200-229.

Neyman, J., and E. L. Scott (1948). Consistent estimates based on partially consistent observations. *Econometrica* 16 (1): 1-32.

OECD (2018). Multinational enterprises in the global economy. Heavily debated but hardly measured. Policy Note. May 2018.

Oster, E. (2019). Unobservable selection and coefficient stability: Theory and evidence. *Journal of Business & Economic Statistics* 37 (2): 187-204.

Pilgrim, G. and A. Wahlgren (2023). Unlocking new insights into multinational enterprises with the power of open-source data. Available at: https://oecdstatistics.blog/2023/05/10/unlocking-new-insights-into-multinational-enterprises-with-the-power-of-open-source-data/.

Plumlee, M., D. Brown, R. M. Hayes, and R. S. Marshall (2015). Voluntary environmental disclosure quality and firm value: Further evidence. *Journal of Accounting and Public Policy* 34 (4): 336-361.

Poole, J. (2013). Knowledge transfers from multinational to domestic firms: Evidence from worker mobility. *Review of Economics and Statistics* 95 (2): 393-406.

Raghunandan, A. (2021). Financial misconduct and employee mistreatment: Evidence from wage theft. *Review of Accounting Studies* 26 (3): 867-905.

Roe, M. J. (1986). Corporate strategic reaction to mass tort. *Virginia Law Review* 72 (1): 1-59.

Robinson, L. A., and P. C. Stocken (2013). Location of decision rights within multinational firms. *Journal of Accounting Research* 51 (5): 1261-1297.

Santos Silva, J., and S. Tenreyro (2006). The log of gravity. *The Review of Economics and Statistics* 88 (4): 641-658.

Schlissel, D., P. Peterson, and B. Biewald (2002). Financial insecurity: The increasing use of limited liability companies and multi-tiered holding companies to own nuclear power plants. Synapse Energy Economics.

Schiller, C. (2018). Global supply-chain networks and corporate social responsibility. Working paper. Available at SSRN: https://ssrn.com/abstract=3089311.

Shroff, N., R. Verdi, and G. Yu (2014). Information environment and the investment decisions of multinational corporations. *The Accounting Review* 89 (2): 759-790.

Sialm, C., Z. Sun, and L. Zheng (2020). Home bias and local contagion: Evidence from funds of hedge funds. *The Review of Financial Studies* 33 (10): 4771-4810.

Spotorno, P. (2024). Vedanta and Okpabi: A Step Forward in Corporate Group Accountability? *Business Law Review* 45 (1): 2-9.

Stein, J. (1997). Internal capital markets and the competition for corporate resources. *Journal of Finance* 52 (1): 111-133.

Steenbergen, V., and A. Saurav (2023). The effect of multinational enterprises on climate change: Supply chain Emissions, green technology transfers, and corporate commitments. World Bank report. Available at: http://hdl.handle.net/10986/39830.

Sun, L. and S. Abraham (2021). Estimating dynamic treatment effects in event studies with heterogeneous treatment effects. *Journal of Econometrics* 225 (2): 175-199.

Surroca, J., J. A. Tribó, and S. A. Zahra (2013). Stakeholder pressure on MNEs and the transfer of socially irresponsible practices to subsidiaries. *Academy of Management Journal* 56 (2): 549-572.

Szabo, D. G. And K. E. Sorensen (2018). Pursuing CSR Policy in Corporate Groups: Insights in the Operation of Groups from Consolidated Non-Financial Reporting. *European Company Law Journal* 15 (2): 51-60.

Templer, K. J (2010). Personal attributes of expatriate managers, subordinate ethnocentrism, and expatriate success: A host-country perspective. *The International Journal of Human Resource Management* 21 (10): 1754-1768.

Thorlakson, T., J. F. De Zegher, and E. F. Lambin (2018). Companies' contribution to sustainability through global supply chains. *Proceedings of the National Academy of Sciences* 115 (9): 2072-2077.

Tirole, J. (1988). The theory of industrial organization. MIT press.

Tomar, S. (2023). Greenhouse gas disclosure and emissions benchmarking. *Journal of Accounting Research* 61 (2): 451-492.

Turban, D. B., and D. W. Greening (1997). Corporate social performance and organizational attractiveness to prospective employees. *Academy of Management Journal* 40 (3): 658-672.

Varvastian, S., and F. Kalunga (2020). Transnational corporate liability for environmental damage and climate change: Reassessing access to justice after Vedanta v. Lungowe. *Transnational Environmental Law* 9 (2): 323-345.

Vuillemey, G. (2020). Evading corporate responsibilities: Evidence from the shipping industry. Working paper. Available at: https://ssrn.com/abstract=3691188.

Wang, L. L. (2023). Transmission effects of ESG disclosure regulations through bank lending networks. *Journal of Accounting Research* 61 (3): 935-978.

Wang, S. L., and D. Li (2019). Responding to public disclosure of corporate social irresponsibility in host countries: Information control and ownership control. *Journal of International Business Studies* 50: 1283-1309.

Wysocki, P. (2011). New institutional accounting and IFRS. *Accounting and Business Research* 41 (3): 309-328.

Yang, L., N. Z. Muller, and P. J. Liang (2021). The real effects of mandatory CSR disclosure on emissions: evidence from the Greenhouse Gas Reporting Program. NBER working paper 2894. Available at: https://ssrn.com/abstract=3880217.

Zhang, Y., Q. Shang, and C. Liu (2018). FDI spillovers on corporate social responsibility: The channel of labor mobility. *Sustainability* 10 (11): 4265.

Zheng, Q., Y. Luo, and V. Maksimov (2015). Achieving legitimacy through corporate social responsibility: The case of emerging economy firms. *Journal of World Business* 50 (3): 389-403.

Zhou, N., and H. Wang (2020). Foreign subsidiary CSR as a buffer against parent firm reputation risk. *Journal of International Business Studies* 51 (8): 1256-1282.

Zou, E. Y. (2021). Unwatched pollution: The effect of intermittent monitoring on air quality. *American Economic Review* 111 (7): 2101-2126.

Appendix: Variable Definitions

Variable	*Definition*
Dependent variables:	
$Ln(1 + ESG\ Incidents_{s,t+1})$	Natural logarithm of one plus the number of ESG incidents for subsidiary s in year $t + 1$ (Source: RepRisk).
$Ln(1 + ESG\ Incidents_{p,t+1})$	Natural logarithm of one plus the number of ESG incidents for parent company p in year $t + 1$ (Source: RepRisk).
$Ln(1 + ESG\ Incidents_{g,t+1})$	Natural logarithm of one plus the number of ESG incidents for business group g in year $t + 1$ (Source: RepRisk).
$Occurrence\ of\ ESG\ Incidents_{s,t+1}$	Indicator variable set equal to one if subsidiary s has at least one ESG incident in year $t + 1$, and zero otherwise (Source: RepRisk).
$Occurrence\ of\ ESG\ Incidents_{p,t+1}$	Indicator variable set equal to one if parent company p has at least one ESG incident in year $t + 1$, and zero otherwise (Source: RepRisk).
$Occurrence\ of\ ESG\ Incidents_{g,t+1}$	Indicator variable set equal to one if business group g has at least one ESG incident in year $t + 1$, and zero otherwise (Source: RepRisk).
$Asset\ Utilization_{s,t+1}$	Subsidiary asset utilization, calculated as the industry-adjusted ratio of sales over total assets for subsidiary s in year $t + 1$. Subsidiary asset utilization is adjusted by subtracting the industry median ratio of sales over total assets (Source: Orbis).
$Employee\ Utilization_{s,t+1}$	Subsidiary employee utilization, calculated as the industry-adjusted ratio of sales over cost of employees for subsidiary s in year $t + 1$. Subsidiary employee utilization is adjusted by subtracting the industry median ratio of sales over cost of employees (Source: Orbis).
$Partial\ Divestiture_{s,[t+1;t+3]}$	Indicator variable set equal to one if the business group reduces the level of equity ownership in subsidiary s below the 50% threshold in the time window from year $t + 1$ to $t + 3$, and zero otherwise (Source: Orbis).
$Full\ Divestiture_{s,[t+1;t+3]}$	Indicator variable set equal to one if the business group divests from subsidiary s completely in the time window from year $t + 1$ to $t + 3$, and zero otherwise (Source: Orbis).
$Divestiture\ Intensity_{s,[t+1;t+3]}$	Indicator variable set equal to one if the business group reduces the level of equity ownership in subsidiary s below the 50% threshold in the time window from year $t + 1$ to $t + 3$, equal to two if the business group divests from subsidiary s completely in the time window from year $t + 1$ to $t + 3$, and zero otherwise (Source: Orbis).
Treatment variable:	
$Mandatory\ ESG\ Disclosure_{p,t}$	Indicator variable set equal to one after a mandatory ESG disclosure regulation enters into force in the subsidiary's parent company country (Source: Hand-collected information. Please refer to Table OA-1 of the Online Appendix for more details).
Control variables:	
$Profitability_{s,t}$	Return on assets for subsidiary s in year t, defined as net income divided by total assets (Source: Orbis).

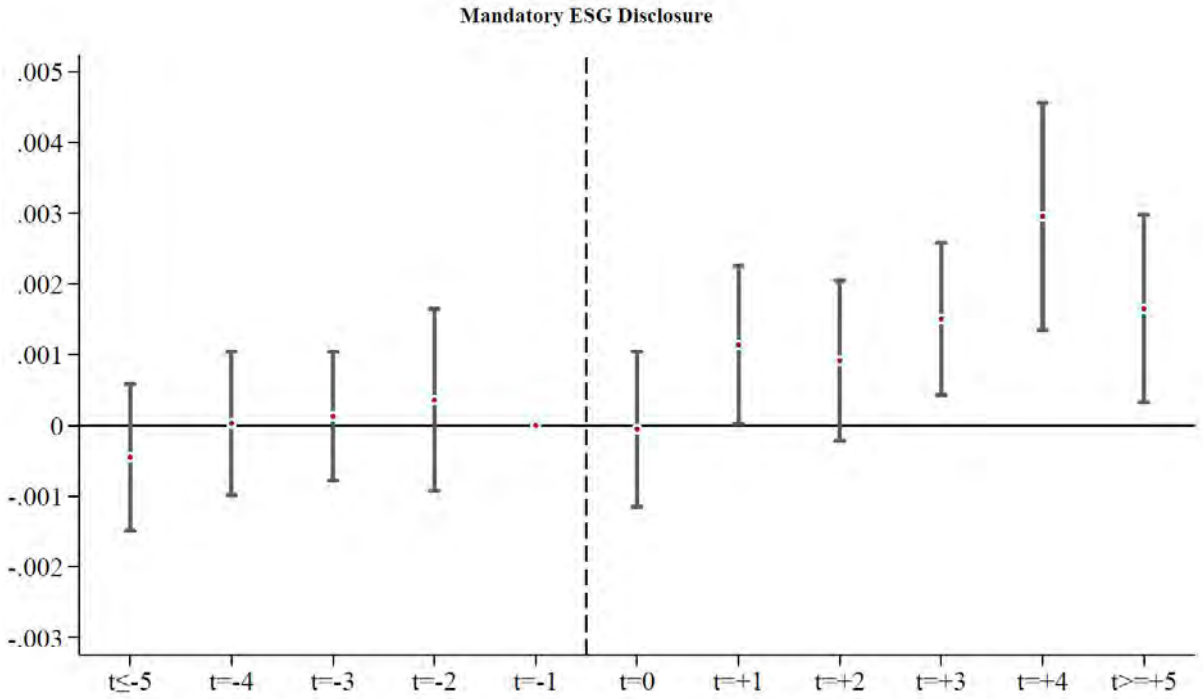
(continued)

Appendix (continued)

(continued)

Variable	*Definition*
Control variables:	
$Profitability_{p,t}$	Return on assets for parent company p in year t, defined as net income divided by total assets (Source: Orbis).
$Size_{s,t}$	Natural logarithm of total assets for subsidiary s in year t (Source: Orbis).
$Size_{p,t}$	Natural logarithm of total assets for parent company p in year t (Source: Orbis).
$Leverage_{s,t}$	Book leverage ratio for subsidiary s in year t, defined as total liabilities divided by total assets (Source: Orbis).
$Leverage_{p,t}$	Book leverage ratio for parent company p in year t, defined as total liabilities divided by total assets (Source: Orbis).
$Sales\ Growth_{s,t}$	Sales growth for subsidiary s in year t, calculated as the annual percentage change in sales (Source: Orbis).
$Sales\ Growth_{p,t}$	Sales growth for parent company p in year t, calculated as the annual percentage change in sales (Source: Orbis).
$Sales\ Volatility_{s,t}$	Volatility of sales for subsidiary s in year t calculated over the previous five years (Source: Orbis).
$Sales\ Volatility_{p,t}$	Volatility of sales for parent company p in year t calculated over the previous five years (Source: Orbis).

Figure 1: Dynamic Analysis of Mandatory ESG Disclosure Effects on Subsidiaries



This figure depicts the estimated coefficients of an ordinary least squares (OLS) regression, which we use to investigate the effect of parent country adoption of mandatory ESG disclosure regulation on the number of subsidiary ESG incidents. We estimate model (1), but replace the $Mandatory\ ESG\ Disclosure_{p,t}$ indicator with separate event-time dummies, each marking a period relative to the entry into force of ESG disclosure regulation in the parent company country (except for the year before the entry into force (i.e., $t = -1$), which serves as the benchmark). We report event-time effects (red dots) for the sample of subsidiaries. Vertical bands represent 95% confidence intervals for the point estimate in each event-time period and are calculated based on standard errors clustered at the parent-country×year level. The vertical dashed line marks the entry into force of ESG disclosure regulations in parent company countries.

