

**SPILLOVER EFFECTS OF THE EU DIRECTIVE FOR
SUSTAINABILITY REPORTING FROM IN-SCOPE
COMPANIES TO UPSTREAM SUPPLIERS (PAPER
PROPOSAL)**

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Spillover Effects of the EU Directive for Sustainability Reporting from in-Scope Companies to Upstream Suppliers

1. Introduction

Sustainability reporting is transitioning from a discretionary practice to a mandatory requirement globally (Christensen et al., 2021), with the European Union (EU) being at the forefront (European Union, 2014; Kinderman, 2019; Hummel and Jobst, 2024). The EU Non-Financial Reporting Directive 2014/95/EU (NFRD) (the EU Directive hereafter), implemented in 2017, represents the first transnational, cross-industry regulation to holistically address the three pillars of sustainability: environment, society, and governance. The EU Directive requires large public-interest entities with more than 500 employees to disclose their policies, outcomes, and risks related to environmental, social, and employee matters, human rights, and anti-corruption (European Union, 2014).

Research suggests that mandatory sustainability reporting may generate at least two levels of effects (Ottenstein et al., 2022). The first relates to direct effect on reporting practices, including changes in the quantity, format, and quality of the reports/disclosure. The second concerns indirect or extended organisational and market effects, such as changes in sustainability performance, adjustments in corporate conduct, and shifts in value-chain practices (Gulenko, 2018; Ioannou and Serafeim, 2019). Prior studies have primarily examined these effects among companies directly subject to reporting regulation (e.g., Dumitru et al., 2017; Ioannou and Serafeim, 2019; Jackson et al., 2020; Fiechter et al., 2022). However, limited research exists on whether such regulation also exerts disciplinary effects on companies outside its formal scope but are connected to regulated companies through ongoing business relationships, particularly in supply chains.

Studying this effect is important because companies do not operate in isolation. Rather, they are embedded in interorganizational relationships that extend across organisational and legal boundaries and, through these linkages, may shape and be shaped by the practices and expectations of other companies (Gereffi et al., 2005). In particular, sustainability accounting and reporting have been shown to foster environmental and social responsibility across supply chains in a voluntary setting (Spence and Rinaldi, 2014). In buyer-driven value chains, companies often exercise considerable influence over suppliers, requiring them to provide information on their sustainability

performance, thereby enabling disclosure norms and sustainability expectations to diffuse upstream (Locke, 2013). In this light, the effective reach of the EU Directive may plausibly extend beyond the companies formally subject to it. This view is also consistent with the Directive itself, as Recital 3 links non-financial disclosure to the transition towards a more sustainable economies, while Recital 8 explicitly recognises risks arising through business relationships, including supply and subcontracting chains (European Union, 2014). Grounded in institutional theory (Meyer and Rowan, 1977), we argue that regulatory mandates do not remain confined to their direct targets but diffuse across organizational fields through coercive, normative, and mimetic isomorphic pressures (DiMaggio and Powell, 1983), compelling even non-mandated organizations to align their practices with prevailing institutional standards.

Accordingly, this study investigates whether indirect exposure to the EU NFRD, through supply-chain relationships with directly mandated firms, is associated with changes in non-EU suppliers' sustainability disclosure, sustainability performance, and the disclosure–performance gap. It further examines whether these associations vary with the intensity of indirect exposure, operationalized as the number and relative economic significance of a supplier's NFRD-exposed customer relationships, as well as the institutional context of the supplier's home country.

Empirically, the study employs a difference-in-differences design, where the treatment group comprises non-EU suppliers with pre-existing customer relationships with EU companies subject to the EU Directive, while the control group consists of otherwise comparable non-EU companies without such exposure. By comparing changes in sustainability disclosure, sustainability performance, and the disclosure–performance gap before and after the Directive's implementation, the study seeks to determine whether indirect exposure to the EU Directive generated measurable upstream effects outside the EU.

Empirical results to be added...

The study seeks to contribute to the literature in three ways. First, it offers theoretically informed empirical evidence on whether the effects of mandatory sustainability reporting extend to companies beyond its formal regulatory scope. Second, it contributes to the literature on inter-organisational spillovers by investigating whether sustainability-related pressures were transmitted upstream through customer-supplier

relationships. This aspect of the study is particularly relevant in showing how regulatory demands imposed on focal companies may travel across organisational and geographic boundaries. Third, the study offers implications for current policy debates on the broader reach and consequences of EU sustainability reporting reforms. By providing evidence on the indirect effects of the NFRD, it offers a useful benchmark for understanding the wider implications of the transition to the Corporate Sustainability Reporting Directive (CSRD).

