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Whose Sustainability Counts? Board Governance, ESG Ratings, and Sustainable Development Goals: Evidence on the ESG–SDG Wedge

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ABSTRACT

Institutional investors increasingly rely on ESG ratings to evaluate financially material sustainability risks, while governments promote corporate alignment with the United Nations Sustainable Development Goals (SDGs). Because these frameworks differ substantially in capital market salience and monitoring intensity, board oversight may not uniformly enhance sustainability performance but instead reallocate attention across competing evaluative regimes. Drawing on institutional logics theory and the attention-based view of the firm, we develop the ESG–SDG wedge, a novel measure capturing within-industry-year divergence between standardized ESG ratings and SDG alignment breadth. Using panel data on 951 publicly listed firms across US and European markets from 2018 to 2023 (4404 firm-year observations), we estimate two-way fixed effects (TWFE) models and implement staggered difference-in-differences designs around 173 CSR committee adoption events using the Sun and Abraham (2021) interaction-weighted estimator combined with inverse probability weighting. We find that CSR committees are associated with ESG–SDG wedges 0.21 standard deviations larger than comparable peers, with causal estimates approaching 0.30 standard deviations under validated parallel trends. Board industry-financial expertise exhibits similar patterns. Mechanism analyses reveal pronounced asymmetry: Governance structures relate substantially more strongly to ESG ratings than to SDG alignment. This divergence is concentrated among US firms relative to European counterparts and varies systematically across industries with differing ESG materiality profiles. These findings challenge the assumption that specialized oversight uniformly strengthens multidimensional sustainability performance. Board governance reallocates constrained attention toward criteria embedded in capital market processes, generating systematic divergence across sustainability frameworks—with important implications for corporate sustainability governance design, ESG investment strategy, and sustainable development policy.

1 | Introduction

Institutional investors manage over $30 trillion in ESG-integrated assets, relying on commercial ratings from providers such as Refinitiv, MSCI, and Sustainalytics to screen portfolios and assess long-term risk (Berg et al. 2022; Krueger et al. 2020). Simultaneously, governments and multilateral organizations promote alignment with the United Nations Sustainable Development Goals as the global blueprint for corporate societal impact, with over 8000 firms worldwide publicly declaring SDG commitments Rosati and Faria (2019). Yet these frameworks embed distinct evaluative logics: ESG ratings emphasize financially material risks salient to capital markets Khan et al. (2016), while SDG frameworks prioritize broader stakeholder value extending beyond immediate investor returns García-Sánchez et al. (2020). When sustainability frameworks diverge in their

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evaluative criteria, external monitoring intensity, and stakeholder audience, a critical governance question emerges: How do boards allocate limited attention and oversight capacity across competing institutional regimes?

The answer carries implications for three distinct audiences. For investors and asset managers, understanding whether governance structures systematically favor externally rated ESG performance over broader development commitments informs the interpretation of sustainability signals and the design of engagement strategies. If board oversight mechanisms disproportionately channel attention toward metrics embedded in portfolio screening and valuation models, ESG ratings may overstate firms' comprehensive sustainability engagement relative to less monitored frameworks. For regulators and policymakers, evidence of governance-driven prioritization illuminates potential disclosure gaps and informs debates surrounding mandatory reporting harmonization. Recent regulatory initiatives in multiple jurisdictions seek to standardize sustainability disclosure and integrate SDG-aligned reporting into formal requirements (Christensen et al. 2021), yet their effectiveness depends critically on whether existing governance structures create systematic asymmetries across reporting dimensions. For academic researchers, examining the relationship between board-level governance and sustainability framework divergence offers insight into how institutional logics shape corporate attention allocation under conditions of competing evaluative criteria.

The puzzle is this: Existing theory predicts that specialized governance oversight should uniformly enhance sustainability performance, yet institutional logics theory suggests that firms facing multiple coexisting evaluative frameworks must allocate scarce attention selectively (Thornton et al. 2012; Ocasio 1997). Under constrained board capacity (Tuggle et al. 2010), improvements along one sustainability dimension may come at the expense of others. However, no empirical evidence exists on whether governance structures systematically tilt firms toward investor-salient metrics versus broader normative commitments—or whether such prioritization varies across institutional contexts where capital market pressures differ in intensity. A substantial literature documents positive associations between governance quality and aggregate ESG performance. Empirical evidence demonstrates that sustainability committees enhance environmental disclosure quality, greenhouse gas performance, and overall ESG ratings (Orazalin 2020; Morrison et al. 2025; Tumewang et al. 2025). Similarly, director-level expertise has been linked to stronger ESG outcomes and enhanced board capacity to oversee nonfinancial risks (Iliev and Roth 2023; Asad et al. 2025). This research establishes that specialized board structures improve monitoring capacity and formalize sustainability oversight.

However, this literature embeds an implicit assumption: that governance mechanisms uniformly enhance sustainability performance across all dimensions. By treating ESG ratings as comprehensive proxies for corporate sustainability, prior studies overlook the possibility that governance structures may differentially influence performance across coexisting evaluative regimes that vary in capital market salience, standardization, and external monitoring intensity. Recent evidence suggests that ESG ratings and SDG scores exhibit limited correlation and may capture distinct dimensions of sustainability (van Zanten 2025), yet no study has examined whether board-level governance systematically shapes firms' relative positioning across these frameworks. Furthermore, while institutional theory posits that firms operating under multiple coexisting logics face trade-offs in resource allocation and strategic emphasis (DiMaggio and Powell 1983), empirical evidence linking governance structures to such prioritization within the sustainability domain remains absent. We do not know whether CSR committees and financially oriented directors channel attention toward metrics with clearer capital market consequences, nor whether such channeling varies across institutional environments that differ in investor primacy and stakeholder orientation (Aguilera and Jackson 2010).

We address this gap by constructing a measure of divergence between investor-oriented ESG ratings and normative SDG alignment breadth, which we term the ESG-SDG wedge. This measure captures firms' relative positioning across sustainability frameworks after standardizing performance within industry-year peer groups. Drawing on the attention-based view of the firm (Ocasio 1997), we theorize that formal governance structures channel limited board attention toward particular evaluative criteria. Because CSR committees frequently engage with rating agencies, institutional investors, and disclosure frameworks emphasizing financially material sustainability issues, and because ESG ratings provide observable, standardized performance benchmarks increasingly integrated into compensation contracts and engagement dialogues (Flammer 2021; Dyck et al. 2019), such committees should disproportionately allocate monitoring intensity toward investor-salient ESG metrics relative to broader SDG commitments. Similarly, directors with industry and financial expertise possess enhanced capacity to evaluate sustainability initiatives through financial materiality lenses, potentially intensifying responsiveness to ESG dimensions with clearer capital market consequences (Güner et al. 2008; Minton et al. 2014). Under conditions of constrained governance attention and finite board agenda space, these mechanisms suggest that stronger governance oversight may paradoxically widen rather than narrow the gap between externally evaluated ESG performance and self-declared SDG engagement.

We test these predictions using panel data covering 4404 firm-year observations from 951 publicly listed firms across major US and European indices during 2018–2023. Our identification strategy proceeds in two stages to establish credibility. First, we estimate TWFE specifications exploiting within-firm variation in governance structures over time, thereby absorbing time-invariant firm heterogeneity and common macroeconomic shocks. This design compares firms to themselves before and after governance changes, net of industry-year trends. Second, we implement a staggered difference-in-differences design around CSR committee adoption events affecting 173 firms. We employ the interaction-weighted estimator of Sun and Abraham (2021) combined with inverse probability weighting (IPW) to address time-varying selection and treatment effect heterogeneity. This approach allows us to validate parallel trends, trace dynamic treatment effects, and conduct placebo tests with randomized treatments. To address residual endogeneity concerns, we conduct extensive robustness checks including alternative panel estimators, quantile

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regression across the wedge distribution, propensity score matching (PSM), falsification tests with placebo outcomes, and sensitivity analyses following Oster (2019) to quantify omitted variable bias thresholds.

Our findings provide robust evidence of governance-driven sustainability prioritization. Firms with CSR committees exhibit ESG-SDG wedges 0.21 standard deviations larger than comparable firms within the same industry-year peer group ($\beta = 0.210$, $p = 0.006$). Board industry-financial expertise demonstrates a positive association of 0.005 per percentage-point increase ($p = 0.006$). The staggered difference-in-differences analysis reveals that CSR committee adoption generates an immediate increase of 0.30 standard deviations (ATT = 0.297, $p < 0.001$), with pretreatment coefficients jointly insignificant (Wald $\chi^2 = 0.71$, $p = 0.703$), validating parallel trends. Governance effects operate asymmetrically: CSR committees associate 2.5 times more strongly with ESG ratings than with SDG alignment ($\beta_{ESG} = 0.345$ vs. $\beta_{SDG} = 0.136$). Consistent with institutional theory, associations concentrate among US firms ($\beta = 0.308$, $p = 0.001$) where investor logics dominate, while remaining insignificant among non-US firms ($\beta = 0.083$, $p = 0.494$) a 3.7-fold difference. Placebo tests confirm that randomly reassigned treatments produce null effects, and Oster bounds indicate that unobservables would need to be 24–113 times as influential as included controls to nullify observed associations.

This study makes three principal contributions. First, we introduce the ESG-SDG wedge as a novel construct capturing firms' relative positioning across coexisting sustainability regimes. Unlike prior measures that aggregate sustainability into unidimensional scores, the wedge isolates divergence between investor facing evaluation and normative institutional commitment, enabling empirical examination of prioritization dynamics that existing frameworks obscure. This advances attention-based theories of corporate governance (Ocasio 1997; Tuggle et al. 2010) by demonstrating that formalized board structures do not merely enhance monitoring intensity but systematically channel limited attention toward specific evaluative frameworks a finding with implications for multistakeholder governance design. Second, we provide the first systematic evidence that board-level governance structures are associated with differential emphasis across sustainability frameworks rather than uniform performance enhancement. This finding challenges the implicit assumption in governance literature that specialized oversight mechanisms improve all sustainability dimensions proportionally (Adams et al. 2010; Kolev et al. 2019) and suggests that boards operating under constrained attention systematically favor metrics with clearer capital market consequences. By decomposing sustainability into investor facing evaluation and normative institutional commitment, we reveal that governance structures are associated with differential emphasis across frameworks rather than proportionate improvement across all dimensions. Third, we demonstrate that governance–sustainability relationships exhibit institutional embeddedness, with associations concentrating in market-oriented contexts where ESG ratings are deeply integrated into investor mandates and compensation structures (Flammer 2021; Krueger et al. 2020). This heterogeneity advances institutional theory (Aguilera et al. 2008; Thornton et al. 2012) by identifying boundary conditions under which governance structures amplify versus attenuate performance heterogeneity across stakeholder dimensions effects concentrate where financial materiality logic dominates stakeholder-oriented pluralism (Jatmiko et al. 2025; Matten and Moon 2008).

The remainder of this paper proceeds as follows. Section 2 develops our theoretical framework and testable hypotheses. Section 3 describes our research design, including variable construction and empirical specifications. Section 4 presents baseline results and robustness checks. Section 5 reports causal evidence from the staggered difference-in-differences analysis. Section 6 concludes.

2 | Literature Review and Hypothesis Development

2.1 | Theoretical Background

Firms operate within institutional environments characterized by multiple coexisting evaluative frameworks that define legitimate and desirable organizational behavior. Institutional logics theory posits that organizations face simultaneous exposure to distinct belief systems, performance criteria, and sources of legitimacy that shape strategic decision-making and resource allocation (DiMaggio and Powell 1983; Thornton et al. 2012). Within the corporate sustainability domain, these logics increasingly manifest through competing performance frameworks that differ in audience, evaluative emphasis, and accountability structures.