Table 1: Sample Selection and Composition

Panel A: Sample Selection Criteria

	Listed Business Group Parents		Subsidiaries	
	Unique Firms	Firm-Years	Unique Firms	Firm-Years
Publicly listed parent companies and subsidiaries of publicly listed parent companies with available ownership data, with total assets and sales greater than U.S. $10,000, excluding *Other legal form* entities, *Museums and educational services, Private households, Membership organizations* (SIC codes 8000-8999) and *Public services* (SIC codes 9000-9999)	15,673	129,406	196,656	1,087,211
Exclude business groups with missing consolidated financial statements	(14)	(1,602)	(293)	(5,202)
Exclude business groups with missing information to match RepRisk data	(0)	(0)	(8)	(61)
Exclude "always treated" observations	(1,026)	(8,392)	(23,974)	(162,414)
Exclude observations with missing data for main analysis	(112)	(6,328)	(23,080)	(88,920)
Sample	14,551	113,084	149,301	830,614

Table 1 (continued)

Panel B: Descriptive Statistics

	Unique Firms	Firm-Years	Mean	Std. Dev.	P25	Median	P75
Test variable:							
$Mandatory\ ESG\ Disclosure_{p,t}$	14,521	113,084	0.464	0.499	0.000	0.000	1.000
Listed Business Group Parents:							
$ESG\ Incidents_{p,t}$	14,521	113,084	0.769	6.311	0.000	0.000	0.000
$Occurrence\ of\ ESG\ Incidents_{p,t}$	14,521	113,084	0.117	0.321	0.000	0.000	0.000
$ESG\ Incidents_{g,t}$	14,521	113,084	0.862	6.664	0.000	0.000	0.000
$Occurrence\ of\ ESG\ Incidents_{g,t}$	14,521	113,084	0.129	0.335	0.000	0.000	0.000
$Profitability_{p,t}$	14,521	113,084	0.019	0.111	0.005	0.032	0.066
$Size_{p,t}$	14,521	113,084	19.896	2.053	18.525	19.824	21.204
$Leverage_{p,t}$	14,521	113,084	0.511	0.231	0.347	0.505	0.655
$Sales\ Growth_{p,t}$	14,521	113,084	0.090	0.360	-0.071	0.041	0.176
$Sales\ Volatility_{p,t}$	14,521	113,084	0.150	0.162	0.055	0.099	0.180
Subsidiaries:							
$ESG\ Incidents_{s,t}$	149,301	830,614	0.012	0.370	0.000	0.000	0.000
$Occurrence\ of\ ESG\ Incidents_{s,t}$	149,301	830,614	0.006	0.075	0.000	0.000	0.000
$Profitability_{s,t}$	149,301	830,614	0.030	0.195	-0.001	0.037	0.098
$Size_{s,t}$	149,301	830,614	16.464	2.083	15.089	16.493	17.844
$Leverage_{s,t}$	149,301	830,614	0.651	0.537	0.341	0.588	0.824
$Sales\ Growth_{s,t}$	149,301	830,614	0.218	1.169	-0.126	0.017	0.195
$Sales\ Volatility_{s,t}$	149,301	830,614	0.453	0.667	0.114	0.243	0.501

This table presents sample selection criteria and descriptive statistics for business group parent and subsidiary observations. Panel A describes the sample selection criteria. Panel B presents descriptive statistics for our main dependent and independent variables, separately for parent companies and subsidiaries. All continuous variables are winsorized at the 1st and 99th percentile of their distributions. All variables are defined in the Appendix.

Table 2: Parent-Country ESG Disclosure Mandates and ESG Incidents

Panel A: Subsidiary ESG Incidents

	Dependent variable:							
	$Ln(1 + ESG\ Incidents_{s,t+1})$				$IHS(ESG\ Incidents_{s,t+1})$	$ESG\ Incidents_{s,t+1}$	$Occurrence\ of\ ESG\ Incidents_{s,}$	
	OLS	OLS	OLS	OLS	OLS	Poisson	OLS	OLS
Independent variable(s):	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Mandatory\ ESG\ Disclosure_{p,t}$	0.002***	0.001**	0.001***	0.002***	0.002***	0.155**	0.001***	0.001**
	(3.20)	(2.12)	(2.61)	(3.65)	(3.61)	(2.09)	(2.71)	(2.55)
$Profitability_{s,t}$		-0.001*	-0.000	-0.000	-0.000	0.123		0.000
		(-1.81)	(-0.47)	(-0.31)	(-0.26)	(0.69)		(0.11)
$Size_{s,t}$		0.005***	0.005***	0.001***	0.002***	0.302***		0.001***
		(23.20)	(23.38)	(6.54)	(6.54)	(5.03)		(5.94)
$Leverage_{s,t}$		0.003***	0.002***	0.000*	0.001*	-0.166		0.000
		(11.68)	(10.67)	(1.67)	(1.67)	(-1.61)		(1.08)
$Sales\ Growth_{s,t}$		-0.000***	-0.000***	-0.000	-0.000	-0.024		-0.000*
		(-6.48)	(-6.18)	(-1.59)	(-1.60)	(-0.89)		(-1.85)
$Sales\ Volatility_{s,t}$		0.002***	0.002***	0.000	0.000	-0.103		0.000
		(10.66)	(10.56)	(0.94)	(0.96)	(-1.34)		(0.62)
Parent-country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	No	No	No	No	Yes	No
Subsidiary fixed effects	No	No	No	Yes	Yes	Yes	No	Yes
Subsidiary-industry×year fixed effects	No	No	Yes	Yes	Yes	Yes	No	Yes
Subsidiary-country×year fixed effects	No	No	Yes	Yes	Yes	Yes	No	Yes
Obs.	657,068	657,068	656,873	636,402	636,402	17,494	657,068	636,402
Adj. R^2 | Pseudo R^2	0.003	0.016	0.046	0.467	0.459	0.540	0.003	0.282

Table 2 (continued)

Panel B: Parent Individual ESG Incidents

	Dependent variable:	
	$Ln(1 + ESG\ Incidents_{p,t+1})$	$Occurrence\ of\ ESG\ Incidents_{p,t+1}$
Independent variable(s):	(1)	(2)
$Mandatory\ ESG\ Disclosure_{p,t}$	-0.032***	-0.016***
	(-2.92)	(-3.22)
Parent controls	Yes	Yes
Parent fixed effects	Yes	Yes
Parent-industry×year fixed effects	Yes	Yes
Obs.	93,209	93,209
Adj. R^2	0.763	0.525

Panel C: Business Group Aggregate ESG Incidents

	Dependent variable:	
	$Ln(1 + ESG\ Incidents_{g,t+1})$	$Occurrence\ of\ ESG\ Incidents_{g,t+1}$
Independent variable(s):	(1)	(2)
$Mandatory\ ESG\ Disclosure_{p,t}$	-0.030**	-0.017***
	(-2.57)	(-3.15)
Parent controls	Yes	Yes
Parent fixed effects	Yes	Yes
Parent-industry×year fixed effects	Yes	Yes
Obs.	93,209	93,209
Adj. R^2	0.745	0.503

This table presents the results of the analysis that examines the effect of parent country mandatory ESG disclosure regulation adoption ($Mandatory\ ESG\ Disclosure_{p,t}$) on the number and occurrence of ESG incidents at the subsidiary level (Panel A), parent individual entity level (Panel B), and business group aggregate level (Panel C), respectively. The dependent variable capturing the number of subsidiary, parent, and group ESG incidents is either one plus the natural logarithm of ESG incidents ($Ln(1 + ESG\ Incidents_{s,t+1})$, $Ln(1 + ESG\ Incidents_{p,t+1})$,and $Ln(1 + ESG\ Incidents_{g,t+1})$ in Panel A, Columns (1), (2), (3), and (4), Panel B, Column (1), and Panel C, Column (1), respectively), the inverse hyperbolic sine of the number of ESG incidents ($IHS(ESG\ Incidents_{s,t+1})$ in Panel A, Column (5)), or the number of ESG incidents ($ESG\ Incidents_{s,t+1}$ in Panel A, Column (6)). The dependent variable capturing the occurrence of subsidiary, parent, and group ESG incidents is an indicator variable set equal to one if the number of ESG incidents is greater than one, and zero otherwise ($Occurrence\ of\ ESG\ Incidents_{s,t+1}$ in Panel A, $Occurrence\ of\ ESG\ Incidents_{p,t+1}$ in Panel B, $Occurrence\ of\ ESG\ Incidents_{g,t+1}$ in Panel C, respectively). Model specifications presented in Panel A, Columns (1), (2), (3), (4), (5), (7), and (8), and all columns of Panels B and C are estimated using ordinary least squares (OLS) regressions, whereas the model specification presented in Panel A, Column (5), is estimated using a Poisson regression. Model specifications presented in Panel A, Columns (1) and (7), include parent-country and year fixed effects. The model specification presented in Panel A, Column (2), includes subsidiary firm-level controls (i.e., $Profitability_{s,t}$, $Size_{s,t}$, $Leverage_{s,t}$, $Sales\ Growth_{s,t}$, and $Sales\ Volatility_{s,t}$) as well as parent-country and year fixed effects. The model specification presented in Panel A, Column (3), includes subsidiary firm-level controls as well as parent-country, subsidiary-industry×year, and subsidiary-country×year fixed effects. Model specifications presented in Panel A, Columns (4), (5), (6), and (8), and in all columns of Panels B and C include subsidiary firm-level controls as well as parent-country, subsidiary, subsidiary-industry×year, and subsidiary-country×year fixed effects. The table reports (in parentheses) *t*-statistics (in Panel A, Columns (1), (2), (3), (4), (5), (7), and (8), and in all columns of Panels B and C) and *z*-statistics (in Panel A, Column (6)) based on heteroscedasticity-robust standard errors clustered at the parent-country×year level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels (two-tailed), respectively. All variables are defined in the Appendix.

Table 3: Treatment Effects by Subsidiary ESG Incidents Type and Severity

Panel A: Treatment Effect by Subsidiary ESG Incidents Type

	Dependent variable:					
	$Ln(1 + ESG\ Incidents^{k}_{s,t+1})$			$Occurence\ of\ ESG\ Incidents^{k}_{s,t+1}$		
	k = Environmental	k = Social	k = Governance	k = Environmental	k = Social	k = Governance
Independent variable(s):	(1)	(2)	(3)	(4)	(5)	(6)
$Mandatory\ ESG\ Disclosure_{p,t}$	0.001***	0.001***	0.000	0.001***	0.001***	0.000
	(3.03)	(3.39)	(1.17)	(2.62)	(3.02)	(0.70)
Subsidiary controls	Yes	Yes	Yes	Yes	Yes	Yes
Parent-country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Subsidiary fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Subsidiary-industry×year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Subsidiary-country×year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	636,402	636,402	636,402	636,402	636,402	636,402
Adj. R^2	0.444	0.463	0.360	0.308	0.284	0.220

Panel B: Treatment Effect by Subsidiary ESG Incidents Severity

	Dependent variable:			
	$Ln(1 + ESG\ Incidents^{k}_{s,t+1})$		$Occurence\ of\ ESG\ Incidents^{k}_{s,t+1}$	
	k = Severe	k = Non-Severe	k = Severe	k = Non-Severe
Independent variable(s):	(1)	(2)	(3)	(4)
$Mandatory\ ESG\ Disclosure_{p,t}$	0.001***	0.001**	0.001***	0.000
	(3.41)	(2.37)	(3.08)	(0.98)
Subsidiary controls	Yes	Yes	Yes	Yes
Parent-country fixed effects	Yes	Yes	Yes	Yes
Subsidiary fixed effects	Yes	Yes	Yes	Yes
Subsidiary-industry×year fixed effects	Yes	Yes	Yes	Yes
Subsidiary-country×year fixed effects	Yes	Yes	Yes	Yes
Obs.	636,402	636,402	636,402	636,402
Adj. R^2	0.380	0.425	0.232	0.255

This table presents the results of the analysis that examines the effect of parent country mandatory ESG disclosure regulation adoption ($Mandatory\ ESG\ Disclosure_{p,t}$) on the number ($Ln(1 + ESG\ Incidents_{s,t+1})$) and occurrence ($Occurrence\ of\ ESG\ Incidents_{s,t+1}$) of subsidiary ESG incidents by type (Panel A) and severity (Panel B) of ESG incidents. In Panel A, we report estimates of the effect of parent country mandatory ESG disclosure regulation adoption separately for environmental (Columns (1) and

(4)), social incidents (Columns (2) and (5)), and governance (Columns (3) and (6)) incidents. In Panel B, we report estimates of the effect of parent country mandatory ESG disclosure regulation adoption separately for severe (Columns (1) and (3)) and non-severe (Columns (2) and (4)) incidents. All model specifications are estimated using ordinary least squares (OLS) regressions and include subsidiary firm-level controls (i.e., $Profitability_{s,t}$, $Size_{s,t}$, $Leverage_{s,t}$, $Sales\ Growth_{s,t}$, and $Sales\ Volatility_{s,t}$) as well as parent-country, subsidiary, subsidiary-industry×year, and subsidiary-country×year fixed effects. The table reports (in parentheses) *t*-statistics based on heteroscedasticity-robust standard errors clustered at the parent-country×year level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels (two-tailed), respectively. All variables are defined in the Appendix.