2. Institutional setting and the relevance of the NFRD

The formal beginning of mandatory sustainability reporting in the EU dates to 2014, when the EU parliament adopted the current EU Directive (NFRD), which requires companies to include information on environmental protection, social responsibility, labor rights protection, anti-corruption and bribery, and board diversity (Hummel and Jobst, 2024). The directive was implemented, across all large publicly listed EU companies having over 500 employees, with dual objectives. First, as set out in Recital 1, the directive aims to enhance transparency of sustainability-related disclosures. Second, articulated in Recital 3, it seeks to drive a change towards more sustainable economies.

more literature on the NFRD to be added...

Although the NFRD is being superseded by the Corporate Sustainability Reporting Directive (CSRD) (Hummel and Jobst, 2024), it remains a highly relevant regulatory setting. The Directive represented the EU's first major effort to integrate sustainability disclosure into the corporate reporting framework and, despite its recognised shortcomings, laid the foundation for subsequent reforms (La Torre et al., 2018; Aluchna et al., 2023). Its evaluation is therefore important for more than retrospective reasons. First, because the CSRD builds on the logic and structure of the NFRD, evidence on the effects and limitations of the earlier regime can inform the implementation of the new one. Second, the NFRD was introduced with explicit policy aims, including improved transparency on sustainability risks, stronger accountability towards stakeholders, and better monitoring of companies' social and environmental impacts (La Torre et al., 2020). Whether these aims were realised is an empirical question. Finally, the relevance of the NFRD may extend beyond companies formally subject to the Directive. By elevating the importance of sustainability reporting among in-scope

companies, it may also have influenced procurement expectations, contractual arrangements, and information demands within supply chains. The literature shows that ESG practices, disclosure signals, and stakeholder pressures can spill over across supply chains. (Tang et al., 2023) Therefore, examining these spillover effects is important for understanding how reporting regulation travels across organisational boundaries and for establishing a benchmark against which the incremental contribution of the CSRD may later be assessed.

3. Theoretical reasoning and hypotheses

Institutional theory: Organisations do not operate in isolation from their social and regulatory surroundings; their structures, practices, and reporting behaviours are fundamentally shaped by the institutional environment in which they are embedded (Meyer and Rowan, 1977). Institutional theory holds that conformity to socially sanctioned norms and expectations, rather than the pursuit of technical efficiency, is the primary driver of organisational change. A consequential extension of this logic concerns the reach of regulatory mandates. Once formalised compliance expectations take hold within an organisational field, they do not remain bounded by their legal perimeter. Instead, through coercive, normative, and mimetic isomorphic mechanisms (DiMaggio and Powell, 1983), they may permeate the broader field, inducing conformity among organisations that fall outside the regulation's direct scope.

We apply this logic to the extraterritorial effects of the NFRD. By mandating sustainability disclosure from large EU firms, NFRD institutionalises sustainability reporting as a legitimate and expected organisational practice within the EU regulatory field. NFRD-exposed firms, now subject to coercive pressure to disclose supply chain sustainability risks, transmit this pressure upstream to their non-EU suppliers through buyer-supplier relationships, thereby embedding ESG expectations in procurement criteria, supplier codes of conduct, and audit requirements. For non-EU suppliers, this buyer-driven pressure constitutes a form of coercive isomorphism: compliance with buyer sustainability expectations is not legally obligated but is economically compelled through resource dependency and the threat of contract loss. Over time, repeated exposure to these expectations normalises sustainability practices within the supplier's own organisational field, generating normative and mimetic pressures that further reinforce adoption independently of direct buyer demands.

to be developed...

Hypotheses (in process)

Sustainability reporting spillovers

The most immediate and observable response to buyer-driven sustainability pressure is the adoption of sustainability reporting practices. Non-EU suppliers subject to indirect NFRD exposure face buyer demands for ESG data to support buyers' own disclosure obligations, thereby creating a direct, instrumentally motivated incentive to initiate or increase sustainability reporting (Awaysheh and Klassen, 2010; Dai and Tang, 2022). From an institutional perspective, this represents the earliest and most visible stage of isomorphic conformity: suppliers adopt the reporting demanded by their institutional environment to maintain buyer relationships and signal organisational legitimacy (Meyer and Rowan, 1977; DiMaggio and Powell, 1983). Furthermore, as indirect exposure intensifies, reflected in the number and relative economic significance of NFRD-exposed buyer relationships, the coercive pressure to conform increases commensurately, as the economic and legitimacy costs of non-compliance rise. Hence, the following hypotheses:

H1a: Indirect exposure to mandatory sustainability reporting through supply-chain relationships is positively associated with the sustainability reporting of unexposed supplier companies.