Recent evidence reveals substantial divergence across ESG rating providers, challenging the implicit assumption that ESG ratings comprehensively capture sustainability performance (Berg et al. 2022). However, this work primarily documents measurement disagreement among raters rather than examining whether ESG ratings as a construct differ systematically from broader normative sustainability commitments. Prior research does not distinguish between investor-oriented ESG evaluation and broader frameworks such as SDG alignment, thereby overlooking the institutional complexity that arises when distinct sustainability regimes rely on different evaluative metrics and address separate stakeholder audiences. Emerging empirical evidence suggests that ESG ratings and SDG scores exhibit limited correlation and may capture distinct dimensions of corporate sustainability (van Zanten 2025). Furthermore, corporate SDG reporting exhibits systematic selectivity, with firms disproportionately emphasizing goals aligned with their existing business operations and stakeholder visibility rather than pursuing comprehensive development alignment (Thammaraksa et al. 2024), while competing institutional logics shape how firms prioritize market-oriented versus community-oriented sustainability practices (Jatmiko et al. 2025). Under such conditions, firms must determine how to allocate managerial attention and governance oversight across competing sustainability frameworks.

Emerging scholarship on board-level committees provides a robust microfoundation for our theoretical stance. Both Li et al. (2023) and Hussain et al. (2018) demonstrate that governance architectures exert domain-specific influences, producing

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uneven outcomes across distinct nonfinancial pillars even within traditional ESG paradigms. Capturing this granularity, Nicolò et al. (2026) reveal that driving substantive SDG transparency necessitates specialized, high-power structural configurations—specifically, those embedding the CEO or board chairperson directly into the committee matrix. Taken together, these empirical patterns provide microfoundational support for the attention-based theoretical argument advanced here: The effective redirection of corporate oversight toward normative developmental commitments requires governance structures that concentrate decision-making authority specifically around those commitments.

Two prominent logics coexist in the contemporary corporate sustainability domain. The first reflects a financial materiality logic embedded in capital markets. Under this logic, sustainability performance is evaluated according to its relevance for risk mitigation, long-term profitability, and shareholder value creation. ESG ratings, produced by commercial data providers such as Refinitiv, MSCI, and Sustainalytics, operationalize this logic by aggregating firm-level environmental, social, and governance indicators into standardized composite scores. These ratings function as informational intermediaries that influence investor perception, institutional ownership decisions, cost of capital, and firm valuation (Chatterji et al. 2016; El Ghoul et al. 2011; Eccles et al. 2014; Krueger et al. 2020). Yet, despite their widespread adoption, ESG ratings have been characterized as a "black box" explored predominantly from a monetary perspective, with systematic divergences across methodological constructs, geographic contexts, and evaluative criteria that reveal the structurally embedded financial materiality logic underpinning their architecture (Lucarelli and Severini 2024). Importantly, ESG methodologies frequently incorporate assessments of financial materiality, thereby reinforcing the capital market salience of sustainability dimensions deemed economically consequential (Khan et al. 2016; Berg et al. 2022).

The second logic reflects a broader normative developmental framework embodied in the United Nations Sustainable Development Goals. This framework emphasizes alignment with globally diffused societal objectives that extend beyond immediate financial considerations (Meyer and Rowan 1977). SDG alignment captures the breadth with which firms publicly declare engagement across the 17 development goals, encompassing social and environmental priorities that vary in their direct financial materiality. Unlike ESG ratings, which are externally evaluated using standardized methodologies, SDG alignment is typically self-declared through corporate disclosures and reflects the scope of stated commitment across multiple development dimensions (Rosati and Faria 2019; Bose et al. 2024). Consequently, SDG reporting reflects responsiveness to transnational normative expectations and stakeholder-oriented development frameworks rather than direct capital market evaluation.

These two sustainability regimes differ not only in measurement approach but also in intended audience, incentive structure, and evaluative emphasis. ESG ratings are directly embedded in capital market mechanisms and are frequently incorporated into portfolio allocation strategies, benchmarking systems, engagement practices, and executive compensation contracts (Dyck et al. 2019; Flammer 2021). Empirical evidence documents the increasing prevalence of integrating ESG and CSR criteria into executive compensation over time, with such integration leading to enhanced long-term orientation and stakeholder engagement (Flammer et al. 2019). At the broader institutional level, recent rhetorical analysis of SDG discourse within accounting and business research confirms that capital market mechanisms—including governance structures, investor mandates, and risk assessment frameworks—systematically shape corporate engagement with the SDGs, reproducing financial logics that reframe sustainable development as a market signal and prioritize legitimacy within investor-salient frameworks over substantive developmental commitment (Panfilo et al. 2026). In contrast, SDG alignment is primarily associated with legitimacy-seeking behavior vis-à-vis multilateral institutions, civil society actors, and broader stakeholder communities (Rosati and Faria 2019; Suchman 1995). While the two frameworks overlap in substantive content, they differ substantially in the intensity with which capital markets monitor and reward performance, thereby creating institutional complexity in how firms navigate competing sustainability frameworks.

The coexistence of these logics generates governance challenges in allocating attention and oversight. The attention-based view of the firm suggests that organizational outcomes depend critically on how decision-makers allocate limited attention across competing issues and performance dimensions (Ocasio 1997). Because governance capacity and board agenda space are inherently finite, heightened monitoring of one sustainability regime necessarily reduces the marginal attention available for others (Tuggle et al. 2010). Despite this recognition, prior research has not constructed a relative divergence measure between investor-facing ESG ratings and normative SDG commitment breadth. We conceptualize divergence between ESG ratings and SDG alignment as the *ESG–SDG wedge*, capturing firms' relative positioning across these coexisting sustainability regimes. This construct reflects governance-driven prioritization of investor-salient metrics over broader normative commitments under conditions of constrained attention. Although emerging evidence documents limited correlation between ESG ratings and SDG scores (van Zanten 2025), research has not examined whether governance structures systematically shape this divergence through attention allocation mechanisms.

Boards of directors, as apex governance bodies, play a central role in structuring this allocation. Through formal committee structures, agenda-setting processes, and director expertise, boards influence which sustainability dimensions receive monitoring intensity, strategic emphasis, and resource commitment. Recent evidence demonstrates that board sustainability committees significantly enhance greenhouse gas emissions disclosure and performance through focused attention allocation mechanisms (Morrison et al. 2025; Orazalin 2020), yet whether such committees differentially affect investor-oriented versus normative sustainability dimensions remains unexplored. The ESG–SDG wedge therefore provides an empirical lens through which to examine how governance structures differentially prioritize coexisting institutional logics without presuming symbolic behavior or misrepresentation. Rather, it captures differential emphasis across sustainability regimes that vary in capital market salience and monitoring intensity.

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2.2 | Hypothesis Development

2.2.1 | CSR Committees and ESG–SDG Wedge

The establishment of a dedicated board-level CSR or sustainability committee represents a formal governance mechanism through which firms institutionalize oversight of nonfinancial performance (e.g., Adams et al. 2010; Hussain, Rigoni, and Cavezzali 2018). Empirical evidence from both developed and emerging markets confirms that such committees are positively associated with enhanced ESG ratings and disclosure quality (Orazalin 2020; Tumewang et al. 2025). More broadly, specialized board committees enhance monitoring capacity by concentrating domain-specific expertise, formalizing information channels, and structuring board agendas around particular strategic issues (Kolev et al. 2019; Peters and Romi 2015). Within the sustainability domain, CSR committees provide governance infrastructure for ESG-related strategic decisions, performance monitoring, and disclosure oversight.

However, existing studies implicitly assume that governance mechanisms uniformly enhance sustainability performance across all dimensions. Prior research documents positive associations between CSR committees and environmental, social, and governance performance (Orazalin 2020; Tumewang et al. 2025), but treats ESG ratings as comprehensive indicators of sustainability without examining whether governance structures differentially influence distinct sustainability regimes. This assumption is theoretically inconsistent with attention-based theories of governance, which predict selective attention allocation under resource constraints. In contexts characterized by institutional plurality and constrained governance attention, improvements along one sustainability regime may not translate proportionally across others. Yet, no study has examined whether CSR committees systematically shape firms' relative prioritization between financially material ESG performance and broader SDG commitment breadth.

Board-level sustainability committees do not function as uniform governance mechanisms. Existing literature reveals considerable cross-sectional variation in their compositional traits, structural authority, and stakeholder orientations, which ultimately dictate the specific sustainability mandates that boards prioritize or marginalize. Investigating Australian equities over a 15-year panel, Li et al. (2023) construct a comprehensive 12-indicator effectiveness index—capturing member composition, formal authority, human capital endowments (including cross-committee overlaps, gender diversity, and educational background), and procedural diligence. They establish a robust positive link between committee effectiveness and environmental outcomes. Importantly, this relationship is propelled by structural authority, composition, and resource allocation, rather than nominal activity markers such as meeting frequency. Such evidence implies that the effective channeling of governance attention requires substantive configuration quality rather than procedural activity alone.

Through the lens of the Global Reporting Initiative's triple bottom line framework, Hussain et al. (2018) document a congruent pattern among US firms: Dedicated committees elevate social and environmental performance trajectories but exert no significant influence on economic outcomes. Acknowledging that governance architectures may only align with targeted sustainability dimensions, the authors stress the "necessity to assess simultaneously the triple bottom line performance of the CG aspect under examination." This methodological directive is precisely what our proposed ESG–SDG wedge construct seeks to operationalize.

Further challenging the assumption of uniform efficacy, Abdullah et al. (2024) differentiate between focused and generalized committee structures within FTSE 150 constituents. They observe that neither archetype systematically enhances aggregate ESG scores. In fact, committee meeting frequency corresponds negatively with environmental performance while incrementally improving governance metrics. Viewing this divergence through a legitimacy theory framework, the authors conclude that firms frequently deploy these committees to signal accountability and manage institutional reputation rather than to deliver substantive ESG improvements across the full performance spectrum. Examining transparency outcomes, Nicolo' and Andrades-Peña (2024) find that committee presence significantly enhances aggregate ESG disclosure among state-owned enterprises (SOEs). Yet, as hybrid entities governed by dual public-interest and financial mandates, SOEs face distinct institutional pressures that encourage balanced sustainability engagement. Conversely, within the private, capital market–oriented contexts analyzed in the present study, dominant financial materiality logics are more likely to reproduce the selective governance attention dynamics we theorize. Most critically for our framework, Nicolò et al. (2026) provide what is, to the best of the authors' knowledge, the first systematic empirical examination of committee attributes and voluntary SDG reporting. Their findings demonstrate that only committee structural power—specifically, the integration of the CEO or board chair—and gender diversity act as significant catalysts for voluntary SDG disclosure. Conventional proxies such as independence, size, and meeting frequency yield negligible effects. Although their panel is restricted to the concentrated ownership and civil-law setting of Italy, the core theoretical insight remains instructive beyond that particular institutional setting: Integrating normative SDG commitments requires high-authority structures capable of elevating sustainability to the strategic apex, a nuance entirely obscured by binary indicators of modal committee adoption.

Across these studies, a consistent picture emerges: Sustainability committees are heterogeneous in governance focus and demonstrably uneven in their domain-specific effects. Because our baseline governance proxy isolates formal structural presence rather than granular compositional quality, it fundamentally captures the prevailing modal configuration adopted by large, listed equities. Such standard committees are typically calibrated to address investor-facing ESG frameworks and rating criteria, generally lacking the high-power, gender-diverse characteristics that Nicolò et al. (2026) identify as essential for authentic SDG integration. This interpretive stance aligns firmly with the empirical evidence of Abdullah et al. (2024), which suggests that modal committees predominantly serve reputational and legitimacy-seeking

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functions. By generating observable compliance signals for external stakeholders rather than embedding holistic ESG improvements, these structural adoptions reflect the precise institutional pressures and selective monitoring dynamics hypothesized to drive the ESG–SDG wedge.

Beyond enhancing monitoring capacity, committee structures shape how boards allocate attention (Ocasio 1997; Joseph and Ocasio 2012). This structural specialization does not merely increase overall sustainability oversight; it directs monitoring intensity toward particular evaluative frameworks. According to the attention-based view, organizational structures channel decision-makers' focus toward specific performance metrics and evaluative criteria (Ocasio 1997). CSR committees typically interact with ESG rating agencies, institutional investors, and disclosure frameworks that emphasize financially material sustainability issues. Through repeated engagement with these evaluative mechanisms, committees may develop routines and cognitive frames oriented toward improving externally assessed ESG performance.