Table 4: Business Group Financial Constraints

	Dependent variable:			
	$Ln(1 + ESG\ Incidents_{s,t+1})$		$Occurrence\ of\ ESG\ Incidents_{s,t+1}$	
	Business Group Financial Constraints		Business Group Financial Constraints	
	High	Low	High	Low
Independent variable(s):	(1)	(2)	(3)	(4)
$Mandatory\ ESG\ Disclosure_{p,t}$	0.004***	0.000	0.003***	-0.000
	(5.08)	(0.35)	(3.98)	(-0.00)
Subsidiary controls	Yes	Yes	Yes	Yes
Parent country fixed effects	Yes	Yes	Yes	Yes
Subsidiary fixed effects	Yes	Yes	Yes	Yes
Subsidiary-industry×year fixed effects	Yes	Yes	Yes	Yes
Subsidiary-country×year fixed effects	Yes	Yes	Yes	Yes
Test for difference in $Mandatory\ ESG\ Disclosure_{p,t}$				
χ2-test p-value: High = Low	0.000		0.000	
Obs.	334,798	293,819	334,798	293,819
Adj. R^2	0.517	0.204	0.324	0.161

This table presents the results of the analysis that examines how the effect of parent country mandatory ESG disclosure regulation adoption ($Mandatory\ ESG\ Disclosure_{p,t}$) on the number ($Ln(1 + ESG\ Incidents_{s,t+1})$) and occurrence ($Occurrence\ of\ ESG\ Incidents_{s,t+1}$) of subsidiary ESG incidents varies, in the cross-section, with the extent of business group financial constraints. The *High* (*Low*) columns present estimates based on subsidiaries that belong to business groups whose parent companies' financial constraints are above (below) the respective sample median. The extent of business group financial constraints is measured using the Size-Age (SA) index developed by Hadlock and Pierce (2010). Accordingly, we classify a group as financially constrained if its SA index is above the sample median . All model specifications are estimated using ordinary least squares (OLS) regressions and include subsidiary firm-level controls (i.e., $Profitability_{s,t}$, $Size_{s,t}$, $Leverage_{s,t}$, $Sales\ Growth_{s,t}$, and $Sales\ Volatility_{s,t}$) as well as parent-country, subsidiary, subsidiary-industry×year, and subsidiary-country×year fixed effects. We report *p*-values from χ^2-tests for the differences in $Mandatory\ ESG\ Disclosure_{p,t}$ across the *High* and *Low* columns. The table reports (in parentheses) *t*-statistics based on heteroscedasticity-robust standard errors clustered at the parent-country×year level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels (two-tailed), respectively. All variables are defined in the Appendix.

Table 5: Cross-Sectional Tests

Panel A: Manufacturing vs. Retail Subsidiaries

	Dependent variable:			
	$Ln(1 + ESG\ Incidents_{s,t+1})$		$Occurrence\ of\ ESG\ Incidents_{s,t+1}$	
	Manufacturing Subsidiaries	Retail Subsidiaries	Manufacturing Subsidiaries	Retail Subsidiaries
Independent variable(s):	(1)	(2)	(3)	(4)
$Mandatory\ ESG\ Disclosure_{p,t}$	0.002**	-0.002	0.001*	-0.003
	(2.47)	(-1.21)	(1.70)	(-1.38)
Subsidiary controls	Yes	Yes	Yes	Yes
Parent country fixed effects	Yes	Yes	Yes	Yes
Subsidiary fixed effects	Yes	Yes	Yes	Yes
Subsidiary-industry×year fixed effects	Yes	Yes	Yes	Yes
Subsidiary-country×year fixed effects	Yes	Yes	Yes	Yes
Test for difference in $Mandatory\ ESG\ Disclosure_{p,t}$				
χ2-test p-value: Manufacturing = Retail	0.040		0.059	
Obs.	203,666	39,101	203,666	39,101
Adj. R^2	0.341	0.468	0.206	0.301

Table 5 (continued)

Panel B: Subsidiary-Country Characteristics – Number of ESG Incidents

	Dependent variable: $Ln(1 + ESG\ Incidents_{s,t+1})$									
	Subsidiary-Country Rule of Law		Subsidiary-Country Government Effectiveness		Subsidiary-Country EPI		Subsidiary-Country NGO Barriers		Subsidiary-Country Veil Piercing Risk	
	High	Low	High	Low	High	High	High	Low	High	Low
Independent variable(s):	(1)	(2)	(3)	(4)	(7)	(7)	(7)	(8)	(7)	(8)
$Mandatory\ ESG\ Disclosure_{p,t}$	0.001	0.003***	0.001	0.002***	0.001**	0.003***	0.001***	0.001	0.000	0.006***
	(1.48)	(3.63)	(1.02)	(2.91)	(2.13)	(3.20)	(2.90)	(1.35)	(0.32)	(2.93)
Subsidiary controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Subsidiary fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Subsidiary-industry×year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Subsidiary-country×year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Test for difference in $Mandatory\ ESG\ Disclosure_{p,t}$										
χ2-test p-value: High = Low	0.018		0.078		0.088		0.765		0.012	
Obs.	449,243	179,746	446,072	181,980	451,801	178,914	527,296	99,968	241,468	66,126
Adj. R^2	0.488	0.407	0.497	0.370	0.488	0.421	0.461	0.556	0.515	0.528

Panel C: Subsidiary-Country Characteristics – Occurrence of ESG Incidents

	Dependent variable: $Occurrence\ of\ ESG\ Incidents_{s,t+1}$									
	Subsidiary-Country Rule of Law		Subsidiary-Country Government Effectiveness		Subsidiary-Country EPI		Subsidiary-Country NGO Barriers		Subsidiary-Country Veil Piercing Risk	
	High	Low	High	Low	High	High	High	Low	High	Low
Independent variable(s):	(1)	(2)	(3)	(4)	(7)	(7)	(7)	(8)	(7)	(8)
$Mandatory\ ESG\ Disclosure_{p,t}$	0.001	0.002***	0.000	0.002**	0.001	0.002**	0.001*	0.001	0.000	0.002
	(1.18)	(2.65)	(0.76)	(2.46)	(1.62)	(2.47)	(1.83)	(0.80)	(0.27)	(1.50)
Subsidiary controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parent country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Subsidiary fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Subsidiary-industry×year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Subsidiary-country×year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Test for difference in $Mandatory\ ESG\ Disclosure_{p,t}$										
χ2-test p-value: High = Low	0.128		0.117		0.263		0.880		0.243	
Obs.	449,243	179,746	446,072	181,980	451,801	178,914	527,296	99,968	241,468	66,126
Adj. R^2	0.287	0.273	0.291	0.252	0.286	0.277	0.290	0.244	0.318	0.295

This table presents the results of the analysis that examines how the effect of parent country mandatory ESG disclosure regulation adoption ($Mandatory\ ESG\ Disclosure_{p,t}$) on the number ($Ln(1 + ESG\ Incidents_{s,t+1})$) and occurrence ($Occurrence\ of\ ESG\ Incidents_{s,t+1}$) of subsidiary ESG incidents varies, in the cross-section, with subsidiary industry (Panel A), and parent-country

institutional quality (Panels B and C). In Panel A, subsidiaries are partitioned into subsamples based whether they belong to the manufacturing (SIC codes 2000-3999) or retail (SIC codes 5200 and 5999) industry. In Panels B and C, subsidiaries are partitioned into subsamples (*High* and *Low*) based on different parent-country institutional quality characteristics. Rule of law and government effectiveness are measured based on Kaufmann et al. (2010). The Environmental Performance Index (EPI) is from the Yale Center for Environmental Law at Yale University. The extent of NGO barriers is based on the measure proposed by Chaudhury and Heiss (2023). The measure of veil piercing likelihood is based on Belenzon et al. (2018). The *High* (*Low*) columns present estimates based on subsidiaries that belong to business groups whose parent-country institutional quality characteristic is above (below) the respective sample median. All model specifications are estimated using ordinary least squares (OLS) regressions and include subsidiary firm-level controls (i.e., $Profitability_{s,t}$, $Size_{s,t}$, $Leverage_{s,t}$, $Sales\ Growth_{s,t}$, and $Sales\ Volatility_{s,t}$) as well as parent-country, subsidiary, subsidiary-industry×year, and subsidiary-country×year fixed effects. We report *p*-values from χ^2-tests for the differences in $Mandatory\ ESG\ Disclosure_{p,t}$ across the *Manufacturing* (*High)* and *Retail* (*Low*) columns. The table reports (in parentheses) *t*-statistics based on heteroscedasticity-robust standard errors clustered at the parent-country×year level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels (two-tailed), respectively. All variables are defined in the Appendix.

Table 6: Economic Mechanism Tests

	Dependent variable:					
	$Asset\ Utilization_{s,t+1}$			$Employee\ Utilization_{s,t+1}$		
	Full Sample	Business Group Financial Constraints		Full Sample	Business Group Financial Constraints	
		High	Low		High	Low
Independent variable(s):	(1)	(2)	(3)	(4)	(5)	(6)
$Mandatory\ ESG\ Disclosure_{p,t}$	0.013**	0.025***	0.010	0.319*	0.531*	-0.094
	(2.00)	(2.75)	(1.17)	(1.81)	(1.73)	(-0.49)
Subsidiary controls	Yes	Yes	Yes	Yes	Yes	Yes
Parent country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Subsidiary fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Subsidiary-industry×year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Subsidiary-country×year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Test for difference in $Mandatory\ ESG\ Disclosure_{p,t}$						
$\chi 2$-test p-value: Yes = No		0.183			0.098	
Obs.	636,402	334,798	293,819	370,297	203,650	162,333
Adj. R^2	0.761	0.775	0.753	0.789	0.795	0.778

This table presents the results of the analysis that examines the effect of parent country mandatory ESG disclosure regulation adoption ($Mandatory\ ESG\ Disclosure_{p,t}$) on the extent of asset utilization (Columns (1), (2) and (3)) and employee utilization (Columns (4), (5) and (6)). The dependent variable capturing the extent of subsidiary asset utilization ($Excess\ Asset\ Utilization_{s,t+1}$) is as the industry-adjusted ratio of sales over total assets for subsidiary s in year $t+1$. Subsidiary asset utilization is adjusted by subtracting the industry median ratio of sales over total assets. The dependent variable capturing the extent of subsidiary employee utilization ($Employee\ Utilization_{s,t+1}$) is measured as the industry-adjusted ratio of sales over cost of employees for subsidiary s in year $t+1$. Subsidiary employee utilization is adjusted by subtracting the industry median ratio of sales over cost of employees. In Columns (2) and (3) as well as in Columns (5) and (6), subsidiaries are partitioned into subsamples (*High* and *Low*) based on the extent of their parent companies' financial constraints. The *High* (*Low*) columns present estimates based on subsidiaries that belong to business groups whose parent companies' financial constraints are above (below) the respective sample median. All model specifications are estimated using ordinary least squares (OLS) regressions and include subsidiary firm-level controls (i.e., $Profitability_{s,t}$, $Size_{s,t}$, $Leverage_{s,t}$, $Sales\ Growth_{s,t}$, and $Sales\ Volatility_{s,t}$) as well as parent-country, subsidiary, subsidiary-industry×year, and subsidiary-country×year fixed effects. We report *p*-values from χ^2-tests for the differences in $Mandatory\ ESG\ Disclosure_{p,t}$ across the *High* and *Low* columns. The table reports (in parentheses) *t*-statistics based on heteroscedasticity-robust standard errors clustered at the parent-country×year level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels (two-tailed), respectively. All variables are defined in the Appendix.

Table 7: Extensive Margin Tests – Subsidiary Divestiture

	Dependent variable:					
	$Partial\ Divestiture_{s,[t+1;t+3]}$		$Full\ Divestiture_{s,[t+1;t+3]}$		$Divestiture\ Intensity_{s,[t+1;t+3]}$	
	ESG-Risky Subsidiary		ESG-Risky Subsidiary		ESG-Risky Subsidiary	
	Yes	No	Yes	No	Yes	No
	Synergistic Subsidiary		Synergistic Subsidiary		Synergistic Subsidiary	
	No	Yes	No	Yes	No	Yes
Independent variable(s):	(1)	(2)	(3)	(4)	(5)	(6)
$Mandatory\ ESG\ Disclosure_{p,t}$	0.007***	0.002	0.027**	-0.008	0.055**	-0.016
	(2.82)	(0.82)	(2.55)	(-1.16)	(2.50)	(-1.05)
Subsidiary controls	Yes	Yes	Yes	Yes	Yes	Yes
Parent country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Subsidiary fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Subsidiary-industry×year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Subsidiary-country×year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Test for difference in $Mandatory\ ESG\ Disclosure_{p,t}$						
χ2-test p-value: Yes/No = No/Yes	0.090		0.000		0.000	
Obs.	92,164	51,885	245,822	114,618	197,700	93,498
Adj. R^2	0.608	0.586	0.636	0.627	0.642	0.633

This table presents the results of the extensive margin analysis of parent country mandatory ESG disclosure regulation adoption ($Mandatory\ ESG\ Disclosure_{p,t}$) on the probability of subsidiary divestiture in the three years following the passage of ESG disclosure regulations. In Columns (1) and (2), the dependent variable capturing whether the business group partially divests from the subsidiary in the following three years is $Partial\ Divestiture_{s,[t+1;t+3]}$. In Columns (3) and (4), the dependent variable capturing whether the business group fully divests from the subsidiary in the following three years is $Full\ Divestiture_{s,[t+1;t+3]}$. In Columns (5) and (6), the dependent variable capturing the intensity with which the business group divests from the subsidiary (i.e., no divestiture, partial divestiture, or full divestiture) in the following three years is $Divestiture\ Intensity_{s,[t+1;t+3]}$. Subsidiaries are partitioned into subsamples (*Yes/No* and *No/Yes*) based on whether they are considered ESG risky as well as synergistic. Subsidiaries are (not) considered ESG risky if the extent of ESG incidents in their country and industry is above (below) the sample median. Subsidiaries are (not) considered synergistic if their profitability is (not) above (below) the business group median. All model specifications are estimated using ordinary least squares (OLS) regressions and include subsidiary firm-level controls (i.e., $Profitability_{s,t}$, $Size_{s,t}$, $Leverage_{s,t}$, $Sales\ Growth_{s,t}$, and $Sales\ Volatility_{s,t}$) as well as parent-country, subsidiary, subsidiary-industry×year, and subsidiary-country×year fixed effects. We report *p*-values from χ^2-tests for the differences in $Mandatory\ ESG\ Disclosure_{p,t}$ across the *Yes* and *No* columns. The table reports (in parentheses) *t*-statistics based on heteroscedasticity-robust standard errors clustered at the parent-country×year level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels (two-tailed), respectively. All variables are defined in the Appendix.