H1b: The positive association between indirect exposure to mandatory sustainability reporting and the suppliers' sustainability reporting is stronger when exposure intensity is higher.

Sustainability performance spillovers

In addition to reporting practices, the unexposed companies may also face normative and mimetic pressures to update their sustainability-related practices. Prior research shows that powerful buyers can diffuse sustainability performance improvements throughout their supply chains by imposing standards, monitoring compliance, and conditioning continued business relationships on suppliers' adherence to these requirements (Gimenez and Tachizawa, 2012). Regulated buyer firms are therefore likely to transmit sustainability expectations through supplier codes of conduct, contracting requirements, information requests, audits, and sourcing decisions. Accordingly, suppliers with greater exposure to regulated buyers

should have stronger incentives to align their sustainability practices with the expectations embedded in mandatory reporting regimes. This reasoning leads to the following hypotheses:

H2a: Indirect exposure to mandatory sustainability reporting through supply-chain relationships is positively associated with the sustainability performance of unexposed supplier companies.

H2b: The positive association between indirect exposure to mandatory sustainability reporting and the suppliers' sustainability performance is stronger when exposure intensity is higher.

Disclosure-performance gap spillovers

An important concept underscored by institutional theory is that of decoupling, which occurs when organisations adopt symbolic practices without substantive operational change (Bromley and Powell 2012). Decoupling predicts that, in the absence of sufficient monitoring, the acceleration of sustainability disclosure may outpace genuine performance improvements.

The arguments in H2a and b suggest that indirect exposure to mandatory sustainability reporting can generate substantive improvements in suppliers' sustainability performance by transmitting regulated buyers' expectations through supply-chain relationships. However, such operational changes are unlikely to occur immediately or at the same pace as changes in sustainability disclosure, due to intended or unintentional factors (Bhaskar et al., 2026). While the intentional factors include motives like greenwashing, cherry-picking, or window-dressing (REF), the unintended ones include complications related to carrying out organizational changes. Because reporting practices can be adjusted more rapidly than production processes, environmental management systems, labor practices, or other operational routines, indirectly exposed suppliers may initially respond by improving the visibility and formalization of sustainability-related information, thereby widening the disclosure-performance gap (Tariq, 2025). Particularly, suppliers with minimal indirect NFRD exposure face weak buyer monitoring and limited economic incentives to substantiate their disclosures, making superficial compliance the path of least resistance. Therefore, we propose the following hypothesis:

H3a: Indirect exposure to mandatory sustainability reporting through supply-chain relationships is positively associated with the extent of disclosure-performance gap of the supplier companies.

As indirect exposure intensifies, however, buyer monitoring capacity increases and the reputational and relational costs of detected decoupling rise, progressively reducing suppliers' ability to sustain a gap between disclosures and actual performance. Higher exposure intensity, therefore, not only drives improvements in both disclosure and performance, but specifically narrows the gap between them by rendering symbolic compliance increasingly untenable.

H3b: The positive association between indirect exposure to mandatory sustainability reporting and the extent of suppliers' disclosure-performance gap is stronger when exposure intensity is higher.

4. Research design

4.1. Sample construction

We construct a panel of non-EU supplier companies to examine whether the EU Directive generated spillover effects beyond directly regulated companies. The sample comprises publicly listed, non-financial companies headquartered outside the EU, with available Refinitiv ESG and financial data and at least one identifiable customer relationship. Treatment is assigned on the basis on pre-existing supply chain links. Specifically, treated companies are non-EU suppliers linked, prior to implementation, to at least one EU customer subject to the EU Directive, with the relationship remaining observable after implementation. Control group is composed of non-EU suppliers with similar observable characteristics but without links to NFRD-exposed EU customers. The panel is restricted to companies observed in both the pre- and post-implementation periods, enabling us to assess whether indirectly exposed suppliers exhibit differential changes in sustainability reporting and sustainability performance following the directive.

The time spans from 2013 to 2023, with NFRD implemented in 2017.

4.2. Model

$$Y_{it} = \alpha + \beta_1(Post * Exposure_i) + \beta_2Controls_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

$$Y_{it} = \alpha + \beta_1(Post * ExposureIntensity_i) + \beta_2Controls_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (2)$$

where Y_{it} denotes the outcome variable for the company i in year t , measured as sustainability disclosure, sustainability performance, or the disclosure-performance gap. $Post_t$ equals one for the post-NFRD period and zero otherwise. $Exposure_i$ is an indicator equal to one for non-EU companies with a pre-existing supply-chain relationship with at least one EU company denote company and year fixed effects, respectively, and ε_{it} is the error term. In both specifications, the coefficient on the interaction term captures the effect of indirect exposure to the NFRD on the outcome variable.