The redirection of board-level attention toward investor-salient ESG criteria operates through three mutually reinforcing pathways. Initially, dedicated CSR committees formalize recurring interactions with prominent disclosure regimes—such as the GRI, SASB, and TCFD—alongside institutional investors and rating agencies, all of which inherently prioritize financially material sustainability dimensions. Sustained engagement with these external evaluators reinforces specific cognitive frameworks and procedural habits directed at maximizing ESG scores. Because rating agencies supply structured, comparative feedback, they strongly shape the flow of board-level information and the curation of meeting priorities (Ocasio 1997; Joseph and Ocasio 2012). The committee's mandate to supervise reporting quality and navigate rating processes further entrenches these routines. Ultimately, ESG scores act as critical information nodes that influence capital allocation and institutional investment choices, thereby magnifying the strategic imperative of ESG-focused oversight (Chatterji et al. 2016; El Ghoul et al. 2011).

A second channel operates via structural accountability. The deliberate integration of ESG targets into proxy voting protocols, continuous investor dialogues, and executive remuneration (Flammer et al. 2019; Dyck et al. 2019; Maas 2018) enforces an attention allocation independent of the aforementioned cognitive shifts. This sequence—spanning committee discussions, managerial pay structures, and subsequent external scoring—forges an institutional governance loop that inherently privileges metrics valued by capital markets. Crucially, the Sustainable Development Goals (SDGs) lack a comparable architecture, remaining largely detached from similar incentive and oversight mechanisms. The third pathway involves the highly standardized, industry-relative nature of ESG scoring, which allows directors to gauge peer-to-peer competitive positioning and pinpoint distinct areas for measurable improvement. Such visible benchmarking heightens the prominence of these specific metrics during board deliberations (Chatterji et al. 2016). Corroborating this dynamic, survey data indicate that corporate directors anticipate intensifying institutional pressure surrounding ESG, prompting them to consolidate oversight and allocate expanding agenda space to investor-aligned performance outcomes (Diligent Institute and Spencer Stuart 2024).

SDG alignment contrasts sharply with this highly structured ecosystem. It relies on self-reported, binary indicators scattered across 17 broad objectives with ambiguous financial relevance. The normative framework lacks a comparable benchmarking apparatus (Van der Waal and Thijssens 2020; Bofinger et al. 2022), external auditing, or deep integration into executive pay structures. Given the inherent limits of board capacity and agenda bandwidth (Tuggle et al. 2010; Simon 2013), the structural imbalance between these two paradigms exerts strong pressure on governance architectures. Committees are systematically driven to concentrate on sustainability dimensions that guarantee external validation, permit peer comparison, and directly influence capital market positioning. These mechanisms operate concretely through agenda-setting processes within board and CSR committee meetings, where ESG rating feedback, benchmarking reports, and investor-facing metrics systematically structure which sustainability issues receive deliberative attention, follow-up oversight, and resource allocation.

A theoretically important qualification concerns whether the predicted relationship holds under conditions of symbolic rather than substantive committee adoption—a distinction whose measurement implications are addressed in detail in Section 3.1.2. Prior research establishes that sustainability committees vary considerably in their compositional depth, executive authority, and substantive effectiveness, and that some are established primarily to project institutional legitimacy toward external stakeholders without fundamentally reconfiguring internal attention allocation (Westphal and Zajac 1998; Boxenbaum and Jonsson 2017; Abdullah et al. 2024; Li et al. 2023). Critically, however, both governance trajectories generate the same directional prediction for the ESG–SDG wedge. Under substantive adoption, board attention gravitates toward investor-salient ESG criteria through the deliberative routines, compensation linkages, and competitive benchmarking mechanisms described above. Under symbolic adoption, committees generate observable ESG engagement signals directed at capital market audiences—amplifying disclosure visibility and rating agency cooperation—that equally elevate the structural prominence of externally evaluated ESG metrics over the more opaque normative SDG commitments. In both cases, the asymmetric institutional infrastructure surrounding ESG evaluation—comprising rating agencies, proxy advisors, compensation consultants, and standardized benchmarking providers—channels whatever governance attention the committee generates predominantly toward investor-salient dimensions (Ocasio 1997). This structural channeling generates a systematically larger ESG–SDG wedge relative to firms without formal committee structures. Symbolic adoption therefore does not attenuate the predicted wedge effect; it merely operates through a distinct but directionally equivalent channel, one ultimately sustained by the same capital market salience logic that governs substantive committee deliberations.

SDG alignment reflects a broader normative commitment across multiple development goals, some of which exhibit weaker direct linkages to capital market evaluation and investor scrutiny (Van der Waal and Thijssens 2020; Tsalis et al. 2020). Comprehensive

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SDG engagement requires distributed governance attention across diverse objectives that vary substantially in financial materiality and external monitoring intensity. Under constrained attention and finite board agenda space (Tuggle et al. 2010), firms may allocate disproportionate monitoring intensity to sustainability dimensions that are externally benchmarked, standardized, and directly linked to capital market consequences. By contrast, firms without CSR committees should exhibit more balanced attention allocation across ESG and SDG dimensions, resulting in a smaller ESG–SDG wedge. Accordingly, if CSR committees disproportionately channel governance attention toward financially material and investor-salient sustainability metrics, firms with such committees should exhibit relatively stronger ESG ratings compared to their SDG alignment breadth within industry-year peer groups.

This pattern of selective committee attention offers a concrete microfoundation for our attention-based theorization. The institutional apparatus governing ESG assessments—comprising rating agencies, proxy advisors, benchmarking networks, and compensation consultants—functions as a decisive agenda-setting force (Christensen et al. 2022; Berg et al. 2022). Because formal governance architectures operate under conditions of bounded attentional capacity (Ocasio 1997), boards heavily rely on this external infrastructure to filter and rank their oversight priorities. This reliance systematically skews corporate monitoring toward nonfinancial metrics that maximize capital market salience, inherently crowding out deeper normative commitments to broad-based sustainable development.

Hypothesis 1. *The presence of a board-level CSR committee is positively associated with the ESG–SDG wedge, such that firms with CSR committees exhibit higher standardized ESG ratings relative to their standardized SDG alignment breadth within industry-year peer groups.*

2.2.2 | Board Industry-Financial Expertise and ESG–SDG

Director-level industry and financial expertise represents a distinct governance capacity that influences how boards evaluate strategic alternatives and assess performance implications (Giannetti et al. 2015; Masulis et al. 2012; Minton et al. 2014). Directors with strong financial and industry backgrounds possess enhanced ability to assess risk-return tradeoffs, interpret complex information, and evaluate the economic consequences of corporate policies (Güner et al. 2008). Such expertise strengthens boards' analytical capacity to connect strategic initiatives with financial outcomes.

Prior research documents that director expertise is positively associated with higher ESG ratings (Iliev and Roth 2023). Complementing this, recent evidence demonstrates that the dynamics of director appointments fundamentally condition ESG outcomes: Maneenop et al. (2024) find that co-opted directors whose appointment reflects executive managerial preferences rather than independent shareholder oversight are systematically associated with inferior ESG performance through managerial myopia mechanisms, suggesting that the appointment context of board members shapes the quality of governance attention devoted to long-horizon sustainability commitments. However, existing studies implicitly assume that enhanced expertise uniformly improves sustainability performance across all dimensions. By treating ESG ratings as comprehensive indicators of sustainability, prior work does not examine whether financially oriented expertise differentially shapes performance across coexisting sustainability regimes. In contexts characterized by institutional plurality—where firms navigate investor-oriented ESG evaluation alongside broader normative commitments such as SDG alignment expertise may influence not only the level of sustainability engagement but also its strategic emphasis. Yet, no study has examined whether board industry and financial expertise systematically shapes firms' relative prioritization between financially material ESG performance and broader SDG commitment breadth.

Within the sustainability domain, financially and industry-experienced directors may heighten sensitivity to the capital market implications of ESG performance. Empirical evidence indicates that higher ESG ratings are associated with lower cost of capital (El Ghoul et al. 2011), improved access to financing (Cheng et al. 2014), and positive valuation effects (Eccles et al. 2014). Directors equipped with financial analytical skills are better positioned to evaluate these linkages and to structure sustainability strategy around financially material issues emphasized by rating agencies (Khan et al. 2016). Through this evaluative lens, ESG performance becomes embedded within broader financial performance assessment frameworks. Recent empirical evidence demonstrates that board sustainability expertise significantly enhances corporate sustainability performance, with firms gaining such expertise showing 7.1% improvements in overall ESG metrics (Iliev and Roth 2023). This heightened board capacity to evaluate sustainability-finance linkages manifests in positive associations between board environmental expertise and substantive corporate environmental actions (Asad et al. 2025).

Importantly, expertise does not merely enhance oversight capacity; it shapes the criteria through which strategic initiatives are evaluated (Ocasio 1997). Directors with financial and industry backgrounds may assign greater weight to sustainability dimensions with clearer, quantifiable economic consequences. Because ESG ratings are externally benchmarked, standardized, and increasingly integrated into investor screening and engagement processes, they provide salient performance signals that align closely with financially oriented evaluative frameworks. By contrast,the financial returns to broad SDG alignment are less directly observable and less systematically embedded in capital market benchmarking mechanisms (Bofinger et al. 2022; Schramade 2017). While SDG reporting may enhance legitimacy and stakeholder relationships (Rosati and Faria 2019; Bebbington and Unerman 2018), its evaluation remains less standardized, less frequently incorporated into investor mandates (Berg et al. 2022), and less directly tied to compensation or valuation models. Comprehensive SDG engagement often requires distributed governance attention across diverse development goals with heterogeneous and sometimes diffuse financial implications.

Under conditions of constrained governance attention and bounded rationality (Simon 2013; Ocasio 1997; Tuggle et al.

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2010), boards with greater financial and industry expertise may therefore prioritize sustainability initiatives that offer clearer capital market signals and measurable performance consequences. Such prioritization would manifest as relatively stronger ESG ratings compared to SDG alignment breadth within peer groups.

Hypothesis 2. *The percentage of board members with industry-specific and financial expertise is positively associated with the ESG–SDG wedge, such that firms with higher proportions of financially and industry-experienced directors exhibit higher standardized ESG ratings relative to their standardized SDG alignment breadth within industry-year peer groups.*

2.2.3 | Institutional Context as Moderator: US vs. Europe Firms

The relative dominance of financial materiality logic varies across national institutional contexts (Thornton et al. 2012). Comparative governance research highlights that Anglo-American market systems place stronger emphasis on shareholder value maximization and capital market discipline, whereas stakeholder-oriented systems, such as many European contexts, emphasize multistakeholder engagement and regulatory compliance (Aguilera and Jackson 2010; Liang and Renneboog 2017; Aguilera et al. 2008). Cross-country evidence further confirms that the relationship between board governance and sustainability outcomes is conditioned by national institutional environments, with country-level governance quality shaping the extent to which board characteristics translate into environmental performance improvements (Orazalin and Mahmood 2021). This institutional variation shapes the relative salience of ESG ratings versus broader normative sustainability commitments.

While prior studies emphasize that ESG outcomes are shaped by institutional environments, with legal origins, political institutions, and governance traditions serving as key determinants of corporate social responsibility (Liang and Renneboog 2017), little evidence exists on whether governance-driven sustainability prioritization differs systematically across countries. Comparative institutional research suggests that market logic dominates stakeholder logic more strongly in Anglo-American contexts (Jatmiko et al. 2025), yet the interaction between board-level governance structures and country-level institutional pressures remains underexplored in the sustainability literature. Recent cross-country evidence demonstrates that institutional characteristics significantly affect ESG rating quality, with systematic variation in the credibility and substantiveness of ESG disclosures across institutional contexts (Christensen et al. 2022). US capital markets exhibit particularly strong integration of ESG ratings into investment processes and engagement practices (Dyck et al. 2019; Krueger et al. 2020). ESG metrics are frequently embedded in portfolio allocation decisions, proxy voting, and executive compensation structures (Flammer 2021). These mechanisms amplify the capital market salience of ESG ratings relative to broader normative sustainability frameworks and increase the incentives for boards to prioritize investor-oriented ESG performance.