Table 8: Mitigating Potential Alternative Explanations

Panel A: Balanced Sample of Constantly Owned Subsidiaries in a 2-Year Window Surrounding ESG Disclosure Mandate Adoptions

	Dependent variable:	
	$Ln(1 + ESG\ Incidents_{s,t+1})$	$Occurrence\ of\ ESG\ Incidents_{s,t+1}$
Independent variable(s):	(1)	(2)
$Mandatory\ ESG\ Disclosure_{p,t}$	0.003**	0.004**
	(2.00)	(2.59)
Subsidiary controls	Yes	Yes
Parent country fixed effects	Yes	Yes
Subsidiary fixed effects	Yes	Yes
Subsidiary-industry×year fixed effects	Yes	Yes
Subsidiary-country×year fixed effects	Yes	Yes
Obs.	62,150	62,150
Adj. R^2	0.571	0.339

Panel B: ESG Incident Media Coverage

	Dependent variable:			
	$Ln(1 + ESG\ Incidents^{k}_{s,t+1})$		$Occurence\ of\ ESG\ Incidents^{k}_{s,t+1}$	
	k = Global Media Coverage	k = Local Media Coverage	k = Global Media Coverage	k = Local Media Coverage
Independent variable(s):	(1)	(2)	(3)	(4)
$Mandatory\ ESG\ Disclosure_{p,t}$	0.000***	0.001***	0.000**	0.001***
	(2.62)	(3.17)	(2.53)	(2.90)
Subsidiary controls	Yes	Yes	Yes	Yes
Parent country fixed effects	Yes	Yes	Yes	Yes
Subsidiary fixed effects	Yes	Yes	Yes	Yes
Subsidiary-industry×year fixed effects	Yes	Yes	Yes	Yes
Subsidiary-country×year fixed effects	Yes	Yes	Yes	Yes
Test for difference in $Mandatory\ ESG\ Disclosure_{p,t}$				
χ2-test p-value: Global = Local	0.026		0.050	
Obs.	636,402	636,402	636,402	636,402
Adj. R^2	0.409	0.376	0.256	0.227

This table presents the results of the analyses that we conduct to mitigate alternative explanations for our main findings. In Panel A, we reexamine the effect of parent country mandatory ESG disclosure regulation adoption ($Mandatory\ ESG\ Disclosure_{p,t}$) on the number ($Ln(1 + ESG\ Incidents_{s,t+1})$) and occurrence

($Occurrence\ of\ ESG\ Incidents_{s,t+1}$) of subsidiary ESG incidents by restricting the sample to a balanced panel of five annual observations for each subsidiary in a 2-year window surrounding the introduction of mandatory ESG disclosure in the parent country. In Panel B, we report estimates of the effect of parent country mandatory ESG disclosure regulation adoption separately for incidents with global (Columns (1) and (3)) and local (Columns (2) and (4)) media coverage. All model specifications are estimated using ordinary least squares (OLS) regressions and include subsidiary firm-level controls (i.e., $Profitability_{s,t}$, $Size_{s,t}$, $Leverage_{s,t}$, $Sales\ Growth_{s,t}$, and $Sales\ Volatility_{s,t}$) as well as parent-country, subsidiary, subsidiary-industry×year, and subsidiary-country×year fixed effects. The table reports (in parentheses) t-statistics based on heteroscedasticity-robust standard errors clustered at the parent-country×year level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels (two-tailed), respectively. All variables are defined in the Appendix.

Online Appendix for

Behind the Corporate Veil: How Business Groups Arbitrage ESG Disclosure Mandates

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1. A Simple Model of Business Group Response to ESG Disclosure Mandates

1.1. Production Allocation in Business Groups

We develop a stylized model to illustrate the effects of parent-country ESG disclosure mandates on the ESG performance of business groups. Specifically, we begin by characterizing the equilibrium outputs of parent and subsidiary companies before the introduction of ESG disclosure mandates. Using a standard multi-plant industrial organization model (Tirole 1988), we show that business groups allocate output between parent and subsidiaries based on their relative marginal production costs. Through comparative statics, we then analyze the optimal response of business groups to the introduction ESG disclosure mandates in the parent country.

Consider a business group that produces an output Q, which involves a certain level of irresponsible ESG activities. A fraction Q_P of this output is produced by the business group parent company (P), while the remaining quantity, $Q_{S_1}, Q_{S_2}, \dots, Q_{S_N}$ is allocated across N subsidiaries:

$$Q = Q_P + \sum_{i=1}^{N} Q_{S_i}.$$

The total output Q is sold globally, generating total revenue $R(Q)$ and corresponding marginal revenue $MR(Q)$ for the business group. The parent company incurs production costs $C_P(Q_P)$ and each subsidiary S_i faces costs $C_{S_i}(Q_{S_i})$, where $i = 1, \dots, N$. Marginal costs $MC_P(Q_P)$ for the parent and $MC_{S_i}(Q_{S_i})$ for each subsidiary are assumed to be increasing in their respective outputs.

The parent company chooses the optimal output Q^* and its allocation across different locations to maximize the business group's consolidated profit:

$$\max_{\{Q_P, Q_{S_1}, \dots, Q_{S_N}\}} \Pi = R(Q) - \left[C_P(Q_P) + \sum_{i=1}^{N} C_{S_i}(Q_{S_i}) \right].$$

Intuitively, the parent company ranks all possible production locations (its own location and that of each subsidiary) based on their respective marginal costs, allocating production to the entity with the lowest marginal cost at each incremental unit of output. Assuming $Q_P^* > 0$ in equilibrium, the profit-maximization condition requires that the marginal revenue equals the marginal cost across all active production locations:

$$MR(Q^*) = MC_P(Q_P^*) = MC_{S_i}(Q_{S_i}^*) \qquad \forall\, i \text{ where } Q_{S_i}^* > 0.$$

A parent company or subsidiary with *consistently* higher marginal costs than other firms within the business group will not be allocated any production.

To illustrate this graphically, consider a simplified case where the business group consists of only the parent company (P) and a single subsidiary (S). The parent company selects the optimal output level Q^*, where the business group's aggregate marginal cost, $MC(Q^*)$, equates marginal revenue, $MR(Q^*)$ (Figure OA-1).

For each output level Q, the aggregate marginal cost reflects the cost of producing an additional unit, given an optimal allocation of production between the parent and the subsidiary. At low output levels, production is fully concentrated with the firm with the lower marginal cost—in this case, the subsidiary ($Q = Q_S$). As output increases, and thus marginal costs rise, it may become cost-effective to allocate some production to the other firm.

When it is optimal to split production between the parent and the subsidiary, cost minimization requires:

$$MC_P(Q_P^*) = MC_S(Q_S^*) = MC(Q^*).$$

1.2. Business Group Response to ESG Disclosure Mandates

A business group's response to ESG disclosure mandates—whether to commit to stronger ESG performance or shift irresponsible activities to subsidiaries (i.e., engage in regulatory arbitrage)—depends on the extent to which the mandate increases the cost of

irresponsible ESG practices, as well as on firms' ability to reduce these costs by taking actions that reduce the level of irresponsible ESG activities involved in production.

ESG disclosure mandates may impose *direct (local) costs* on the parent company, including costs related to monitoring and reporting, as well as increased reputational or legal penalties. These costs elevate the parent's marginal and total costs of producing or managing irresponsible ESG activities domestically. In Section 1.3.1., we examine how parent firms optimally respond to an increase in these direct costs.

The adoption of ESG disclosure mandates at the parent-country level may also increase subsidiaries' local operating costs. Subsidiaries may be required to collect and report ESG metrics to the parent company and could face greater stakeholder pressure and heightened reputational or legal penalties as well, particularly in countries with stronger enforcement, social norms, or NGO activity. Additionally, these mandates may exacerbate reputational damage to parent companies (and other group firms) due to subsidiaries' irresponsible ESG activities and increase the parent's regulatory exposure through veil piercing. We incorporate these *spillover costs*—that is, *indirect* costs for the parent company originated by irresponsible ESG activities of subsidiaries—into our model in Section 1.3.2.

1.3. Regulatory Arbitrage

1.3.1. Local Parent Costs of ESG Disclosure Mandates

Assume the adoption of an ESG disclosure mandate in the business group parent country raises the local marginal cost of irresponsible ESG activities to $MC_P^{post}(Q)$, such that $MC_P^{post}(Q) > MC_P^{pre}(Q)$. Consequently, the parent's new production cost rises to $C_p^{post}(Q_P) > C_p^{pre}(Q_P)$ for all Q_P.

The parent company again selects the production levels $Q_P, Q_{S_1}, \ldots, Q_{S_N}$ to maximize the consolidated profit of the business group:

$$\max_{\{Q_P, Q_{S_1}, \ldots, Q_{S_N}\}} \Pi = R(Q) - \left[C_p^{post}(Q_P) + \sum_{i=1}^{N} C_{S_i}(Q_{S_i}) \right].$$

Assuming $Q_P^* > 0$ in equilibrium, the optimality condition requires:

$$MR(Q^*) = MC_p^{post}(Q_P^*) = MC_{S_i}(Q_{S_i}^*) \qquad \forall\, i \text{ where } Q_{S_i} > 0.$$

As the marginal cost for the parent increases, and assuming the parent was responsible for part of the production before the ESG disclosure mandate ($Q_p^{*pre} > 0$), some production will be reallocated to subsidiaries. Formally, this implies:

$$Q_p^{*post} < Q_p^{*pre} \text{ and } \sum_{i=1}^{N} Q_{S_i}^{*post} > \sum_{i=1}^{N} Q_{S_i}^{*pre}.$$

To illustrate this graphically, consider the previous example of a business group with only one subsidiary in addition to the parent company. Following the introduction of an ESG disclosure mandate at the parent-country level, the parent's marginal cost curve shifts upward (Figure OA-2). Consequently, the business group's aggregate marginal cost curve also shifts upward, albeit to a lesser extent, as the ability to reallocate production to subsidiaries mitigates the impact of the parent's increased marginal cost. The business group reduces total output and shifts production from the parent company to the subsidiary company.

1.3.2. Local Subsidiary Costs and Spillover Costs of ESG Disclosure Mandates

Thus far, the model assumes that ESG disclosure mandates at the parent-country level only affect the costs associated with irresponsible ESG activities occurring within the parent company. However, this assumption does not account for the potential increase in local costs for subsidiaries or the spillover costs borne by the parent due to subsidiaries' own irresponsible ESG activities. Following the adoption of ESG disclosure mandates, subsidiaries may also experience higher local costs, such that:

$$C_{S_i}^{post}(Q_{S_i}) > C_{S_i}^{pre}(Q_{S_i}).$$

In addition, the parent company may face increased reputational or regulatory penalties (i.e., spillover costs) due to these activities, denoted as $\Phi_i(Q_{S_i})$, where:

$$\Phi_i(Q_{S_i}) > 0 \text{ and } \Phi_i'(Q_{S_i}) = \frac{\partial \Phi_i(Q_{S_i})}{\partial Q_{S_i}} > 0.$$

In this case, from the parent's perspective, the effective cost of conducting irresponsible ESG activities at subsidiary i is given by:

$$C_{S_i}^{post}(Q_{S_i}) + \Phi_i(Q_{S_i}).$$

The parent company then chooses production quantities to maximize the consolidated profit of the business group:

$$\max_{\{Q_P, Q_{S_1}, \ldots, Q_{S_N}\}} \Pi = R(Q) - \left[C_p^{post}(Q_P) + \sum_{i=1}^{N} C_{S_i}^{post}(Q_{S_i})\right] - \sum_{i=1}^{N} \Phi_i(Q_{S_i}).$$

Assuming $Q_P^* > 0$ in equilibrium, the optimality condition now requires:

$$MR(Q^*) = MC_p^{post}(Q_P^*) = MC_{S_i}^{post}(Q_{S_i}^*) + \Phi_i'(Q_{S_i}^*) \qquad \forall\, i \text{ where } Q_{S_i}^* > 0.$$

When the marginal cost of producing in subsidiary S_i ($MC_{S_i}^{post}(Q_{S_i}) + \Phi_i'(Q_{S_i})$) is high, producing in that subsidiary might no longer be optimal. In other words, the spillover costs borne by the parent and the incremental local subsidiary costs may alter the ranking of subsidiaries in terms of their attractiveness for shifting irresponsible ESG activities, with production in subsidiaries whose irresponsible ESG actions impose lower reputational or legal costs on the parent.

Figure OA-3 illustrates these effects in the context of a business group comprising a parent and a single subsidiary. Panel A compares the new equilibrium following the ESG disclosure mandate to the pre-mandate equilibrium shown in Figure OA-1. Optimal output decreases due to the upward shifts in the marginal costs of both the parent and the subsidiary. However, assuming the subsidiary's marginal cost increases less than the parent's, part of the production is reallocated to the subsidiary. This assumption—that the increase in subsidiary's local costs and in spillover costs borne by the parent due to the subsidiary's irresponsible ESG activities is smaller than the increase in parent local costs—is plausible. It reflects the

heightened scrutiny ESG disclosure mandates place on parent firms, the general limited liability principle, as well as well-documented home biases.

Panel B of Figure OA-3 examines how subsidiary local costs and spillover costs for the parent alter the equilibrium described in Figure OA-2. Specifically, these costs reduce the benefits of regulatory arbitrage, leading to an increase in production at the parent company and a decrease in the amount of output shifted to the subsidiary.