4.3. Dependent variables

4.3.1. Sustainability disclosures

Sustainability disclosure is proxied by Bloomberg's ESG disclosure score, a measure commonly used in the literature to capture the extent of corporate non-financial reporting (e.g., Ioannou and Serafeim, 2019; Yu et al., 2020). The score ranges from 0.1 to 100, where higher values indicate more extensive disclosure. It is constructed using Bloomberg's proprietary methodology, which draws on more than 900 indicators covering a wide range of environmental, social, and governance dimensions, including greenhouse gas emissions, energy use, water consumption, waste management, employee diversity, workplace safety, governance arrangements, and political contributions. The measure is intended to capture the quantity and breadth of sustainability information disclosed by companies, rather than their underlying sustainability performance.

4.3.2. Sustainability performance

Sustainability performance is proxied by the Asset4 ESG score, a measure commonly used in the literature to capture companies' performance across environmental, social, and governance dimensions (e.g., Cheng et al., 2014; Ioannou and Serafeim, 2017; Yu et al., 2020). The score ranges from 0 to 100, with higher values indicating stronger performance relative to industry peers. It is based on a wide set of indicators reflecting companies' achievements across key sustainability dimensions, including emissions reduction, resource efficiency, labour-related outcomes, and governance quality. Unlike the disclosure measure, the Asset4 score is intended to reflect underlying sustainability performance rather than the breadth of sustainability information reported by the company.

4.3.3. Sustainability disclosure-performance gap

Disclosure-performance gap is measured as the extent to which a company's sustainability disclosures diverge from its underlying sustainability performance, consistent with prior research (e.g., Yu et al., 2020; Ruiz-Blanco et al., 2022). Specifically, it is calculated as the difference between the company's sustainability disclosure score and its sustainability performance score, as set out in Equation (1). Higher values indicate a larger gap between what the company reports and how it performs, whereas lower values indicate closer alignment between disclosure and performance.

Greenwashing_score = (a normalized measure of a company's sustainability disclosure score) – (a normalized measure of a company's sustainability performance score) (3)

4.4. Independent variable

The main independent variable for our baseline model is indirect exposure to the EU Directive. We measure this as an indicator equal to one for non-EU supplier companies with a pre-existing customer relationship with at least one EU company subject to the EU Directive, and zero otherwise. In the regression analysis, this variable is interacted with a post-implementation indicator to capture the effect of indirect exposure following the introduction of the directive.

Therefore, the effective independent variable of interest in the regression is:
Post × NFRD

Moreover, we also test for the exposure intensity to capture the degree of indirect exposure, specifically in terms of the number of EU NFRD customers and the proportion of total customers that are EU NFRD customers, expressed as *Post × ExposureIntensity*.

4.5. Control variables

A set of control variables will be added to minimize the omitted variable bias and to account for alternative explanations and extraneous factors influencing the main analysis.

4.6. Additional analyses/Robustness tests

4.6.1. Heterogeneity tests

divide the non-EU treatment group into sub-groups: developed economies, emerging economies; variations across industries, etc.

4.6.2. Parallel trends analysis

A critical underpinning for our study is the plausibility of parallel trends between the treatment and control groups in the pre-implementation period, as proposed by Atanasov and Black (2016). To test the parallel trend assumption, we estimate yearly treatment effects, two years pre- and two years post-implementation periods...

4.6.3. Propensity score matching

Studies examining regulatory interventions aimed at specific organizational practices often struggle to empirically isolate the regulation's impact from other confounding factors. To increase the comparability of the treatment and control groups, we repeat the analysis using propensity-score-matched groups. The groups are matched on a number of observable company-level characteristics that are likely to affect companies' sustainability-related choices as well as cost behaviour (cf. Ioannou and Serafeim, 2019).

5. Empirical results

to be added

6. Conclusions

Expected contributions: The study extends the literature on mandatory reporting by showing whether regulatory effects travel across organisational and geographic boundaries through business relationships, particularly supply chains. It also offers evidence relevant to current policy debates on the broader reach and effectiveness of EU sustainability reporting reforms.

Prior studies largely focus on the direct effects of the EU Directive on companies formally within scope, while supply-chain research has mostly examined customer influence in non-regulatory settings. This study contributes by linking mandatory sustainability reporting regulation to cross-border upstream spillovers through customer-supplier relationships.

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