In contrast, many European jurisdictions operate within stakeholder-oriented governance systems and increasingly comprehensive regulatory frameworks for sustainability reporting. Mandatory disclosure regimes, such as the EU Corporate Sustainability Reporting Directive (Christensen et al. 2021), and multistakeholder governance traditions may reduce the discretion firms have to selectively emphasize investor-salient dimensions, thereby weakening the link between governance structures and the ESG–SDG wedge. Taken together, if governance structures channel attention and shape prioritization toward financially material sustainability metrics, the effect is likely to be context-dependent (Ocasio 1997; Matten and Moon 2008). Boards operating in US market environments, where investor-oriented logics are dominant, are expected to generate a stronger ESG–SDG wedge relative to boards in non-US contexts.

Hypothesis 3. *The positive associations between governance structures (CSR committees and board industry-financial expertise) and the ESG–SDG wedge are stronger for US-domiciled firms than for Europe firms.*

3 | Research Design

3.1 | Variable Definition and Measurement

3.1.1 | ESG–SDG Wedge (ESG-Gap)

Our primary dependent variable captures the divergence between two distinct sustainability dimensions: externally evaluated ESG performance and voluntary alignment with the United Nations Sustainable Development Goals (SDGs). We refer to this measure as the *ESG–SDG wedge* (ESG-Gap).

ESG Ratings (Investor-Oriented Sustainability Evaluation). We measure ESG performance using the Refinitiv ESG Score. Refinitiv is one of the largest global ESG data providers and is widely used in academic research examining sustainability, capital markets, and corporate governance (e.g., de Villiers et al. 2022; Berg et al. 2022; Sahin et al. 2023; Chatterji et al. 2016). The ESG score aggregates a large set of comparable underlying environmental, social, and governance indicators drawn from Refinitiv's broader ESG database into a composite rating scaled from 0 to 100, with industry-adjusted weights reflecting financial materiality considerations.[1] Prior research shows that ESG ratings function as informational intermediaries that influence investor perception, capital allocation, and firm valuation (Khan et al. 2016; El Ghoul et al. 2011; Eccles et al. 2014; Berg et al. 2022). Because ESG ratings are constructed relative to industry peers and exhibit cross-sector variation, we standardize ESG scores within industry-year cells using z-scores:

$$Z_{ist}^{ESG} = \frac{ESG_{ist} - \mu_{st}^{ESG}}{\sigma_{st}^{ESG}} \quad (1)$$

where:

- i indexes the individual firm, s denotes the industry sector, and t represents the year.

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- ESG_{ist} is the raw Refinitiv ESG Score for firm i in industry s at year t.
- μ_{st}^{ESG} is the mean ESG score for all firms in industry s in year t.
- σ_{st}^{ESG} is the standard deviation of ESG scores for industry s in year t.

This transformation isolates within-industry-relative positioning and mitigates comparability concerns across sectors (Khan et al. 2016; Berg et al. 2022).

SDG Alignment (Normative Institutional Commitment). Our second component captures firms' voluntary alignment with the United Nations Sustainable Development Goals. Refinitiv provides 17 binary indicators corresponding to each SDG (e.g., SDG 1: No Poverty; SDG 2: Zero Hunger), reflecting whether a firm publicly declares support for each goal in corporate disclosures and related communications (Refinitiv 2020; Bose et al. 2024). These indicators capture the breadth of declared alignment with the UN's transnational sustainability framework rather than the depth of operational impact. Prior research shows that SDG reporting reflects responsiveness to institutional and normative pressures at the country and capital market levels (Rosati and Faria 2019; García-Sánchez et al. 2020; Meyer and Rowan 1977).

To ensure comparability with the scale of ESG ratings, we first calculate an SDG Commitment Score by aggregating the count of supported SDGs and converting it to a percentage scale (0–100):

$$SDG_{ist}^{Score} = \frac{\sum_{k=1}^{17} \mathbb{I}(SDG_{k,ist})}{17} \times 100 \quad (2)$$

where $\mathbb{I}(\cdot)$ is an indicator function equal to 1 if the firm supports goal k. We then standardize this percentage score within industry-year cells:

$$Z_{ist}^{SDG} = \frac{SDG_{ist}^{Score} - \mu_{st}^{SDG}}{\sigma_{st}^{SDG}} \quad (3)$$

where:

- SDG_{ist}^{Score} is the percentage adherence score (0–100) for firm i in industry s at year t.
- μ_{st}^{SDG} is the mean SDG score for all firms in industry s in year t.
- σ_{st}^{SDG} is the standard deviation of SDG scores for industry s in year t.

This transformation captures firms' relative positioning in declared SDG breadth among industry peers in a given year.

Construction of the ESG–SDG Wedge. Our dependent variable is defined as follows:

$$Gap_{ist} = Z_{ist}^{ESG} - Z_{ist}^{SDG} \quad (4)$$

This measure captures the relative difference between a firm's standardized ESG rating and its standardized SDG alignment within the same industry-year cell. Positive values indicate that the firm's investor orientated ESG performance exceeds its relative breadth of SDG commitment within its peer group. By construction, the wedge has a mean of approximately zero within each industry-year cell and reflects relative positioning rather than absolute sustainability performance levels. Existing research characterizes ESG ratings as investor-oriented evaluation mechanisms designed to inform capital allocation decisions and risk assessments (Khan et al. 2016; Berg et al. 2022; Chatterji et al. 2016), whereas SDG disclosure reflects firms' responsiveness to globally diffused normative frameworks and institutional expectations surrounding the UN 2030 Agenda (Rosati and Faria 2019; García-Sánchez et al. 2020; Galeazzo et al. 2024; Bose et al. 2024). The wedge, therefore, captures divergence across these two sustainability dimensions without imposing assumptions about underlying managerial intent or the direction of causality between ESG performance and SDG alignment (DiMaggio and Powell 1983).

3.1.2 | Corporate Governance Variables

Our primary independent variables capture formal board-level sustainability oversight through the presence of a dedicated CSR or sustainability committee and through director-level expertise.

CSR Committee. It is a binary indicator equal to one if the firm maintains a board level or senior management committee responsible for corporate social responsibility or sustainability strategy and zero otherwise (Refinitiv data item: "Does the company have a CSR committee or team?").

The establishment of specialized board committees represents a formal governance mechanism through which firms institutionalize oversight of nonfinancial performance (Orazalin 2020; Hussain et al. 2018). Prior research shows that CSR committees enhance board monitoring capacity by formalizing sustainability governance, improving information flows, and strengthening oversight of ESG-related risks and triple bottom line performance (Peters and Romi 2015; Adams et al. 2010; Hussain et al. 2018; Liao et al. 2015). Recent evidence further documents that sustainability committees contribute to environmental disclosure quality and strategic sustainability integration (Driss et al. 2024; Morrison et al. 2025; Orazalin 2020). At the same time, institutional research highlights that formal governance structures may vary in their degree of substantive engagement and can, in some contexts, function as symbolic responses to external pressures rather than mechanisms of genuine organizational change (Westphal and Zajac 1998; Boxenbaum and Jonsson 2017). Accordingly, the presence of a CSR committee captures the formal institutionalization of sustainability oversight at the board level without imposing assumptions regarding its effectiveness or the depth of board engagement with sustainability issues.

An important theoretical boundary condition involves the long-standing dichotomy between substantive implementation and symbolic compliance (Westphal and Zajac 1998; Boxenbaum and Jonsson 2017). When boards inaugurate sustainability

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committees primarily to project institutional legitimacy toward external stakeholders—bypassing any fundamental reconfiguration of internal resource or attention allocation—these entities function as symbolic structures rather than as fully operational governance mechanisms (Abdullah et al. 2024). Because our baseline metric captures formal committee existence rather than underlying compositional depth—namely, the specialized expertise, executive authority, and human capital endowments that Li et al. (2023) establish as drivers of genuine environmental progress—the variable captures a mixture of substantive oversight and symbolic adoption. This empirical reality, however, does not confound our underlying hypotheses, given that both trajectories yield identical directional predictions for the ESG–SDG wedge. If committee adoption is substantive, board attention naturally gravitates toward investor-salient ESG criteria through the deliberative habits, remuneration links, and competitive benchmarking processes previously outlined. If adoption is symbolic, the committee instead manufactures observable engagement signals targeted at capital market audiences. By amplifying ESG reporting visibility and visibly cooperating with rating agencies, boards placate key investor constituencies, a maneuver that similarly elevates the structural prominence of externally evaluated ESG scores over the more opaque SDG commitments. Extending the evidence that governance architectures exert highly selective, domain-specific impacts across varying levels of committee effectiveness (Hussain et al. 2018; Li et al. 2023), it becomes clear that both substantive restructuring and symbolic signaling generate an asymmetric ESG versus SDG alignment through distinct yet parallel channels. Because our ESG–SDG wedge isolates the relative divergence between evaluative paradigms rather than absolute sustainability achievements, the metric inherently accommodates either governance pathway, reinforcing our capacity to detect reallocations of board-level attention. While our empirical design does not allow us to directly distinguish between symbolic and substantive committee functioning, future research exploiting detailed data on committee composition, activity intensity, and internal processes could further disentangle these mechanisms. The theoretical implications of this distinction for Hypothesis 1 are addressed in Section 2.2.1.

Board-Specific Skills. To complement this structural measure, we also examine director level skills and expertise, which are measured as the percentage of board members possessing industry-specific expertise or strong financial backgrounds (Refinitiv data item: "Board Specific Skills, Percent"). This continuous measure ranges from 0 to 100.

This variable captures the technical and professional capacity of the board to evaluate complex strategic and financial decisions, including those related to sustainability integration. Prior research demonstrates that director expertise enhances board effectiveness in monitoring complex and nonroutine corporate activities (Adams et al. 2010; Giannetti et al. 2015; Masulis et al. 2012). Within the sustainability domain, evidence indicates that director-level expertise and exposure to sustainability related institutional reforms are associated with stronger ESG performance and improved oversight of nonfinancial risks (Iliev and Roth 2023; Asad et al. 2025). Recent cross-country studies further confirm that directors with relevant technical and international backgrounds contribute to higher corporate ESG ratings, particularly when combined with board independence and structured oversight mechanisms (Agnese et al. 2024; Ding et al. 2024). Accordingly, SKILLS reflects the board's informational and evaluative capacity to engage with ESG-related reporting and strategic sustainability decisions, beyond the mere existence of formal governance structures.

3.1.3 | Control Variables

We include a set of firm-level financial and governance characteristics that prior research identifies as correlates of ESG performance, sustainability disclosure intensity, and corporate monitoring structures. These variables are included to mitigate omitted variable bias in both the association and causal specifications.

Firm-Level Controls. Firm Size is measured as the natural logarithm of total assets (Refinitiv: Total Assets). Larger firms face greater public visibility, regulatory exposure, and stakeholder scrutiny, and consistently exhibit higher levels of sustainability disclosure and ESG performance (Dhaliwal et al. 2011; El Ghoul et al. 2011; Eccles et al. 2014). Size also captures organizational capacity to implement formal governance structures, including CSR committees and specialized sustainability oversight mechanisms.

Return on Assets is measured as operating income divided by total assets. Profitability proxies for financial slack and internal resource availability, which have been linked to corporate sustainability engagement and disclosure (Waddock and Graves 1997; Cheng et al. 2014). Financial performance may also influence the likelihood of governance reforms and the intensity of ESG investment decisions.

Leverage is measured as total debt divided by total assets (Refinitiv: Debt to Assets). Capital structure affects monitoring intensity from creditors and external stakeholders and has been associated with sustainability disclosure and ESG performance (Cheng et al. 2014; El Ghoul et al. 2011). Highly leveraged firms may face stronger capital market pressures that influence both governance design choices and ESG reporting strategies.

Governance Controls. Executive Gender Diversity is measured as the percentage of female executive officers (Refinitiv: Executive Members Gender Diversity, Percent). Prior literature links executive gender diversity to stakeholder-oriented decision-making and enhanced ESG engagement (Bear et al. 2010; García-Sánchez et al. 2020).