1.4. ESG Commitment

The analysis thus far assumes that the parent company cannot take actions to mitigate the increase in local and spillover costs. The parent company might however commit to improve its ESG performance by taking costly actions to reduce the level of irresponsible ESG activities required to produce Q (e.g., an investment in green technology). These costly improvements, $I_P, I_{S_1}, \dots, I_{S_N}$, can be made at the parent and/or subsidiary level at a cost of $K(I_P), K(I_{S_1}), \dots, K(I_{S_N})$. We assume that, because they reduce the level of irresponsible activities involved in producing Q, these improvements dampen the effect of ESG disclosure mandates on local and spillover costs:

$$\frac{\partial C_P^{post}(Q_P, I_P)}{\partial I_P} < 0, \frac{\partial C_{S_i}^{post}(Q_{S_i}, I_{S_i})}{\partial I_{S_i}} < 0, \text{ and } \frac{\partial \Phi_i(Q_{S_i}, I_{S_i}))}{\partial I_{S_i}} < 0$$

In this case, the business group parent optimally selects output $Q_P, Q_{S_1}, \dots, Q_{S_N}$ and ESG improvement levels, $I_P, I_{S_1}, \dots, I_{S_N}$, in each location to maximize the group's consolidated profit:

$$\max_{\{Q_P, Q_{S_1}, \dots, Q_{S_N};\, I_P, I_{S_1}, \dots, I_{S_N}\}} \Pi$$

$$= R(Q) - \left[C_p^{post}(Q_P, I_P) + \sum_{i=1}^{N} C_{S_i}^{post}\left(Q_{S_i}, I_{S_i}\right) \right] - \sum_{i=1}^{N} \Phi_i(Q_{S_i}, I_{S_i}) - K(I_P)$$

$$- \sum_{i=1}^{N} K(I_{S_i}).$$

As before, assuming $Q_P^* > 0$ in equilibrium, the optimality condition requires:

$$MR(Q^*) = MC_p^{post}(Q_P^*, I_P^*) = MC_{S_i}^{post}\left(Q_{S_i}^*, I_{S_i}^*\right) + \Phi_i'(Q_{S_i}^*, I_{S_i}^*) \qquad \forall\, i \text{ where } Q_{S_i}^* > 0.$$

Furthermore, assuming $I_P^* > 0$ in equilibrium, the optimal investment conditions satisfy:

$$-\frac{\partial C_p^{post}(Q_P^*, I_P^*)}{\partial I_P} - \frac{\partial K(I_P^*)}{\partial I_P} = 0 \quad \text{and} \quad -\frac{\partial C_{S_i}^{post}\left(Q_{S_i}^*, I_{S_i}^*\right)}{\partial I_{S_i}} - \frac{\partial K(I_{S_i}^*)}{\partial I_{S_i}} = 0 \qquad \forall\, i \text{ where } I_{S_i}^* > 0.$$

These conditions imply that the optimal ESG improvement level in each group firm equates the marginal cost of the ESG improvement to its marginal benefit, which arises from reduced local and spillover costs.

If the parent can implement ESG improvements at a relatively low cost, it may no longer find it profitable to shift production to subsidiaries. However, financial constraints play a crucial role in determining whether a business group invests in ESG improvements or shifts irresponsible ESG activities to subsidiaries. A parent firm with limited free cash flow, high external financing costs, and capital constraints may find it profit-maximizing to shift irresponsible ESG activities to subsidiaries. In contrast, a well-capitalized parent with access to low-cost financing—whether through borrowing or equity issuance—may find it optimal to make ESG improvements.

1.5. Subsidiary Divestiture

As the marginal costs of production in a subsidiary rise—whether due to increased local costs or spillover costs affecting the parent company—it may become suboptimal for the parent to retain the subsidiary within the corporate structure. In such cases, the parent company might opt to divest from the subsidiary. This decision reflects a shift along the *extensive margin* of the business group's ESG response strategy. Whereas reallocating ESG-risky production across existing subsidiaries (as discussed earlier) reflects an *intensive margin* adjustment—one that preserves the corporate boundary—divestiture entails an active reshaping of that boundary. It removes the subsidiary entirely from the business group's ownership structure, allowing the

parent to shed associated ESG risks rather than manage or reallocate them internally. To inform this decision, the parent company compares the consolidated group profit under the two scenarios: retention (Π^{retain}) and divestiture (Π^{divest}).

Assume that Ω_i represents the synergies derived from owning subsidiary i, which may stem from improved access to local markets, tax advantages, or knowledge sharing. The business group's consolidated profit if it retains the subsidiary is:

$$\Pi_i^{retain} = R(Q) - \left[C_p^{post}(Q_P) + \sum_{j \neq i} C_{S_j}^{post}\left(Q_{S_j}\right) + C_{S_i}^{post}\left(Q_{S_i}\right) \right] - \sum_{j \neq i} \Phi_j(Q_{S_j}) - \Phi_i(Q_{S_i}) + \sum_{j \neq i} \Omega_j + \Omega_i.$$

For simplicity assume that the parent sells subsidiary S_i for price $V_{sale,i}$ and contracts to purchase its output at a price $\rho_i(Q_{S_i})$, which includes a markup ($\rho_i(Q_{S_i}) > C_{S_i}\left(Q_{S_i}\right)$).Under these conditions, the group's consolidated profit if it divests from subsidiary i is:

$$\Pi_i^{divest} = R(Q) - \left[C_p^{post}(Q_P) + \sum_{j \neq i} C_{S_j}\left(Q_{S_j}\right) \right] - \sum_{j \neq i} \Phi_j\left(Q_{S_j}\right) + \sum_{j \neq i} \Omega_j + V_{sale,i} - \rho_i(Q_{S_i})$$

The parent will choose to divest when spillover costs are high, when markups and transaction costs are relatively low, and when the synergies from ownership are limited.[1]

2. Matching RepRisk to Orbis

2.1. Matching Algorithm

We source data from RepRisk, which tracks incidents with reputational, compliance, and financial impact across several ESG areas. RepRisk contains ESG incidents for more than 260,000 public and private firms worldwide.

[1] While our model treats the divestiture decision as binary, in practice, business groups may opt for partial divestiture by retaining a minority ownership stake. This allows them to preserve some synergies while mitigating reputational risk.

We develop an algorithm to match our sample firms to RepRisk. The matching process is conducted in multiple stages to ensure accuracy and completeness. Initially, we identify all exact matches based on name and headquarter country. Subsequently, we address the firms that remain unmatched from this first step.

To enhance the matching process, we pre-process the name strings in both the Orbis and RepRisk datasets. This pre-processing involves several key steps: separating prefixes, standardizing common words and characters, and removing extraneous blank spaces and special characters. Furthermore, we identify instances in which the firm name fields in RepRisk and Orbis contain additional names. These additional names are typically preceded by "formerly," "doing business as," and "also known as."

Following pre-processing, we perform exact matching on these standardized name strings (excluding prefixes) and headquarter country information. A RepRisk firm may be matched to multiple Orbis firms. To select the best matches for each RepRisk firm, we assess the similarity of the Orbis and RepRisk names (including prefixes) and verify exact matches on website URLs and ISINs. Specifically, we retain matches for which: (i) there is an exact website URL match (after cleaning the URL to remove "http://," "https://," and "www." and retaining only the primary domain of the website), (ii) there is an ISIN match to a parent company, and (iii) the similarity between Orbis and RepRisk names is highest. This process allows us to identify more than 90% of our final matches.

We then proceed to match the remaining unmatched firms (those without an exact match on name or on pre-processed name) by comparing the similarity between their pre-processed RepRisk and Orbis names. The process through which we assess the similarity between Orbis and RepRisk names is described in more detail below.

2.2. Similarity Score

As described above, we rely on measures of the similarity between Orbis and RepRisk names to select the best match from a set of matches based on pre-processed names and to perform fuzzy matching of the firms that remain unmatched in the last step of our algorithm. We compute the asymmetric spelling distance (Spedis score) and the generalized edit distance (Compged score)[2] between the two names (using the SAS "SPEDIS" and "COMPGED" functions, respectively). Each of these measures has its own set of advantages and disadvantages and is, as a result, likely to be incrementally informative. Moreover, they are sensitive to the length of the strings. Strings that are equally similar (based on the percentage of text that is different) can have different Compged scores, if they are of different length (Staum 2007).

To identify our initial set of fuzzy matches, we impose caps of 50 and 200 on the Spedis and Compged scores, respectively. We then aggregate the two scores to purge the initial set of fuzzy matches from incorrect matches and to find the best match within each set.

To calibrate and weight the two measures, we select a random sample of 2,000 fuzzy matches obtained at the beginning of the final stage of our algorithm (that is, all fuzzy matches with Spedis and Compged scores below 50 and 200, respectively). We manually verify each match to determine whether it is a true match. We then randomly split our sample into a training sample and a test sample.

Within the training sample, we estimate four logistic regression models, with the dependent variable indicating a true match. The first two regressions include the Spedis score and the Compged score, as well as their interaction, as predictors. In the remaining two

[2] This is a generalization of the Levenshtein edit distance, which captures the number of deletions, insertions, or replacements of single characters that are required to transform the first string into the second string.

regressions, we scale the scores by the maximum length of the two strings being compared (i.e., the pre-processed RepRisk and Orbis names), following Staum (2007).

Using the estimated coefficients, we compute the probability that each of the matches in the test sample is a true match. By applying different probability thresholds, we evaluate the percentage of type 1 and type 2 classification errors in the test sample. The interaction terms do not improve the out-of-sample classification accuracy. Moreover, the model that includes the scaled Spedis and Compged scores has higher out-of-sample classification accuracy across various thresholds, resulting in lower type 1 and type 2 error rates. We therefore use the coefficients from this classification model and the scaled Spedis and Compged scores to compute our similarity score:

$$Similarity\ Score = \frac{e^{\left(2.00-0.3*\frac{Spedis\ score}{Maximum\ lenght}-0.26*\frac{Compged\ score}{Maximum\ lenght}\right)}}{1+e^{\left(2.00-0.3*\frac{Spedis\ score}{Maximum\ lenght}-0.26*\frac{Compged\ score}{Maximum\ lenght}\right)}}$$

We impose a minimum similarity score of 0.6, which, in our test sample, results in type 1 and type 2 error rates of 2.4% and 7%, respectively. Choosing a higher threshold would reduce the type 1 rate but increase the type 2 error rate, meaning we would be less likely to identify false matches but more likely to miss true matches. We carefully inspect matches with similarity scores just above and just below 0.6 to assess the appropriateness of this threshold. As outlined in our description of our matching algorithm, we use similarity scores to select and retain the best matches. When multiple matches share the same similarity score, we select the optimal match by verifying if the firm's Orbis and RepRisk websites, as well as ISINs, are the same.

3. Mitigating Treatment Effect Heterogeneity Bias

Our empirical specification assumes *homogenous treatment effects*, meaning it presumes that treatment effects are similar for cohorts of subsidiaries treated at different points in time and that, within each cohort, treatment effects remain constant over time. If this assumption is

violated, our estimated treatment effects may be biased by comparisons between earlier-treated and later-treated subsidiaries (Goodman-Bacon 2021). To diagnose this potential issue, in Table OA-4 we perform the Goodman-Bacon (2021) decomposition.

The Goodman-Bacon (2021) decomposition requires a strongly balanced panel. Therefore, as a first step, we balance our sample and retain only parent-subsidiary pairs for which financial statement and ownership information is available for all sample years. Accordingly, our subsidiary firm-year sample experiences a dramatic decrease from 636,402 to 5,235 subsidiary-year observations. The first lines of Table OA-4, Panel A, present our DiD estimate (i.e., the estimated coefficient on $Mandatory\ ESG\ Disclosure_{p,t}$), with country-parent and year fixed effects within the strongly balanced sample. This estimate remains positive and significant in this sample across both of our dependent variables. Importantly, notwithstanding the much-reduced sample size, treatment effect estimates are remarkably similar to those we document in our main tests.

We then decompose the average treatment effect into a "between" and "within" component. Because we include time-varying controls in our estimation, the nature of the treatment changes from an indicator to an indicator with variables partialled out. Part of the average treatment effect is therefore driven by the fact that covariates may evolve differently for subsidiaries within the same treatment cohort (i.e., by a "within" component). The within component is only responsible for 0.2% of our documented treatment effect. Most of our treatment effect is driven by the "between" component and, specifically, by the comparison of treated vs. never treated observations. This comparison receives the highest weight (73.8%) and generates the largest treatment effect estimate (0.005 and 0.004, in Columns (1) and (2), when the dependent variable is $Ln(1 + Number\ of\ ESG\ Incidents_{s,t+1})$ and $Occurrence\ of\ ESG\ Incidents_{s,t+1}$, respectively). Only 26% of our DiD estimate is driven

by a comparison of early adopters vs. late adopters and late adopters vs. early adopters ("cohorts"). These comparisons also lead to more modest treatment effects (0.001).

Overall, the results of the Goodman-Bacon (2021) decomposition suggest that the treatment effects that we document in Table 2 are mainly driven by a comparison of treated and never treated subsidiaries, and that heterogeneous treatment effects, if anything, bias our DiD estimate downwards.

Although the results of the Goodman-Bacon (2021) decomposition are reassuring, as they do not indicate that heterogeneity in treatment effects presents a serious threat to identification, we further apply the Callaway and Sant'Anna (2021) estimation approach with and without time-varying covariates to ensure that all control firms are either never treated or not yet treated. Using our full sample, we continue to document an increase in the number and likelihood of occurrence of ESG incidents following the introduction of ESG disclosure mandates in the parent company country. Moreover, the average treatment effects are similar or higher than those reported in Table 2 of the paper. This is consistent with the results from the Goodman-Bacon (2021) decomposition, which suggest that treatment heterogeneity biases our estimates downwards.

References

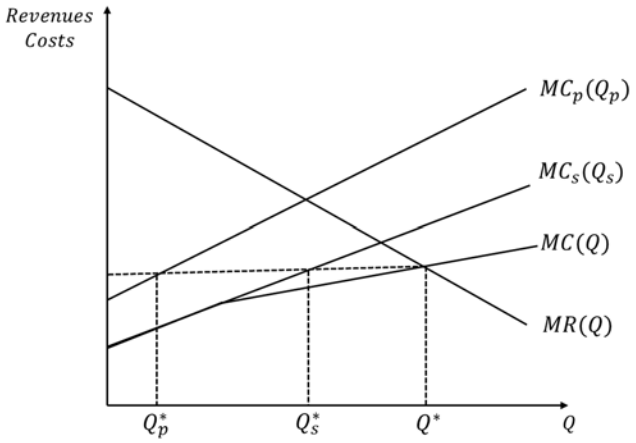
Callaway, B. and P. Sant'Anna (2021). Difference-in-differences with multiple time periods. *Journal of Econometrics* 225 (2): 200-230.