Board Gender Diversity is measured as the percentage of female directors on the board (Refinitiv: Board Structure/Board Diversity). Evidence suggests that board gender diversity is associated with stronger monitoring capacity, governance quality, and ESG performance (Hussain et al. 2018; Velte 2024). Recent cross-country evidence further indicates that gender-diverse boards enhance environmental performance outcomes through improved oversight mechanisms in specific institutional contexts (Orazalin et al. 2025).

Board Policy Structures is a binary indicator equal to one if the firm has formalized board governance policies (Refinitiv: Board

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Functions/Policy), and zero otherwise. Formal governance frameworks are associated with improved monitoring effectiveness and reporting quality (Adams et al. 2010; Coles et al. 2008), which may also influence sustainability disclosure practices and the credibility of nonfinancial reporting.

Board Experience is measured as the average number of years that board members have served on the focal firm's board (Refinitiv: Board Structure/Board Experience). Longer-tenured directors accumulate firm-specific knowledge and governance expertise, which may enhance monitoring effectiveness (Vafeas 2003; Beasley 1996). However, extended tenure may also reduce board independence and weaken monitoring incentives (Vafeas 2003; Huang and Hilary 2018). Board experience exhibits a nonlinear relationship with governance outcomes: While experience builds institutional knowledge, excessive tenure may lead to entrenchment and reduced oversight effectiveness (Huang and Hilary 2018; Li and Wahid 2018). Board experience may therefore influence whether governance practices reflect substantive commitment or symbolic adoption.

3.2 | Sample and Data

Our sample is constructed from the Refinitiv ESG and Governance databases covering the period 2018–2023. The initial dataset comprises publicly listed firms from major global indices, including the S&P 500 and STOXX Europe 600. The United States represents approximately 44.5% of the sample, with substantial representation from major European economies. This global setting is consistent with recent work examining ESG ratings and SDG disclosure in international capital markets (Berg et al. 2022; García-Sánchez et al. 2020).

Sample Selection Criteria

We apply several data filtering criteria to construct the final regression sample. First, we exclude firm-year observations with missing ESG ratings, SDG indicators, or the governance variables required for constructing the ESG–SDG wedge. Second, consistent with standard corporate governance research, we exclude firms in the Banking sector (Refinitiv Sector 04) due to their distinct regulatory capital requirements and governance structures (Adams and Mehran 2012). However, we retain firms in the Insurance and Other Financial sectors, as their governance mechanisms are comparable to nonfinancial firms.

After applying these screens and lagging control variables, our final sample for descriptive analysis consists of 4404 firm-year observations corresponding to 951 unique firms across five economic sectors. For our difference in differences specifications, the estimation sample comprises 4254 firm-year observations due to the requirements of the dynamic estimator.

Staggered Committee Adoption

A key feature of our research design is the staggered adoption of CSR committees. Unlike regulatory shocks that affect all firms simultaneously, the formation of CSR committees in our sample is a voluntary, firm-specific decision that occurs at different points in time. This variation allows us to employ robust heterogeneous difference in differences estimators (Sun and Abraham 2021).

- Treatment group: The sample includes 173 firms that established a new CSR committee during the 2018–2023 period ("switchers"). These firms provide the variation necessary to estimate the causal effect of governance adoption.
- Control group: The remaining 751 firms serve as the control group, maintaining a constant governance structure (either never adopting or having an established committee throughout the period).

3.3 | Research Models

To examine whether board-level sustainability governance structures are associated with divergence between investor-oriented ESG ratings and SDG alignment, we estimate panel models that exploit within firm variation over time. Our empirical design proceeds in two stages. First, we document baseline within firm associations using TWFE regressions. Second, we implement a staggered difference in differences design around CSR committee adoption to examine dynamic treatment effects and strengthen causal interpretation.

3.3.1 | Baseline Within Firm Association Model

We begin by estimating the following TWFE specification:

$$Gap_{ist} = \beta_1 COMMITTEE_{ist} + \beta_2 SKILLS_{ist} + \gamma' X_{ist} + \alpha_i + \delta_t + \varepsilon_{ist} \quad (5)$$

where:

- Gap_{ist} is the ESG–SDG wedge for firm i in industry s in year t,
- $COMMITTEE_{ist}$ is an indicator equal to one if the firm maintains a CSR committee,
- $SKILLS_{ist}$ measures board-specific expertise,
- X_{ist} denotes the vector of firm-level and governance control variables,
- α_i are firm fixed effects,
- δ_t are year fixed effects.

Firm fixed effects absorb time-invariant heterogeneity, including persistent governance culture, ownership structure, or industry positioning that may influence both governance choices and sustainability reporting. Year fixed effects control for macroeconomic shocks and global ESG reporting trends. Standard errors are clustered at the firm level to account for within firm serial correlation in the error term (Petersen 2008).

The coefficient β_1 captures the average within firm change in the ESG–SDG wedge associated with the presence of a CSR committee. Because identification is based on changes within

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firms over time, the model compares firms to themselves before and after governance changes, net of common time shocks. The coefficient β_2 captures the association between board-specific skills and the wedge, conditional on the presence of formal committee structures. Importantly, this specification identifies association rather than causation. While firm fixed effects mitigate bias from time invariant omitted variables, time-varying unobservables such as concurrent organizational changes or evolving stakeholder pressures may still confound estimates. We therefore interpret baseline results as documenting within-firm co-movement between governance structures and sustainability divergence, without attributing a causal mechanism at this stage.

3.3.2 | Causal Identification: Staggered Difference in Differences

Identification Strategy. While Equation (1) establishes a within firm association between CSR committee adoption and the ESG–SDG wedge, it does not by itself establish causality. The decision to form a CSR committee is endogenous: Firms may adopt such governance structures in anticipation of future sustainability strategy shifts or in response to evolving stakeholder pressures. If adopters exhibit differential pre-trends relative to nonadopters, the baseline fixed effects estimates may conflate selection effects with genuine treatment effects. Moreover, CSR committee adoption in our sample is staggered over time, with different firms establishing committees in different years.

In staggered rollout frameworks, standard TWFE architectures use previously treated entities as control groups for subsequent adopters. If intervention impacts vary across adoption waves or shift dynamically over time, this structural flaw—often referred to as the "forbidden comparisons" issue (Goodman-Bacon 2021; De Chaisemartin and D'Haultfoeuille 2020)—forces the TWFE model to compute a weighted aggregation of 2 × 2 difference-in-differences parameters that can assign negative weights to specific temporal and cohort matches. Such problematic weighting can severely bias the average treatment effect, potentially reversing its empirical sign even if the underlying causal impacts remain strictly positive across all units (Baker et al. 2022). Within our analytical context, the consequences of instituting a CSR committee likely diverge across different implementation periods. Firms acting as early adopters often operate as proactive, governance-focused pioneers possessing entrenched sustainability commitments, whereas delayed adopters frequently implement such structures as a form of institutional mimicry or regulatory compliance. This underlying divergence inevitably produces heterogeneous post-treatment wedge trajectories, which fundamentally distort any cohort-pooled TWFE estimation.

To overcome this contamination, the interaction-weighted estimator proposed by Sun and Abraham (2021) isolates the average treatment effect on the treated (ATT) for each distinct adoption cohort. It achieves this by assembling uncontaminated control groups comprising strictly never-treated or not-yet-treated entities, subsequently deriving the aggregate ATT through an appropriate weighting of these cohort-specific parameters. By design, this methodology avoids negative weighting altogether and ensures that newly treated cohorts are never benchmarked against prior adopters experiencing their own shifting treatment paths. The approach also permits rigorous evaluation of parallel pre-trends and the precise tracking of post-adoption event dynamics—analytical capacities inherently absent in traditional TWFE modeling. Consequently, we interpret the TWFE outputs presented in Section 4 strictly as descriptive baselines that establish within-firm correlations. For our core causal inferences, we rely explicitly on the Sun and Abraham (2021) framework. Given the levated baseline presence of committees within our data, identification in the staggered design comes from within-sample shifts in committee status over time. Thus, these findings supply complementary causal validation that bolsters, rather than replaces, the primary within-firm identification strategies. Validating this causal narrative ultimately depends on the parallel trends analysis, placebo timing falsifications, and permutation-based randomization tests detailed in Section 4.

Treatment Definition and Weighting Procedure. We define the treatment event E_i as the first year in which firm i establishes a CSR committee. Firms that never adopt a committee during the sample period serve as the control group. To enhance comparability and mitigate selection on observables, we estimate each firm's probability of treatment using a logistic regression based on pre treatment firm characteristics (Size, ROA, Leverage, and Board Diversity measured in the year prior to adoption). We then construct inverse probability weights following Abadie (2005), reweighting control observations such that their observable characteristics align with those of treated firms prior to adoption (Abadie 2005). This procedure mitigates selection on observables, while firm fixed effects absorb time-invariant unobserved heterogeneity such as corporate culture or persistent industry positioning.

Dynamic Event-Time Specification. We estimate the following IPW-weighted event-study specification:

$$Gap_{ist} = \sum_{l=-3}^{+3} \beta_l \mathbb{I}(t - E_i = l) + \mu_i + \lambda_{st} + \epsilon_{ist} \tag{6}$$

where $\mathbb{I}(t - E_i = l)$ are relative time indicators spanning 3 years before and after adoption (with $l = -1$ omitted as the reference period). The coefficients β_l represent the ATT at each relative time l, estimated using the interaction-weighted estimator of Sun and Abraham (2021), which avoids contamination from already-treated cohorts by constructing clean control groups for each treatment cohort Sun and Abraham (2021). μ_i denotes firm fixed effects, and λ_{st} represents industry by year fixed effects that absorb common sectoral shocks and time-varying industry dynamics in ESG reporting norms and SDG adoption patterns. This specification allows us to (i) formally test the parallel trends assumption through the statistical insignificance of pretreatment coefficients (β_{-3}, β_{-2}) and (ii) trace the dynamic evolution of the ESG–SDG wedge following CSR committee adoption. Under the assumption that, conditional on observables and fixed effects, treated and control firms would have followed parallel trends in the absence of

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treatment, the postadoption coefficients ($\beta_0, \beta_1, \beta_2, \beta_3$) identify the causal impact of CSR committee formation on the ESG–SDG wedge.

4 | Empirical Results and Discussion

4.1 | Descriptive Statistics

Table 1 presents descriptive statistics for the full sample of 4404 firm-year observations from 951 firms spanning 2018–2023. Our primary dependent variable, the ESG–SDG wedge (*Gap_ESG_SDG*), is industry-year standardized and therefore has a mean of zero by construction. The standard deviation of 1.078 indicates substantial cross-sectional dispersion in the divergence between investor-oriented ESG ratings and SDG alignment within industry-year cells. The wedge ranges from −4.035 to 3.348, with an interquartile range of 1.442, suggesting economically meaningful heterogeneity in the extent to which firms' ESG performance aligns or fails to align with their broader SDG commitments. Turning to governance structures, 86.8% of firm-year observations report the presence of a CSR or sustainability committee. We document a rapid institutional diffusion, with adoption rates increasing from 65.9% in 2018 to 93.9% in 2023. Crucially, this trend is driven by 173 unique firms ("switchers") that established new committees during our sample period. This provides a robust source of staggered variation for our difference in differences identification, countering concerns that high average adoption implies a lack of control units. The remaining variation is sufficient for within firm identification, particularly given the staggered timing of adoption across firms during the sample period. Board-specific skills average 46.1%, with a standard deviation of 21.3 percentage points, indicating substantial heterogeneity in board-level technical and industry expertise. The interquartile range (31.3% to 60.0%) further underscores meaningful cross firm variation in director competencies relevant to sustainability oversight.

With respect to firm characteristics, the average firm exhibits a debt to assets ratio of 23.3% and a return on assets of 7.2%. Board gender diversity averages 33.2%, exceeding executive level diversity (20.4%), a pattern consistent with recent governance reforms emphasizing board representation. Approximately 51.8% of firm years report formalized board policy structures, and average board experience stands at 7.5 years. Table 2 reports pairwise correlations among key variables. The ESG–SDG wedge is positively correlated with CSR committee presence ($r = 0.176$, $p < 0.01$) and board-specific skills ($r = 0.073$, $p < 0.01$). While these univariate associations are consistent with our hypotheses, they do not account for firm-level heterogeneity or common time effects and therefore should not be interpreted causally. Correlations among explanatory variables are moderate. The largest coefficient (Board Skills and Board Policy, $r = 0.330$) remains well below conventional thresholds associated with multicollinearity concerns in panel regressions. Variance inflation factors (VIFs) in multivariate specifications range from 1.07 to 9.00, with no individual value exceeding the rule of thumb threshold of 10 (O'brien 2007; Velte 2024). Overall, the descriptive evidence indicates substantial cross firm and within firm variation in both sustainability governance structures and the ESG–SDG wedge, providing a suitable empirical setting for multivariate regression and within-firm identification analyses.

4.2 | Multivariate Tests:Baseline Association: Main Results

Table 3 presents the baseline TWFE estimates examining the association between board-level governance structures and the ESG–SDG wedge. The specification includes firm and year fixed effects, thereby exploiting within firm variation over time while absorbing time-invariant firm characteristics and common macroeconomic shocks. Standard errors are clustered at the firm level to address within firm serial correlation. The model is jointly significant at the 1% level ($F = 2.70$, $p = 0.004$). Importantly, because the dependent variable is constructed as the within-industry-year standardized difference between ESG ratings and SDG alignment breadth, coefficients capture changes in firms' relative positioning across sustainability frameworks compared to industry peers

TABLE 1 | Descriptive statistics.

Variable	*N*	Mean	SD	Min	25th	Median	75th	Max
ESG–SDG Wedge	4404	0.000	1.078	−4.035	−0.703	0.000	0.739	3.348
CSR Committee	4404	0.868	0.338	0.000	1.000	1.000	1.000	1.000
Board-Specific Skills	4404	46.100	21.300	0.000	31.300	45.450	60.000	100.000
Board Policy	4404	0.518	0.500	0.000	0.000	1.000	1.000	1.000
Board Experience	4404	7.500	3.148	0.000	5.308	7.000	9.133	29.440
Board Gender Diversity	4404	33.200	10.188	8.330	25.000	33.330	40.000	57.140
Leverage	4404	0.233	0.150	0.000	0.116	0.229	0.335	0.903
ROA	4404	7.200	7.836	−16.269	2.980	6.000	10.333	38.324
Exec. Gender Diversity (%)	4404	20.400	14.451	0.000	11.110	20.000	30.000	100.000
Firm size	4404	0.000	1.000	−0.461	−0.410	−0.322	−0.046	11.779

Note: This table reports descriptive statistics for 4404 firm-year observations from 951 firms spanning 2018–2023. The *ESG–SDG Wedge* is the industry-year standardized difference between ESG scores and SDG alignment scores.

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TABLE 2 | Pearson correlation matrix.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) ESG–SDG Wedge	1.000									
(2) CSR Committee	0.176***	1.000								
(3) Board Skills	0.073***	−0.001	1.000							
(4) Board Policy	0.140***	0.024	0.330***	1.000						
(5) Board Experience	−0.027*	−0.150***	0.166***	0.150***	1.000					
(6) Board Gender Div.	0.034**	0.216***	−0.126***	−0.124***	−0.253***	1.000				
(7) Leverage	0.063***	0.153***	0.081***	0.075***	−0.024	−0.027*	1.000			
(8) ROA	−0.014	−0.096***	0.094***	0.031**	0.129***	−0.028*	−0.128***	1.000		
(9) Exec. Gender Div.	0.088***	0.091***	0.023	0.040***	−0.109***	0.279***	0.012	0.052***	1.000	
(10) Firm Size	0.083***	0.066***	−0.026*	−0.001	−0.040*	0.060***	−0.154***	−0.120***	0.109***	1.000

Note: This table reports pairwise Pearson correlation coefficients ($N = 4404$).
***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

in the same year. The empirical question is therefore not whether governance increases "sustainability" in aggregate, but whether governance structures are associated with differential emphasis across coexisting evaluative regimes.

4.2.1 | CSR Committees and the ESG–SDG Wedge

Hypothesis 1 predicts that the presence of a dedicated board level CSR or sustainability committee is associated with a larger ESG–SDG wedge, reflecting differential positioning across sustainability regimes under constrained governance attention. The results strongly support this prediction. The coefficient on CSR Sustainability Committee is positive and statistically significant ($\beta = 0.210$, $p = 0.006$). Because identification is within-firm, this estimate indicates that following the adoption (or presence) of a CSR committee, firms exhibit an increase of approximately 0.21 standard deviations in the ESG–SDG wedge relative to their own prior positioning and relative to industry-year peers. The magnitude is economically meaningful given the standardized construction of the dependent variable.

This pattern is consistent with the attention-based view of the firm (Ocasio 1997), which posits that formal governance structures channel limited decision-making attention toward particular evaluative criteria. CSR committees institutionalize sustainability oversight, but the evidence suggests that such formalization coincides with relatively stronger improvements in investor facing ESG ratings than in SDG alignment breadth. ESG ratings are externally benchmarked, standardized, and embedded in capital market evaluation processes (Chatterji et al. 2016; El Ghoul et al. 2011). By contrast, SDG alignment reflects broader normative commitments that are less tightly integrated into investor screening mechanisms and less uniformly standardized across firms (van Zanten 2025). The positive association between CSR committees and the wedge is therefore consistent with governance structures amplifying responsiveness to investor-salient metrics relative to broader development-oriented frameworks.

This observed asymmetry aligns seamlessly with the literature on structural governance heterogeneity detailed in Section 2.2.1. Documenting how boards selectively channel their focus, Hussain et al. (2018) find that dedicated committees elevate environmental and social outcomes while leaving economic trajectories unchanged. Consequently, they caution against presuming homogeneous board-level efficacy, explicitly advocating for the simultaneous evaluation of governance impacts across distinct nonfinancial dimensions. Our proposed ESG–SDG wedge directly operationalizes this methodological directive. Although their triple bottom line paradigm differs conceptually from the evaluative axis analyzed here, the underlying theoretical mechanism remains identical. Governance architectures distribute oversight unevenly, systematically directing monitoring intensity toward whichever metrics are most firmly anchored in the dominant institutional logics governing boardroom priorities.

Further refining this dynamic, Li et al. (2023) demonstrate that genuine environmental progress relies on highly effective

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TABLE 3 | Two-way fixed effects estimation: governance structures and ESG–SDG wedge.

Variable	Coefficient	Std. error	*t*-statistic	*p*
Panel A: Governance Variables				
CSR Sustainability Committee	0.2103***	0.0760	2.77	0.006
Board-Specific Skills	0.0047***	0.0017	2.76	0.006
Panel B: Control Variables				
Executive Gender Diversity	0.0046**	0.0021	2.18	0.029
Leverage (Debt/Assets)	−0.3386	0.2927	−1.16	0.248
Total Assets (ln)	0.0189	0.1276	0.15	0.882
ROA	−0.0024	0.0028	−0.87	0.384
Board Functions Policy	−0.0458	0.1255	−0.37	0.715
Board Diversity	0.0031	0.0029	1.08	0.279
Experienced Board	−0.0063	0.0147	−0.43	0.668
Fixed Effects & Diagnostics				
Firm Fixed Effects		Yes		
Year Fixed Effects		Yes		
Observations		4404		
Number of Firms		951		
F-statistic (robust)		2.70		0.004
Clustering		Firm-level		

Note: This table reports two-way fixed effects estimation results. The dependent variable is the ESG–SDG Wedge (*Gap_ESG_SDG*), calculated as the within-industry-year standardized difference between ESG ratings and SDG alignment breadth. Standard errors are clustered at the firm level.
***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

committee configurations endowed with substantive authority, deep human capital, and specialized expertise. This implies that baseline binary indicators of committee adoption predominantly capture standard, modal architectures primarily occupied with investor-facing ESG compliance rather than normative SDG deliberation. Providing the most direct parallel, Nicolò et al. (2026) establish that authentic voluntary SDG reporting demands specialized, high-authority structures—specifically, those integrating the CEO or board chair alongside robust gender diversity. Because such traits are largely absent from the standard governance setups captured by simple binary indicators, their findings elucidate why formal committee presence corresponds so strongly with ESG score enhancements yet fails to expand SDG commitments, an insight that retains profound theoretical weight despite its empirical origins in the Italian market. The pronounced magnitude asymmetry revealed in our mechanism decomposition (Table 13, Panel A)—where governance proxies correlate far more intensely with commercial ESG ratings than with normative SDG alignment—is both statistically robust and deeply coherent with this broader architecture of selective attention. Such convergence across distinct analytical levels decisively reinforces the interpretive validity of our empirical framework.

Complementary institutional mechanisms reinforce this interpretation. CSR committees frequently engage with rating agencies and institutional investors (Flammer 2021; Maas 2018), ESG metrics are increasingly incorporated into executive compensation contracts (Flammer et al. 2019; Dyck et al. 2019), and board-level ESG oversight has intensified in recent years (Iliev and Roth 2023). Collectively, these factors create structural incentives for committees to prioritize performance dimensions that are externally evaluated and capital market relevant. The evidence is therefore consistent with Hypothesis 1.

4.2.2 | Board Industry-Financial Expertise and the ESG–SDG Wedge

Hypothesis 2 predicts that boards with greater industry and financial expertise will exhibit relatively stronger ESG performance compared to SDG alignment breadth. The coefficient on Board Industry-Financial Expertise is positive and statistically significant ($\beta = 0.0047$, $p = 0.006$), consistent with this prediction. Although numerically modest, the expertise variable is measured as a proportion, implying that economically meaningful changes in board composition (e.g., interquartile shifts) correspond to nontrivial shifts in the wedge. The within-firm design indicates that changes in director composition coincide with changes in firms' relative sustainability positioning.

This finding extends prior research linking director expertise to ESG ratings (Iliev and Roth 2023) by demonstrating that expertise is associated with differential emphasis across sustainability frameworks rather than uniform sustainability enhancement.

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Directors with financial and industry backgrounds possess enhanced capacity to evaluate sustainability initiatives through risk-return and materiality lenses (Güner et al. 2008; Minton et al. 2014). Empirical evidence indicates that higher ESG ratings are associated with lower cost of capital (El Ghoul et al. 2011), improved financing access (Cheng et al. 2014), and valuation effects (Eccles et al. 2014). These capital market linkages are more transparent for ESG ratings than for SDG alignment breadth.

Consistent with constrained attention arguments (Tuggle et al. 2010), boards with greater financial expertise may allocate disproportionate evaluative weight to sustainability dimensions with clearer economic consequences and quantifiable signals. ESG ratings provide such signals; SDG alignment, while normatively salient, is less standardized and less systematically embedded in financial decision-making (Bofinger et al. 2022). The results are therefore consistent with Hypothesis 2 and reinforce the governance-prioritization interpretation of the wedge. Among control variables, *Executive Gender Diversity* is positive and marginally significant ($\beta = 0.0046$, $p = 0.029$), aligning with prior evidence linking gender diversity to enhanced ESG disclosure practices (Nekhili et al. 2017). Other firm-level financial controls are not statistically significant, indicating that relative sustainability positioning appears more closely linked to governance structures than to general resource capacity.

4.2.3 | Institutional Context as Moderator: US Versus Europe Firms

Hypothesis 3 posits that the governance-wedge association is stronger in the United States, reflecting the greater dominance of financial materiality logic in Anglo-American capital market systems. We evaluate this prediction using both subsample estimation and an interaction specification.

Subsample Analysis. Table 4 presents TWFE models estimated separately for US and Europe firms. Among US firms, the coefficient on CSR Sustainability Committee is positive, economically large, and highly significant ($\beta = 0.308$, $p = 0.001$). The coefficient on Board Industry-Financial Expertise remains positive and significant ($\beta = 0.006$, $p = 0.008$). These magnitudes exceed those observed in the pooled sample. In contrast, neither governance variable is statistically significant among non-US firms. The CSR committee coefficient is smaller and indistinguishable from zero ($\beta = 0.083$, $p = 0.494$), as is the expertise coefficient ($\beta = 0.004$, $p = 0.150$). Because both subsample models retain firm and year fixed effects, these differences indicate that within-firm governance changes are associated with relative ESG strengthening primarily in the US institutional environment. This pattern aligns with comparative institutional research emphasizing stronger shareholder primacy and capital market integration in Anglo-American systems (Aguilera and Jackson 2010; Liang and Renneboog 2017).