Goodman-Bacon, A. (2021). Difference-in-differences with variation in treatment timing. *Journal of Econometrics* 225 (2): 254-277.

Staum. P (2007). Fuzzy matching using the COMPGED Function. NESUG 2007.

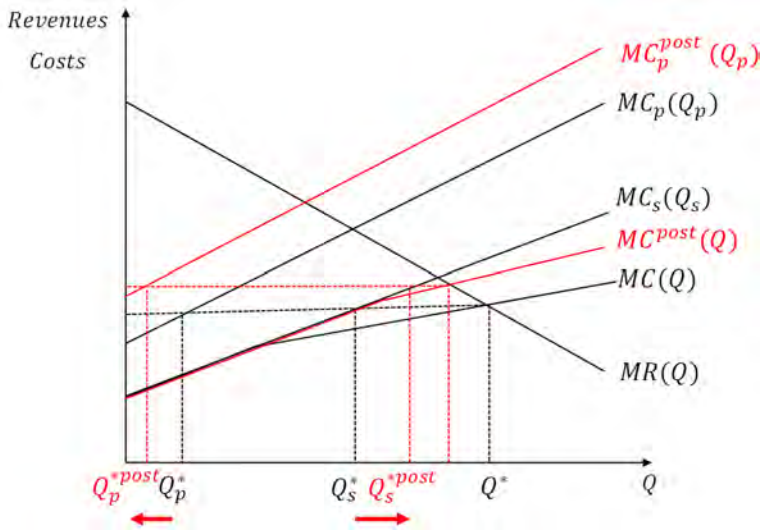
Tirole, J. (1988). The theory of industrial organization. MIT press.

Figure OA-1: Before the ESG Mandate



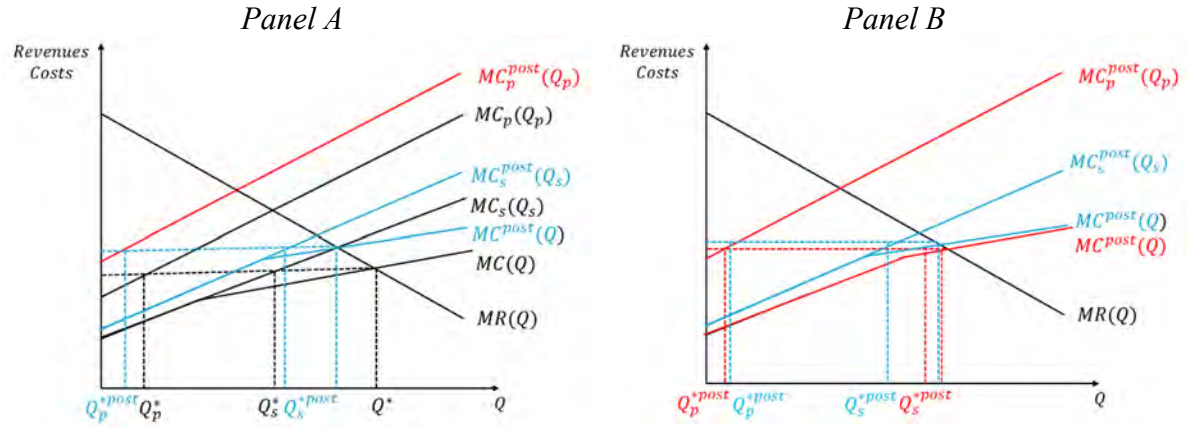
The figure illustrates the marginal cost curves of the parent ($MC_p(Q_p)$) and the subsidiary ($MC_s(Q_s)$), along with the business group's aggregate marginal cost ($MC(Q)$) and marginal revenue ($MR(Q)$) curves. The business group's optimal output (Q^*) is allocated between the parent (Q_p^*) and the subsidiary (Q_s^*).

Figure OA-2: After the ESG Mandate – Parent Local Costs



The figure illustrates the shift in the parent's marginal cost curve and the business group's aggregate marginal cost curve following the adoption of an ESG disclosure mandate in the parent country, assuming this mandate increases the parent's local production costs. Consequently, the business group's optimal production level and its allocation between the parent and subsidiary adjust accordingly.

Figure OA-3: After the ESG – Parent Local Costs, Subsidiary Local Costs, and Spillover Costs



The figure illustrates the shift in the parent's marginal cost curve and the business group's aggregate marginal cost curve following the adoption of an ESG disclosure mandate, assuming this mandate increases not only the parent's local production costs but also the subsidiary's local costs and the spillover costs borne by the parent. The resulting upward shift in the subsidiary's marginal cost curve reduces the parent's incentive to engage in regulatory arbitrage, leading to a lower optimal output for the business group and decreased subsidiary production. Panel A compares the new equilibrium with the pre-ESG mandate equilibrium presented in Figure OA-1, while Panel B contrasts the new equilibrium with the equilibrium described in Figure OA-2 (which reflects the ESG mandate's local cost impact on the parent).

Table OA-1: Mandatory ESG Reporting Regulations

Country	Year	Regulation Name	Scope	Issuer
Argentina	2008	Ley N 2594 de Balanco de Responsabilidad Social y Ambiental	Large companies	Buenos Aires City Council
Australia	2003	Listing Rule 4.10.3, Australian Stock Exchange	Listed companies	Australian Stock Exchange
Austria	2016	Transposition of the EU NFR Directive: Sustainability and Diversity Improvement Act 257/ME	Large private and listed companies	Ministry of Justice
Belgium	2009	The 2009 Belgian Code on Corporate Governance	Listed companies	Corporate Governance Committee (Private foundation created on initiative of the Banking, Finance, and Insurance Commission (FSMA), the Federation of Enterprises in Belgium (FEB) and Euronext Brussels)
Brazil	2012	Federal Senate Senate Bill No. 289, 2012	Public companies ("Sociedades anonimas")	The Brazilian Senate
Bulgaria	2016	Transposition of the EU NFR Directive: The New Accounting Act	Large private and listed companies	Ministry of Finance/Treasury
Canada	2004	The TSX Timely Disclosure Policy	Listed companies	Toronto Stock Exchange
Chile	2015	Norma de Caracter General N 385/386	Listed companies	Superintendencia de Valores y Seguros
China	2008	Guidelines on Listed Companies' Environmental Information Disclosure	Listed companies	Shanghai Stock Exchange (SSE)
Costa Rica	2023	Circular 33-2023	Large private companies and listed companies	Colegio de Contadores Publicos de Costa Rica
Croatia	2016	Transposition of the EU NFR Directive: Amendment to Accounting Act	Large private and listed companies	Croatian Parliament
Cyprus	2016	Transposition of the EU NFR Directive: amendments to the Companies Act	Large private and listed companies	Ministry of Finance/Treasury
Czechia	2017	Transposition of the EU NFR Directive: amendments of the Accounting Act and the Act on Auditors	Large private and listed companies	Czech Parliament
Denmark	2016	Transposition of the EU NFR Directive: Executive order No. 558	Large private and listed companies	Danish Business Authority
Egypt	2021	Decree 107, Decree 108	Listed companies	Financial Regulatory Authority

(continued)

Table OA-1 (continued)

(continued)

Country	Year	Regulation Name	Scope	Issuer
Estonia	2016	Transposition of the EU NFR Directive: Amendments to Accounting Act	Large private and listed companies	Ministry of Finance
Finland	2016	Transposition of the EU NFR Directive: HE 208/2016 Government Proposal to Parliament for Amendments to Accounting Act and Certain Related Acts	Large private and listed companies	Ministry of Economic Affairs and Employment
France	2001	New Economic Regulations Act (NRE)	Large private and listed companies	French Parliament
Germany	2016	Transposition of the EU NFR Directive: CSR Directive Implementation Act	Large private and listed companies	Ministry of Justice and Consumer Affairs
Greece	2006	Law 3487, 2006	All companies	Parliament
Hong Kong	2015	HKEX Listing Rules Disclosure of Financial Information	Listed companies	Hong Kong Stock Exchange
Hungary	2016	Transposition of EU NFR Directive: Amendments to Accounting Act C of 2000	Large private and listed companies	Ministry of National Economy, Accounting and Supervision
Iceland	2016	Transposition of the EU NFR Directive: Amendments to Accounting Act 3/2006	Large private and listed companies	Parliament
India	2015	Circular No. CIR/CFD/CMD/10/2015 Format for Business Responsibility Report	Listed companies	Securities and Exchange Board of India (SEBI)
Indonesia	2012	Rule No.KEP-431/BL/2012 concerning the obligation to submit annual reports for issuers of public companies	Listed companies	Capital Market and Financial Institutions Supervisory Agency (Bapepam-LK)
Ireland	2016	Transposition of the EU NFR Directive: S.I. No. 360/2017 European Union (Disclosure of Non-Financial and Diversity Information by Certain Large Undertakings and Groups) Regulations	Large private and listed companies	Department of Jobs, Enterprise and Innovation
Israel	2009	Securities Law Regulations	Listed companies	Israeli Securities Authority
Italy	2016	Transposition of the EU NFR Directive: Legislative Decree 30 December 2016, n.254	Large private and listed companies	Ministry of Economic Affairs
Japan	2022	Cabinet Office Ordinance on the Disclosure of Corporate Affairs	Listed companies	Japan Financial Services Agency
Jordan	2022	Amendments of the Directives of Listing Securities and the Directives of The Over-The-Counter Market (OTC)	Listed companies	Amman Stock Exchange (ASE)
Kazakhstan	2021	Rules for Information Disclosure by Admittance Initiators of securities: Appendix 3 Requirements of the Exchange for the disclosure of information by the issuer in its annual report	Listed companies	Kazakhstan Stock Exchange (KASE)

(continued)

Table OA-1 (continued)

(continued)

Country	Year	Regulation Name	Scope	Issuer
Kuwait	2015	Executive Regs, Book 15, Corporate Governance	Listed companies	Capital Markets Authority
Latvia	2016	Transposition of the EU NFR Directive: Amendment to the Financial Instruments Market Law No. 2016/254.4	Large private and listed companies	Parliament of the Republic, Cabinet of Ministers
Lithuania	2016	Transposition of the EU NFR Directive: amendments to articles 4, 22, 23, 25, 27, 28 in Law on the Financial Reporting of Enterprises	Large private and listed companies	Seimas of the Republic of Lithuania
Luxembourg	2016	Transposition of the EU NFR Directive: Law of 23 July 2016 on the Publication of Non-financial Information and Information on Diversity A156	Large private and listed companies	Ministry of Justice
Malaysia	2007	Main Markets listing requirements CSR description	Listed companies	Bursa Malaysia Securities Berhad
Malta	2016	Transposition of the EU NFR Directive: Amendments of the Companies Act and of the Accountancy Profession Act	Large private and listed companies	Ministry of Finance
Morocco	2019	AMMC Circular No. 03/19, Chapitre II. Gouvernance, Deontologie et Rapport. Section 3: Rapport ESG	Listed companies	Bourse de Casablanca (Casablanca Stock Exchange)
Namibia	2023	NamCode	Listed companies	Namibian Stock Exchange
Netherlands	2016	Transposition of the EU NFR Directive: Decree Disclosure of Non-financial Information PbEU, 2014, L330 and Decree Disclosure Diversity Policy PbEU, 2014, L330	Large private and listed companies	Ministry of Security and Justice
Nigeria	2018	Nigerian Code of Corporate Governance (NCCG)	Listed companies listed on premium board of the exchange	Financial Reporting Council
Norway	2013	Act amending the Norwegian Accounting Act	Large private and listed companies	Norwegian Parliament
Oman	2023	ESG Disclosure Guidelines	Listed companies	Muscat Stock Exchange (MSX)
Pakistan	2009	Companies (Corporate Social Responsibility) general order	Listed companies	Securities and exchange commission of Pakistan
Peru	2015	Resolucion SMV No 033-2015-SMV/01	Listed companies	Peruvian Capital Markets Superintendency
Philippines	2011	Corporate Social Responsibility Act, 2011	Large private and listed companies	Committee on Trade and Commerce
Poland	2016	Transposition of the EU NFR Directive: amendments to the Accounting Act	Large private and listed companies	Governments

(continued)

Table OA-1 (continued)

(continued)

Country	Year	Regulation Name	Scope	Issuer
Portugal	2010	The Financial Reporting Accounting Standard n 26	All companies	Commission for Accounting Normalization
Romania	2016	Transposition of the EU NFR Directive: Act No 1938 as "Order regarding changes and additions to existing accounting regulations"	Large private and listed companies	Governments (Ministry of Public Finance)
Russia	2014	Reg. No. 454-P on the Disclosure of Information by Issuers of Securities.	Listed companies	Ministry of Justice, Central Bank
Singapore	2016	SGX-ST Listing Rules Practice Note 7.6 Amendments to sustainability reporting guide	Listed companies	Singapore Stock Exchange (SGX)
Slovakia	2015	Transposition of the EU NFR Directive: Act No. 130/2015 Coll., amending Act No. 431/2002 Coll. on Accounting	Large private and listed companies	Finance Directorate of the SR Banska Bystrica
Slovenia	2017	Transposition of the EU NFR Directive: amendments of the Companies Act	Large private and listed companies	National Assembly of the Republic of Slovenia
South Africa	2010	Johannesburg Stock Exchange Listing Requirement 2010	Listed companies	Johannesburg Stock Exchange Listing Requirement 2010
South Korea	2012	Green Posting System/ Environmental Information Disclosure Policy	Listed companies	Financial Services Commission
Spain	2012	Spanish Sustainable Economy Law (revision of 2011)	Listed companies	The National Securities Market (CNVM)
Sweden	2016	Transposition of the EU NFR Directive: Corporate Sustainability Reporting and Diversity Policy	Large private and listed companies	Ministry of Industries and Innovation
Switzerland	2022	Swiss Civil Code: amendment "Verordnung uber die Berichterstattung uber Klimabelange"	All companies	Swiss Confederation
Taiwan	2019	Taiwan Stock Exchange Corporation Rules Governing the Preparation and Filing of Corporate Social Responsibility Reports by TWSE Listed Companies	Listed companies	Taiwan Stock Exchange (TWSE)
Tanzania	2022	Dar Es Salaam Stock Exchange PLC Rules 2022	Listed companies	Dar Es Salaam Stock Exchange
Thailand	2014	Rules, Conditions, and Procedures for Disclosure Regarding Financial and Non-financial Information of Securities Issuers	Listed companies	Stock Exchange of Thailand
Turkey	2014	GHG Monitoring Regulation/Communique on corporate governance principles	Listed companies	Capital Markets Board of Turkey
United Arab Emirates	2020	Article 76 from the Chairman of SCAs Board of Directors Decision no. (3/Chairman) of 2020 concerning Approval of Joint Companies Governance Guide	Listed companies	UAE Securities and Commodities Authority (SCA)