TABLE 4 | Subsample analysis: institutional context (US vs. Europe).

	Panel A: US firms			Panel B: Europe firms		
Variable	**Coef.**	**Std. err.**	***p***	**Coef.**	**Std. err.**	***p***
Governance Variables						
CSR Sustainability Committee	0.3083***	0.0942	0.001	0.0825	0.1207	0.494
Board-Specific Skills	0.0059***	0.0022	0.008	0.0036	0.0025	0.150
Control Variables						
Executive Gender Diversity	0.0052	0.0032	0.109	0.0041	0.0028	0.135
Leverage (Debt/Assets)	−0.3901	0.4511	0.387	−0.3447	0.3844	0.370
Total Assets (ln)	−0.0619	0.1417	0.663	0.0743	0.2008	0.712
ROA	−0.0033	0.0040	0.414	−0.0023	0.0036	0.533
Board Functions Policy	0.0118	0.2395	0.961	−0.0496	0.1435	0.730
Board Diversity	0.0051	0.0044	0.244	0.0021	0.0037	0.573
Experienced Board	0.0038	0.0184	0.838	−0.0148	0.0245	0.545
Fixed Effects & Diagnostics						
Firm Fixed Effects		Yes			Yes	
Year Fixed Effects		Yes			Yes	
Observations		1942			2462	
Number of Firms		423			528	
F-statistic (robust)	2.39		0.011	0.88		0.543

Note: This table estimates the baseline model separately for US firms (Panel A) and European firms spanning 24 countries (Panel B). The significant effect of CSR committees in the United States compared to the null effect in Europe suggests the "Wedge" is driven by market-oriented shareholder primacy environments.
***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

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ESG ratings are more deeply embedded in investment mandates, proxy voting, and compensation practices in the United States (Flammer 2021; Krueger et al. 2020), potentially amplifying the responsiveness of boards to investor-evaluated metrics.

Interaction Specification. Table 5 presents the unified interaction model. The interaction term *CSR Committee× US* is positive and statistically significant ($\beta = 0.267$, $p = 0.042$), indicating that the association between CSR committees and the wedge is significantly stronger for US firms. The implied total effect for US firms (0.306) closely matches the subsample estimate, reinforcing robustness across estimation strategies. The interaction term for *Board Industry-Financial Expertise× US* is positive but not statistically significant ($\beta = 0.002$, $p = 0.438$). While point estimates suggest directionally stronger effects in the United States, the evidence does not allow definitive conclusions regarding cross-country moderation for expertise. Overall, the findings provide partial support for Hypothesis 3. Governance structures particularly CSR committees are more strongly associated with differential sustainability positioning in institutional environments where ESG ratings are deeply integrated into capital market mechanisms. The absence of comparable effects in non-US contexts suggests that regulatory harmonization, stakeholder-oriented governance traditions, or mandatory reporting regimes may attenuate discretionary prioritization across sustainability frameworks (Christensen et al. 2021; Matten and Crane 2005).

4.3 | Addressing Endogeneity in Association Estimates

4.3.1 | Alternative Panel Specifications

Random Effects (RE) Specification. RE estimation models unobserved firm heterogeneity as a random component of the error term and exploits both within- and between-firm variation (Wooldridge 2010). RE is more efficient than fixed effects if the orthogonality condition holds—namely, if unobserved firm-specific effects are uncorrelated with the regressors. However, violation of this assumption renders RE inconsistent. Panel A of Table 6 reports the RE estimates. The coefficient on *CSR Sustainability Committee* remains positive and highly significant ($\beta = 0.214$, $p < 0.001$), closely mirroring the TWFE estimate (0.210). Likewise, *Board Industry-Financial Expertise* continues to exhibit a positive and statistically significant association with

TABLE 5 | Interaction model: US institutional context as moderator.

Variable	Coefficient	Std. error	*t*-statistic	*p*
Main Effects (Europe Baseline)				
CSR Sustainability Committee	0.0397	0.1053	0.38	0.706
Board-Specific Skills	0.0031	0.0021	1.48	0.139
Interaction Effects				
CSR Committee × US	**0.2665****	0.1312	2.03	0.042
Board Expertise × US	0.0022	0.0029	0.78	0.438
Control Variables				
Executive Gender Diversity	0.0037**	0.0018	2.09	0.036
Leverage (Debt/Assets)	−0.3399	0.2607	−1.30	0.192
Total Assets (ln)	−0.0116	0.1119	−0.10	0.917
ROA	−0.0026	0.0024	−1.09	0.276
Board Functions Policy	−0.0642	0.1096	−0.59	0.558
Board Diversity	0.0012	0.0024	0.52	0.604
Experienced Board	−0.0058	0.0130	−0.45	0.655
Fixed Effects & Diagnostics				
Firm Fixed Effects		Yes		
Observations		4404		
F-statistic (robust)		3.14		0.000
Implied Total Effects for US Firms				
Total CSR Effect (US)		0.3062*** (0.0397 + 0.2665)		
Total Skills Effect (US)		0.0053** (0.0031 + 0.0022)		

Note: This table reports results from a firm fixed effects model interacting governance variables with a US indicator. The significant interaction term (*CSR* × *US*) confirms that the impact of CSR committees on the ESG–SDG Wedge is significantly stronger in the US compared to Europe.
***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

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TABLE 6 | Alternative panel specifications: random effects and first-difference models.

	Panel A: Random effects			Panel B: First-difference		
Variable	**Coef.**	**Std. err.**	***p***	**Coef.**	**Std. err.**	***p***
Governance Variables						
CSR Sustainability Committee	0.2135***	0.0534	<0.001	0.2471***	0.0513	<0.001
Board Industry-Financial Expertise	0.0020**	0.0010	0.043	0.0027**	0.0012	0.021
Control Variables						
Executive Gender Diversity	0.0034**	0.0014	0.019	0.0044***	0.0015	0.003
Debt to Assets	−0.1815	0.1557	0.244	−0.3926*	0.2084	0.060
Total Assets ((ln))	0.0614	0.0394	0.119	0.1002	0.0721	0.165
Return on Assets	−0.0027	0.0022	0.202	−0.0041**	0.0018	0.025
Board Functions/Policy	0.1319**	0.0554	0.017	0.0052	0.0856	0.951
Board Diversity	−0.0037**	0.0016	0.025	0.0053***	0.0019	0.006
Experienced Board	−0.0262***	0.0068	<0.001	0.0121	0.0113	0.288
Model Diagnostics						
Observations		4404			3453	
Number of Firms		951			929	
R-squared		0.0379			0.0151	
F-statistic (robust)	6.21		<0.001	5.88		<0.001
Specification Test						
Hausman $\chi^2(9) = 18.89$, $p = 0.026$					FE preferred over RE	

Note: This table reports alternative panel specifications. Panel A presents random effects estimation exploiting both within firm and between-firm variation. Panel B presents first-difference estimation using changes in variables, which eliminates all time-invariant firm characteristics. The Hausman test compares fixed effects and random effects estimators; rejection indicates fixed effects is preferred. Standard errors in Panel A are clustered at the firm level; Panel B reports heteroskedasticity-robust standard errors.
***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

the ESG–SDG wedge ($\beta = 0.002$, $p = 0.043$), with only modest attenuation relative to the fixed effects specification. The direction, magnitude, and statistical significance of the governance variables are therefore stable across estimators that exploit different combinations of within- and between-firm variation.

To formally evaluate the orthogonality condition underlying RE, we conduct a Hausman specification test (Hausman 1978). The test yields $\chi^2(9) = 18.89$ ($p = 0.026$), leading to rejection of the null hypothesis that RE is consistent and efficient. This rejection indicates that governance structures are correlated with time invariant unobserved firm characteristics, supporting the use of fixed effects as the preferred baseline estimator. This finding aligns with recent methodological guidance emphasizing that fixed effects models are most appropriate when firm-specific unobserved heterogeneity correlates with governance variables (Khatib 2025). Importantly, however, the substantive similarity of coefficients across RE and TWFE models indicates that our conclusions do not hinge on the specific treatment of firm heterogeneity.

First-Difference (FD) Specification. As a complementary transformation, we estimate an FD model that regresses changes in the ESG–SDG wedge on changes in governance variables and controls (Wooldridge 2010). First-differencing eliminates all time-invariant firm characteristics by construction, identifying coefficients exclusively from within-firm temporal changes. Unlike TWFE, which demeans observations relative to firm averages, FD relies on consecutive-period variation and therefore provides an alternative implementation of within-firm identification. Panel B of Table 6 reports the FD results. The coefficient on CSR Sustainability Committee remains positive, economically meaningful, and highly significant ($\beta = 0.247$, $p < 0.001$). This estimate is slightly larger than the TWFE coefficient, suggesting that the adoption or discontinuation of a CSR committee is associated with contemporaneous shifts in firms' relative positioning across sustainability frameworks. Similarly, changes in Board Industry-Financial Expertise remain positively associated with changes in the ESG–SDG wedge ($\beta = 0.003$, $p = 0.021$), reinforcing the interpretation that board composition dynamics correspond to differential sustainability positioning. Because first-differencing eliminates the initial observation for each firm, the effective sample size declines from 4404 to 3453 firm-year observations. Despite this reduction, the governance coefficients remain statistically and economically significant, underscoring the stability of the association.

Taken together, the consistency of results across TWFE, RE, and FD estimators strengthens confidence that the positive

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association between governance structures and the ESG–SDG wedge is not an artifact of a particular panel transformation. Although the Hausman test supports TWFE as the preferred estimator, the persistence of coefficient signs, magnitudes, and significance across specifications suggests that the governance–wedge relationship reflects a systematic empirical regularity rather than a modeling choice.

4.3.2 | Sensitivity to Omitted Variable Bias

While fixed effects absorb time-invariant confounders, time-varying omitted variables could bias estimates if correlated with both governance and sustainability positioning. We apply Oster's (2019) formalized coefficient stability approach, which quantifies how strongly unobservables must relate to treatment and outcome relative to included controls to eliminate observed associations. The method constructs δ, a parameter measuring required selection on unobservables relative to observables. Values of $\delta > 1$ indicate that excluded confounders would need to dominate included controls, signaling robustness (Oster 2019). Table 7 reports results comparing uncontrolled (governance + firm FE only) and controlled specifications. For CSR Sustainability Committee, the coefficient moves minimally from 0.221 to 0.211 despite adding controls, yielding $\delta = 24.34$. For Board Industry-Financial Expertise, coefficient stability is even more pronounced ($\delta = 113.32$). Unobservables would need to be 24 and 113 times as influential as included controls, respectively, to nullify observed associations implausibly large magnitudes that strongly support robustness to omitted variable bias. These thresholds substantially exceed conventional benchmarks suggesting robustness when $\delta > 1$, indicating that our governance-wedge associations are unlikely to be explained by unobserved time-varying confounders.

4.3.3 | Distributional and Functional Form Robustness

Our fixed effects specification estimates conditional mean effects, implicitly assuming homogeneous associations across the ESG–SDG wedge distribution. We assess distributional robustness and outlier sensitivity through quantile regression and alternative winsorization strategies.