(continued)

Table OA-1 (continued)

(continued)

Country	Year	Regulation Name	Scope	Issuer
United Kingdom	2013	The Companies Act 2006 Regulations 2013	Large private and listed companies	Secretary of State
United States	2024	Climate-Related Disclosure Rules	Public Companies	Securities and Exchange Commission
Vietnam	2015	Circular 155/2015/TT-BTC	Listed companies	Hanoi/ Ho Chi Min Stock Exchange
Zimbabwe	2015	Zimbabwe National Code of Corporate Governance, 2015	All companies	The Institute of Directors Zimbabwe and the Zimbabwe Leadership Forum and Standards Association of Zimbabwe Institute (NGO)

This table reports, for the ESG disclosure mandates in our sample countries, information on the adoption year, the specific name of the regulation, its scope, and the details of the issuer of the regulation.

Table OA-2: Sample Composition by Country, Year, and Industry

Panel A: Sample Composition by Country

Country	Treated	Listed Business Group Parents				Subsidiaries			
		Unique firms		Firm-years		Unique firms		Firm-years	
		Obs.	%	Obs.	%	Obs.	%	Obs.	%
Albania	1	0	0.00%	0	0.00%	23	0.02%	75	0.01%
Algeria	0	2	0.01%	8	0.01%	96	0.06%	372	0.04%
Antigua and Barbuda	0	1	0.01%	8	0.01%	0	0.00%	0	0.00%
Argentina	1	12	0.08%	98	0.09%	35	0.02%	162	0.02%
Armenia	1	0	0.00%	0	0.00%	3	0.00%	8	0.00%
Australia	1	0	0.00%	0	0.00%	1,926	1.29%	9,307	1.12%
Austria	1	39	0.27%	428	0.38%	1,263	0.85%	8,784	1.06%
Bahamas	0	3	0.02%	15	0.01%	0	0.00%	0	0.00%
Bahrain	0	1	0.01%	3	0.00%	2	0.00%	4	0.00%
Bangladesh	0	3	0.02%	5	0.00%	5	0.00%	6	0.00%
Barbados	0	1	0.01%	13	0.01%	0	0.00%	0	0.00%
Belarus	0	1	0.01%	2	0.00%	60	0.04%	119	0.01%
Belgium	1	66	0.45%	668	0.59%	2,433	1.63%	17,204	2.07%
Bermuda	0	121	0.83%	770	0.68%	7	0.00%	22	0.00%
Bolivia	1	0	0.00%	0	0.00%	7	0.00%	60	0.01%
Bosnia and Herzegovina	0	23	0.16%	113	0.10%	161	0.11%	1,040	0.13%
Brazil	1	105	0.72%	719	0.64%	1,315	0.88%	5,963	0.72%
Bulgaria	1	29	0.20%	252	0.22%	723	0.48%	4,618	0.56%
Cambodia	1	0	0.00%	0	0.00%	2	0.00%	5	0.00%
Canada	1	0	0.00%	0	0.00%	11	0.01%	23	0.00%
Cayman Islands	0	293	2.02%	1,172	1.04%	21	0.01%	40	0.00%
Chile	1	32	0.22%	258	0.23%	78	0.05%	300	0.04%
China	1	2,628	18.10%	17,517	15.49%	26,227	17.57%	89,484	10.77%
Colombia	0	20	0.14%	161	0.14%	904	0.61%	5,916	0.71%
Congo	1	0	0.00%	0	0.00%	1	0.00%	1	0.00%
Costa Rica	0	1	0.01%	1	0.00%	1	0.00%	4	0.00%
Côte d'Ivoire	0	0	0.00%	0	0.00%	3	0.00%	24	0.00%
Croatia	1	44	0.30%	373	0.33%	614	0.41%	4,131	0.50%
Curaçao	0	2	0.01%	18	0.02%	0	0.00%	0	0.00%
Cyprus	1	17	0.12%	154	0.14%	6	0.00%	11	0.00%
Czech Republic	1	13	0.09%	65	0.06%	1,307	0.88%	10,619	1.28%

(continued)

Table OA-2 (continued)

(continued)

Country	Treated	Listed Business Group Parents				Subsidiaries			
		Unique firms		Firm-years		Unique firms		Firm-years	
		Obs.	%	Obs.	%	Obs.	%	Obs.	%
Denmark	1	75	0.52%	771	0.68%	876	0.59%	5,791	0.70%
Dominican Republic	0	0	0.00%	0	0.00%	1	0.00%	10	0.00%
Ecuador	0	3	0.02%	22	0.02%	8	0.01%	49	0.01%
Egypt	1	7	0.05%	44	0.04%	14	0.01%	28	0.00%
El Salvador	1	0	0.00%	0	0.00%	1	0.00%	5	0.00%
Estonia	1	11	0.08%	111	0.10%	377	0.25%	3,362	0.40%
Ethiopia	1	0	0.00%	0	0.00%	2	0.00%	3	0.00%
Faroe Islands	0	0	0.00%	0	0.00%	1	0.00%	1	0.00%
Finland	1	119	0.82%	1,215	1.07%	1,958	1.31%	11,676	1.41%
France	1	0	0.00%	0	0.00%	6,585	4.41%	44,953	5.41%
French Guiana	0	1	0.01%	10	0.01%	19	0.01%	127	0.02%
Gabon	1	0	0.00%	0	0.00%	1	0.00%	2	0.00%
Georgia	1	0	0.00%	0	0.00%	21	0.01%	48	0.01%
Germany	1	279	1.92%	2,908	2.57%	4,746	3.18%	25,456	3.06%
Ghana	0	1	0.01%	6	0.01%	1	0.00%	2	0.00%
Gibraltar	0	1	0.01%	16	0.01%	0	0.00%	0	0.00%
Greece	1	0	0.00%	0	0.00%	479	0.32%	3,650	0.44%
Greenland	1	0	0.00%	0	0.00%	9	0.01%	85	0.01%
Guadeloupe	1	0	0.00%	0	0.00%	15	0.01%	137	0.02%
Guatemala	0	0	0.00%	0	0.00%	1	0.00%	3	0.00%
Guernsey	0	9	0.06%	43	0.04%	0	0.00%	0	0.00%
Hong Kong	1	173	1.19%	1,171	1.04%	26	0.02%	41	0.00%
Hungary	1	22	0.15%	171	0.15%	1,245	0.83%	8,985	1.08%
Iceland	1	8	0.06%	76	0.07%	106	0.07%	601	0.07%
India	1	917	6.31%	5,900	5.22%	5,236	3.51%	24,487	2.95%
Indonesia	1	54	0.37%	288	0.25%	14	0.01%	37	0.00%
Iran	0	11	0.08%	38	0.03%	16	0.01%	64	0.01%
Ireland	1	54	0.37%	451	0.40%	1,034	0.69%	5,855	0.70%
Isle of Man	0	17	0.12%	86	0.08%	2	0.00%	8	0.00%
Israel	1	106	0.73%	841	0.74%	40	0.03%	133	0.02%
Italy	1	192	1.32%	1,642	1.45%	7,020	4.70%	43,882	5.28%

(continued)

Table OA-2 (continued)

(continued)

Country	Treated	Listed Business Group Parents				Subsidiaries			
		Unique firms		Firm-years		Unique firms		Firm-years	
		Obs.	%	Obs.	%	Obs.	%	Obs.	%
Jamaica	0	3	0.02%	26	0.02%	1	0.00%	1	0.00%
Japan	0	1,912	13.17%	17,457	15.44%	9,299	6.23%	54,015	6.50%
Jersey	0	32	0.22%	209	0.18%	2	0.00%	2	0.00%
Jordan	0	2	0.01%	5	0.00%	1	0.00%	2	0.00%
Kazakhstan	1	10	0.07%	66	0.06%	96	0.06%	567	0.07%
Kenya	1	0	0.00%	0	0.00%	1	0.00%	2	0.00%
Kosovo	1	0	0.00%	0	0.00%	5	0.00%	23	0.00%
Kuwait	1	7	0.05%	53	0.05%	3	0.00%	5	0.00%
Latvia	1	9	0.06%	69	0.06%	373	0.25%	2,270	0.27%
Lebanon	0	1	0.01%	4	0.00%	0	0.00%	0	0.00%
Liberia	0	1	0.01%	16	0.01%	0	0.00%	0	0.00%
Lithuania	1	16	0.11%	146	0.13%	429	0.29%	2,590	0.31%
Luxembourg	1	34	0.23%	287	0.25%	245	0.16%	1,285	0.15%
Madagascar	1	0	0.00%	0	0.00%	1	0.00%	1	0.00%
Malawi	1	0	0.00%	0	0.00%	1	0.00%	7	0.00%
Malaysia	1	579	3.99%	5,419	4.79%	6,688	4.48%	42,191	5.08%
Malta	1	9	0.06%	77	0.07%	131	0.09%	582	0.07%
Marshall Islands	0	11	0.08%	66	0.06%	3	0.00%	4	0.00%
Martinique	1	0	0.00%	0	0.00%	14	0.01%	82	0.01%
Mauritius	0	15	0.10%	95	0.08%	108	0.07%	329	0.04%
Mayotte	1	0	0.00%	0	0.00%	2	0.00%	2	0.00%
Mexico	0	51	0.35%	378	0.33%	377	0.25%	940	0.11%
Monaco	0	1	0.01%	13	0.01%	0	0.00%	0	0.00%
Mongolia	0	1	0.01%	3	0.00%	0	0.00%	0	0.00%
Montenegro	0	1	0.01%	9	0.01%	34	0.02%	183	0.02%
Morocco	1	14	0.10%	101	0.09%	309	0.21%	1,236	0.15%
Nepal	0	1	0.01%	1	0.00%	2	0.00%	8	0.00%
Netherlands	1	80	0.55%	798	0.71%	1,421	0.95%	7,654	0.92%
New Zealand	0	38	0.26%	255	0.23%	482	0.32%	2,569	0.31%
Nigeria	0	1	0.01%	3	0.00%	1	0.00%	2	0.00%
North Macedonia	0	26	0.18%	178	0.16%	138	0.09%	774	0.09%

(continued)

Table OA-2 (continued)

(continued)

Country	Treated	Listed Business Group Parents				Subsidiaries			
		Unique firms		Firm-years		Unique firms		Firm-years	
		Obs.	%	Obs.	%	Obs.	%	Obs.	%
Norway	1	125	0.86%	889	0.79%	3,527	2.36%	20,517	2.47%
Oman	1	0	0.00%	0	0.00%	3	0.00%	8	0.00%
Pakistan	1	17	0.12%	66	0.06%	37	0.02%	66	0.01%
Palestine	0	0	0.00%	0	0.00%	1	0.00%	1	0.00%
Panama	0	5	0.03%	53	0.05%	6	0.00%	37	0.00%
Papua New Guinea	0	1	0.01%	1	0.00%	0	0.00%	0	0.00%
Peru	1	10	0.07%	68	0.06%	24	0.02%	84	0.01%
Philippines	1	52	0.36%	407	0.36%	1,063	0.71%	5,849	0.70%
Poland	1	273	1.88%	2,390	2.11%	5,026	3.37%	30,297	3.65%
Portugal	1	27	0.19%	317	0.28%	2,010	1.35%	14,231	1.71%
Qatar	0	5	0.03%	44	0.04%	4	0.00%	13	0.00%
Republic of Moldova	1	0	0.00%	0	0.00%	38	0.03%	163	0.02%
Reunion	1	0	0.00%	0	0.00%	36	0.02%	216	0.03%
Romania	1	47	0.32%	275	0.24%	1,150	0.77%	8,136	0.98%
Russia	1	215	1.48%	1,785	1.58%	4,856	3.25%	30,157	3.63%
Saint Barthélemy	0	0	0.00%	0	0.00%	1	0.00%	13	0.00%
Saint Lucia	0	0	0.00%	0	0.00%	1	0.00%	1	0.00%
Saint Martin	1	0	0.00%	0	0.00%	2	0.00%	19	0.00%
Saint Vincent and the Grenadines	0	0	0.00%	0	0.00%	1	0.00%	2	0.00%
Samoa	0	1	0.01%	7	0.01%	0	0.00%	0	0.00%
Saudi Arabia	0	13	0.09%	111	0.10%	7	0.00%	37	0.00%
Serbia	0	41	0.28%	200	0.18%	567	0.38%	3,249	0.39%
Seychelles	1	0	0.00%	0	0.00%	1	0.00%	1	0.00%
Singapore	1	271	1.87%	2,263	2.00%	5,148	3.45%	26,870	3.23%
Slovakia	1	9	0.06%	48	0.04%	444	0.30%	3,609	0.43%
Slovenia	1	12	0.08%	113	0.10%	359	0.24%	2,483	0.30%
South Africa	1	14	0.10%	88	0.08%	3	0.00%	13	0.00%
South Korea	1	858	5.91%	6,131	5.42%	4,247	2.84%	22,484	2.71%
Spain	1	100	0.69%	1,053	0.93%	6,894	4.62%	47,599	5.73%
Sri Lanka	0	8	0.06%	31	0.03%	14	0.01%	23	0.00%

(continued)

Table OA-2 (continued)

(continued)

Country	Treated	Listed Business Group Parents				Subsidiaries			
		Unique firms		Firm-years		Unique firms		Firm-years	
		Obs.	%	Obs.	%	Obs.	%	Obs.	%
Sweden	1	380	2.62%	2,737	2.42%	4,714	3.16%	28,937	3.48%
Switzerland	0	110	0.76%	1,290	1.14%	42	0.03%	341	0.04%
Syria	0	0	0.00%	0	0.00%	1	0.00%	2	0.00%
Taiwan	1	628	4.32%	4,499	3.98%	377	0.25%	1,344	0.16%
Tanzania	1	0	0.00%	0	0.00%	8	0.01%	10	0.00%
Thailand	1	331	2.28%	2,980	2.64%	5,369	3.60%	38,663	4.65%
Trinidad and Tobago	0	1	0.01%	1	0.00%	1	0.00%	2	0.00%
Tunisia	0	7	0.05%	36	0.03%	0	0.00%	0	0.00%
Turkey	1	61	0.42%	440	0.39%	456	0.31%	1,847	0.22%
Ukraine	0	83	0.57%	312	0.28%	1,051	0.70%	5,859	0.71%
United Arab Emirates	1	11	0.08%	89	0.08%	8	0.01%	15	0.00%
United Kingdom	1	724	4.99%	5,942	5.25%	11,911	7.98%	70,163	8.45%
United States	0	1,419	9.77%	12,425	10.99%	274	0.18%	1,471	0.18%
Uruguay	1	0	0.00%	0	0.00%	113	0.08%	286	0.03%
Venezuela	0	2	0.01%	6	0.01%	0	0.00%	0	0.00%
Vietnam	1	256	1.76%	1,448	1.28%	2,243	1.50%	10,367	1.25%
Virgin Islands	0	29	0.20%	150	0.13%	2	0.00%	7	0.00%
Zambia	1	0	0.00%	0	0.00%	1	0.00%	1	0.00%
Zimbabwe	1	3	0.02%	24	0.02%	5	0.00%	12	0.00%
Total		14,521	100.00%	113,084	100.00%	149,301	100.00%	830,614	100.00%

Table OA-2 (continued)

Panel B: Sample Composition by Year

Year	Listed Business Group Parents		Subsidiaries	
	Obs.	%	Obs.	%
2007	3,730	3.30%	21,334	2.57%
2008	4,014	3.55%	25,321	3.05%
2009	4,328	3.83%	28,706	3.46%
2010	3,945	3.49%	28,631	3.45%
2011	5,093	4.50%	34,846	4.20%
2012	5,687	5.03%	40,267	4.85%
2013	6,271	5.55%	45,753	5.51%
2014	6,626	5.86%	49,915	6.01%
2015	8,026	7.10%	60,162	7.24%
2016	8,705	7.70%	65,312	7.86%
2017	9,329	8.25%	70,884	8.53%
2018	9,830	8.69%	75,400	9.08%
2019	9,595	8.48%	74,175	8.93%
2020	10,083	8.92%	77,383	9.32%
2021	9,358	8.28%	72,530	8.73%
2022	8,464	7.48%	59,995	7.22%
	113,084	100.00%	830,614	100.00%

Panel C: Sample Composition by Industry

One-digit SIC	Listed Business Group Parents				Subsidiaries			
	Unique firms		Firm-years		Unique firms		Firm-years	
	Obs.	%	Obs.	%	Obs.	%	Obs.	%
0	222	1.53%	1,553	1.37%	2,475	1.66%	12,618	1.52%
1	971	6.69%	7,438	6.58%	10,408	6.97%	55,877	6.73%
2	3,128	21.54%	25,360	22.43%	18,179	12.18%	100,719	12.13%
3	5,178	35.66%	42,938	37.97%	30,169	20.21%	169,335	20.39%
4	1,314	9.05%	10,757	9.51%	19,872	13.31%	112,401	13.53%
5	1,604	11.05%	11,460	10.13%	40,413	27.07%	237,251	28.56%
7	2,104	14.49%	13,578	12.01%	27,785	18.61%	142,413	17.15%
	14,521	100.00%	113,084	100.00%	149,301	100.00%	830,614	100.00%

This table presents the sample composition for business group parent and subsidiary observations. Panel A presents the distribution of sample firms and firm-years by country. Panel B presents the distribution of sample firm-years by year. Panel C presents the distribution of sample firms and firm-years by one-digit SIC industry code.

Table OA-3: Sensitivity Test – Krueger et al. (2024) Treatment

	Dependent variable:			
	$Ln(1 + ESG\ Incidents_{s,t+1})$		$Occurrence\ of\ ESG\ Incidents_{s,t+1}$	
Independent variable(s):	(1)	(2)	(3)	(4)
$Mandatory\ ESG\ Disclosure_{p,t}^{Krueger\ et\ al.(2024)}$	0.001**	0.002***	0.001**	0.001***
	(2.27)	(3.64)	(2.19)	(2.60)
$Profitability_{s,t}$		-0.000		0.000
		(-0.40)		(0.08)
$Size_{s,t}$		0.001***		0.001***
		(4.95)		(4.30)
$Leverage_{s,t}$		0.000		0.000
		(1.36)		(0.84)
$Sales\ Growth_{s,t}$		-0.000		-0.000
		(-1.09)		(-1.22)
$Sales\ Volatility_{s,t}$		0.000		0.000
		(0.73)		(0.43)
Parent-country fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	No	Yes	No
Subsidiary fixed effects	No	Yes	No	Yes
Subsidiary-industry×year fixed effects	No	Yes	No	Yes
Subsidiary-country×year fixed effects	No	Yes	No	Yes
Obs.	586,924	567,466	586,924	567,466
Adj. R^2	0.002	0.466	0.003	0.279

This table presents the results of the sensitivity analysis that examines the robustness of our main findings to the alternative treatment definition based on the treatment and control countries identified in Krueger et al. (2024) ($Mandatory\ ESG\ Disclosure_{p,t}^{Krueger\ et\ al.(2024)}$). In Columns (1) and (2) ((3) and (4)), we examine the effect of parent country mandatory ESG disclosure regulation adoption on the number (occurrence) of subsidiary ESG incidents. The dependent variable capturing the number of subsidiary ESG incidents is $Ln(1 + ESG\ Incidents_{s,t+1})$, whereas the dependent variable capturing the occurrence of subsidiary ESG incidents is $Occurrence\ of\ ESG\ Incidents_{s,t+1}$. All model specifications are estimated using ordinary least squares (OLS) regressions. Model specifications in Columns (1) and (3) include parent-country and year fixed effects. Model specifications in Columns (2) and (4) include subsidiary firm-level controls (i.e., $Profitability_{s,t}$, $Size_{s,t}$, $Leverage_{s,t}$, $Sales\ Growth_{s,t}$, and $Sales\ Volatility_{s,t}$) as well as parent-country, subsidiary, subsidiary-industry×year, and subsidiary-country×year fixed effects. The table reports (in parentheses) *t*-statistics based on heteroscedasticity-robust standard errors clustered at the parent-country×year level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels (two-tailed), respectively. All variables are defined in the Appendix to the paper.

Table OA-4: Sensitivity Test – Alternative Standard Error Clustering

	Dependent variable:			
	$Ln(1 + ESG\ Incidents_{s,t+1})$		$Occurrence\ of\ ESG\ Incidents_{s,t+1}$	
Independent variable(s):	(1)	(2)	(3)	(4)
$Mandatory\ ESG\ Disclosure_{p,t}$	0.002***	0.002***	0.001**	0.001**
	(3.11)	(3.14)	(2.37)	(2.40)
$Profitability_{s,t}$		-0.000		0.000
		(-0.39)		(0.14)
$Size_{s,t}$		0.001***		0.001***
		(4.49)		(5.89)
$Leverage_{s,t}$		0.000		0.000
		(1.64)		(1.11)
$Sales\ Growth_{s,t}$		-0.000		-0.000
		(-1.31)		(-1.52)
$Sales\ Volatility_{s,t}$		0.000		0.000
		(0.72)		(0.49)
Parent-country fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	No	Yes	No
Subsidiary fixed effects	No	Yes	No	Yes
Subsidiary-industry×year fixed effects	No	Yes	No	Yes
Subsidiary-country×year fixed effects	No	Yes	No	Yes
Obs.	636,402	636,402	636,402	636,402
Adj. R^2	0.467	0.467	0.282	0.282

This table presents the results of the sensitivity analysis that examines the robustness of our main findings to clustering standard errors at the parent-country level. In Columns (1) and (2) ((3) and (4)), we examine the effect of parent country mandatory ESG disclosure regulation adoption ($Mandatory\ ESG\ Disclosure_{p,t}$) on the number (occurrence) of subsidiary ESG incidents. The dependent variable capturing the number of subsidiary ESG incidents is $Ln(1 + ESG\ Incidents_{s,t+1})$, whereas the dependent variable capturing the occurrence of subsidiary ESG incidents is $Occurrence\ of\ ESG\ Incidents_{s,t+1}$. All model specifications are estimated using ordinary least squares (OLS) regressions. Model specifications in Columns (1) and (3) include parent-country and year fixed effects. Model specifications in Columns (2) and (4) include subsidiary firm-level controls (i.e., $Profitability_{s,t}$, $Size_{s,t}$, $Leverage_{s,t}$, $Sales\ Growth_{s,t}$, and $Sales\ Volatility_{s,t}$) as well as parent-country, subsidiary, subsidiary-industry×year, and subsidiary-country×year fixed effects. The table reports (in parentheses) *t*-statistics based on heteroscedasticity-robust standard errors clustered at the parent-country level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels (two-tailed), respectively. All variables are defined in the Appendix to the paper.

Table OA-5: Mitigating Potential Treatment Effect Heterogeneity Bias

Panel A: Goodman-Bacon Decomposition

	Dependent variable:			
	$Ln(1 + ESG\ Incidents_{s,t+1})$		$Occurrence\ of\ ESG\ Incidents_{s,t+1}$	
Independent variable(s):	(1)		(2)	
	Overall treatment effect		Overall treatment effect	
$Mandatory\ ESG\ Disclosure_{p,t}$	0.004**		0.004*	
	(2.55)		(1.91)	
Treatment effect decomposition:	Weight	Treatment component	Weight	Treatment component
Between	0.998	0.004	0.998	0.004
Treated vs never treated	0.757	0.002	0.757	0.002
Cohorts	0.241	-0.000	0.241	0.001
Within	0.002	0.077	0.002	0.064
Subsidiary controls		Yes		Yes
Parent country fixed effects		Yes		Yes
Year fixed effects		Yes		Yes
Number of groups		5,235		5,235
Number of cohorts		13		13
Obs.		78,525		78,525

Panel B: Callaway and Sant'Anna Estimator

	Dependent variable:			
	$Ln(1 + ESG\ Incidents_{s,t+1})$		$Occurrence\ of\ ESG\ Incidents_{s,t+1}$	
Independent variable(s):	(1)	(2)	(3)	(4)
$Mandatory\ ESG\ Disclosure_{p,t}$	0.001**	0.002***	0.002**	0.002***
	(2.37)	(3.31)	(2.27)	(2.91)
Subsidiary controls	No	Yes	No	Yes
Parent country fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Obs.	520,251	520,251	520,251	520,251

This table presents the results of the Goodman-Bacon decomposition of our treatment effect ($Mandatory\ ESG\ Disclosure_{p,t}$) in a balanced sample of subsidiaries with available data over the sample period (Panel A) as well as the results of the heterogenous treatment effect estimation following the approach of Callaway and Sant'Anna (2021) (Panel B). All model specifications include parent-country and year fixed effects. All model specifications presented in Panel A and Panel B, Columns (2) and (4), include

subsidiary firm-level controls. The table reports (in parentheses) *t*-statistics based on heteroscedasticity-robust standard errors clustered at the parent-country level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels (two-tailed), respectively. All variables are defined in the Appendix to the paper.

Table OA-6: Treatment Effect Stability

	Dependent variable:	
	$Ln(1 + ESG\ Incidents_{s,t+1})$	$Occurrence\ of\ ESG\ Incidents_{s,t+1}$
	(1)	(2)
$\beta_{Uncontrolled}$	0.0034	0.0036
$R^2_{Uncontrolled}$	0.0004	0.0005
$\beta_{Controlled}$	0.0016	0.0012
$R^2_{Controlled}$	0.0001	0.0001
Δ	-8.3620	-7.1523

This table presents an estimate of the value of *Delta* (Δ), the relative degree of selection on observed and unobserved control variables for which the treatment effect would be zero, following the methodology developed by Oster (2019). The table presents the coefficient on our treatment effect ($Mandatory\ ESG\ Disclosure_{p,t}$) and the R^2 from the estimation of our main specification (Table 2, Panel A, Columns (4) and (8)) of the paper with ($\beta_{Controlled}$, $R^2_{Controlled}$) and without ($\beta_{Uncontrolled}$, $R^2_{Uncontrolled}$) subsidiary firm-level controls (i.e., $Profitability_{s,t}$, $Size_{s,t}$, $Leverage_{s,t}$, $Sales\ Growth_{s,t}$, and $Sales\ Volatility_{s,t}$). Following the methodology proposed by Oster (2019) we set R^{max} (the R^2 from a hypothetical regression of the outcome on treatment and both observed and unobserved control variables) equal to 1.3 multiplied by the R^2 of the regression that includes all control variables (i.e., the controlled regression).