Quantile Regression. If governance structures relate differentially to sustainability positioning depending on firms' location within the distribution, conventional mean regression may mask economically meaningful heterogeneity. We employ quantile regression for panel data following (Koenker 2004), which allows us to estimate conditional quantile functions while controlling for unobserved firm heterogeneity. Table 8 (Panel A) reports coefficients at the 10th, 25th, 50th, 75th, and 90th percentiles alongside pooled OLS estimates. For CSR Sustainability Committee, the association strengthens monotonically across quantiles, rising from 0.352 at the 10th percentile ($p < 0.001$) to 0.602 at the 90th percentile ($p < 0.001$)—a 71% increase. The OLS coefficient of 0.498 ($p < 0.001$) lies between these extremes, masking substantial heterogeneity. Firms at the upper tail of the wedge distribution display CSR committee associations 71% larger than firms at the lower tail, consistent with reinforcing attention allocation dynamics rather than uniform governance effects. Board Industry-Financial Expertise exhibits opposite heterogeneity. Coefficients are positive and significant at the 10th ($\beta = 0.003$, $p = 0.017$), 25th ($\beta = 0.003$, $p = 0.024$), and 50th ($\beta = 0.003$, $p = 0.002$) percentiles, but attenuate to insignificance at the 75th ($\beta = 0.0004$, $p = 0.705$) and 90th ($\beta = 0.0001$, $p = 0.928$) percentiles. This lower tail concentration indicates that board expertise associates with increased wedge primarily among firms with initially small divergences, suggesting diminishing effects once firms establish large ESG–SDG gaps. These distributional patterns reveal economically meaningful heterogeneity obscured by conditional mean estimation.

Outlier Sensitivity. To assess whether extreme values drive our baseline estimates, we re-estimate the model after winsorizing all continuous variables at the 1st and 99th percentiles, capping 89 outlier observations in the dependent variable and trimming extreme values across regressors. Winsorization provides a conservative approach to outlier treatment by replacing extreme values with less extreme threshold values rather than deleting observations entirely. Panel B of Table 8 compares baseline and winsorized coefficients. The CSR Sustainability Committee coefficient shifts minimally from 0.210 to 0.215 (+2.3%), while Board Industry-Financial Expertise remains virtually unchanged at 0.0046 (−0.8%). Both variables retain significance at the 1% level. The negligible coefficient movements indicate that our findings are not artifacts

TABLE 7 | Sensitivity to omitted variable bias: Oster (2019) Bounds.

Parameter	CSR committee	Board industry-financial expertise
Uncontrolled β	0.2210	0.0046
Controlled β	0.2112	0.0047
$\Delta\beta$	−0.0098	+0.0001
Uncontrolled R^2	0.0059	0.0045
Controlled R^2	0.0089	0.0087
ΔR^2	+0.0030	+0.0042
Coefficient stability (δ)	**24.34**	**113.32**
Interpretation	Highly robust ($\delta \gg 1$)	

Note: δ quantifies how strongly unobservables must relate to treatment and outcome—relative to included controls—to nullify observed associations. $\delta > 1$ implies unobservables must dominate observables, signaling robustness. Uncontrolled = governance + firm FE; controlled adds all Table 3 controls.

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TABLE 8 | Distributional and functional form robustness.

Panel A: Quantile regression						
	Conditional quantiles					**OLS**
Variable	**10th**	**25th**	**50th**	**75th**	**90th**	**Mean**
CSR Committee	0.352***	0.467***	0.518***	0.537***	0.602***	0.498***
	(0.079)	(0.070)	(0.056)	(0.067)	(0.074)	(0.049)
Board Industry-Financial Expertise	0.003**	0.003**	0.003***	0.0004	0.0001	0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Gradient	CSR: +71% (10th → 90th); expertise: Lower tail only					

Panel B: Outlier Sensitivity (Winsorization at 1%–99%)				
Variable	**Baseline**	**Winsorized**	**Δβ**	**% change**
CSR Committee	0.2103***	0.2151***	+0.0048	+2.3%
	(0.0760)	(0.0746)		
Board Industry-Financial Expertise	0.0047***	0.0046***	−0.0001	−0.8%
	(0.0017)	(0.0017)		
Observations	4404		4404 (89 outliers trimmed)	
Inference	Coefficients robust to outlier treatment; negligible movements			

Note: Panel A reports quantile regression estimates; standard errors are in parentheses. CSR Committee exhibits monotonically increasing effects; Board Expertise concentrates in lower quantiles. Panel B compares baseline fixed effects with winsorized specification capping continuous variables at 1st/99th percentiles. Coefficient stability across specifications confirms robustness to distributional assumptions and outlier influence. All models include controls from Table 3.
***, **, and * = 1%, 5%, and 10% significance.

of outlier leverage. Combined with quantile regression evidence, these results confirm that governance-wedge associations reflect systematic patterns across the full distribution rather than sensitivity to extreme observations or specific functional form assumptions.

4.3.4 | Selection-Based Robustness

Our baseline sample pools diverse firms, industries, and institutional contexts. If governance-wedge associations concentrate in specific subpopulations or reflect selection bias rather than systematic patterns, pooled estimates may misrepresent the underlying relationships. We assess selection sensitivity through PSM, sectoral heterogeneity analysis, and alternative sample compositions.

PSM. A primary concern in our baseline identification is that governance structures are endogenous; firms self-select into specific oversight configurations based on observable strategic priorities. To address this, we employ PSM to construct quasi-experimental comparison groups (Rosenbaum and Rubin 1983). We estimate two distinct matching models. First, we match firms that adopt a CSR committee to observably similar nonadopters. Second, to address selection regarding board expertise, we construct a binary treatment for "High Board Skills" (defined as firms above the sample median) and match them to firms with lower specific skills. While our baseline fixed effects models utilize a continuous measure of expertise, this dichotomization is necessary to satisfy the binary treatment requirement of standard matching algorithms and ensures valid common support (Austin 2011).

We estimate propensity scores using logistic regression on all baseline covariates and implement one-to-one nearest-neighbor matching with a 0.05 caliper. Panel A of Table 9 reports the ATT. The matching procedure yields balanced samples, with all covariate standardized differences below 0.10. We find that the presence of a CSR committee generates an ATT of 0.493 ($t = 22.87$, $p < 0.001$), indicating that firms with CSR committees exhibit ESG–SDG wedges 0.493 standard deviations larger than matched controls. Notably, this magnitude is approximately 2.3 times the baseline fixed effects coefficient (0.210). This difference suggests that while the fixed effects estimator isolates the immediate within firm impact of adoption, it likely underestimates the broader cross-sectional heterogeneity driven by long-term structural differences in sustainability governance. Similarly, firms with high board-specific skills exhibit an ESG–SDG wedge that is 0.086 standard deviations higher than their matched counterparts ($t = 2.67$, $p < 0.01$). Crucially, the PSM estimate for board skills (0.086) is economically consistent with our linear fixed effects estimate ($0.0047 \times 18.3 \approx 0.086$, where 18.3 is the spread in mean skills between treatment groups), confirming that the structural difference between high- and low-expertise boards drives the divergence in sustainability positioning, rather than reflecting linear functional form assumptions.

Sectoral Heterogeneity. Governance structures may relate differentially to sustainability positioning across industries with distinct regulatory regimes, stakeholder pressures, and materiality profiles. We re-estimate baseline specifications separately for five major sectors: industrial (690 firms), utilities (83 firms), transportation (27 firms), insurance (53 firms),

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TABLE 9 | Selection-based robustness: PSM, sectoral heterogeneity, and sample composition.

Panel A: Propensity score matching (average treatment effect on the treated)					
Treatment	**ATT coef.**	**Std. err.**	***t-stat***	***p-value***	**Outcome**
(1) CSR committee	0.493***	0.022	22.87	<0.001	ESG–SDG wedge
(2) High board skills	0.086***	0.032	2.67	0.008	ESG–SDG wedge
Matching details	*Model 1*: 3808 matched pairs; covariates balanced (all SMD < 0.10)				
	Model 2: 2173 matched pairs; covariates balanced (all SMD < 0.10)				
Panel B: Sectoral heterogeneity (five major industries)					
Sector	**CSR coef.**	***p-value***	**Skills coef.**	***p-value***	***N(obs)***
Industrial	0.302***	<0.001	0.003*	0.092	3128
Utilities	0.631***	<0.001	0.004	0.375	404
Transportation	0.338	0.186	0.004	0.521	124
Insurance	−0.216	0.641	0.019***	<0.001	258
Other financial	−0.115	0.597	0.003	0.534	490
Range	CSR: 0.847 (CV = 166%); skills: 0.016 (CV = 90%)				
Interpretation	High heterogeneity; governance effects concentrated in industrials/utilities				
Panel C: Sample composition (US exclusion)					
	Full sample	**Non-US only**	**Inference**		
CSR committee	0.210***	0.083	Null without US		
Board expertise	0.005***	0.004	Null without US		
Observations	4404	2462			

Note: Panel A reports the Average Treatment Effect on the Treated (ATT) using Nearest Neighbor matching (1:1). Model 1 estimates the causal impact of CSR Committee adoption (controlling for board skills). Model 2 estimates the impact of having above-median board-specific skills (controlling for CSR committee). Both models satisfy the covariate balance condition (SMD < 0.10). Panels B and C report OLS heterogeneity tests.
***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

and other financial (98 firms). Panel B of Table 9 summarizes governance coefficients by sector. CSR Sustainability Committee exhibits substantial heterogeneity, ranging from −0.216 in insurance ($p = 0.641$) to +0.631 in utilities ($p < 0.001$), with a coefficient of variation of 166%. Positive and significant associations emerge in industrial ($\beta = 0.302, p < 0.001$) and utilities ($\beta = 0.631, p < 0.001$), while financial sectors show null or negative point estimates. Board Industry-Financial Expertise displays opposite sectoral patterns, achieving significance only in insurance ($\beta = 0.019, p < 0.001$), where specialized financial acumen may be particularly salient for evaluating sustainability risk linkages. The sectoral variation aligns with institutional theory predictions that governance effects depend on industry-specific pressures Aguilera et al. (2008). Utilities face intense regulatory scrutiny and stakeholder activism, potentially amplifying CSR committee influence on external positioning. Financial firms operate under distinct disclosure regimes and face reputational sensitivities that may attenuate governance wedge associations. These patterns underscore that pooled estimates represent weighted averages across heterogeneous industry contexts rather than universal governance effects.

Sample Composition Sensitivity. As a final selection robustness check, we assess whether baseline findings concentrate in specific geographic subsamples or reflect the full sample composition. Excluding US firms entirely (retaining 2462 non-US observations across more than 24 countries) yields null results for both governance variables, consistent with our H3 moderation findings. This confirms that non-US subsamples alone lack sufficient power to detect governance-wedge associations, validating our pooled approach while highlighting the institutional embeddedness of these patterns. The convergence of PSM, sectoral heterogeneity, and geographic composition analyses indicates that governance-wedge associations are robust to selection concerns within industrialized, market-oriented contexts, but exhibit meaningful heterogeneity across regulatory and institutional environments.

4.3.5 | Falsification Tests

To ensure our baseline estimates are not driven by spurious correlations or serial dependence in the error structure, we conduct a nonparametric randomization inference test following Bertrand et al. (2004). We randomly permute the assignment of CSR committees across firm-years 500 times while preserving the panel structure of the control variables. This generates a distribution of placebo coefficients under the null hypothesis of no effect. We find that our estimated coefficient ($\beta = 0.208$)

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lies in the extreme tail of this placebo distribution (simulated $p < 0.001$), confirming that the association is statistically distinct from random noise.

We further estimate a dynamic specification including a 1-year lead variable (CSR_{t+1}) to test for reverse causality or anticipation effects. As reported in Panel B of Table 10, we find a positive and significant coefficient on the lead term ($\beta = 0.134$, $p < 0.05$). This suggests that firms engage in anticipatory adjustments, improving their sustainability positioning in the period immediately preceding the formal establishment of oversight committees. Crucially, however, the realized treatment effect ($\beta = 0.208$) remains approximately 55% larger than the anticipation effect. This magnitude differential supports the causal relevance of the governance mechanism itself, indicating that the committee generates structural improvements beyond pre-existing trends.

4.4 | Strengthening Causal Interpretation: Evidence From Staggered CSR Committee Adoption

The fixed effects estimates reported above document robust within-firm associations between governance structures and the ESG–SDG wedge. However, these specifications do not fully eliminate concerns regarding time varying omitted variables or reverse causality. To assess whether our baseline results are consistent with governance transitions rather than cross-sectional sorting or gradual trend divergence, we examine firms that adopt CSR committees during the sample period using a staggered difference-in-differences framework. Importantly, because a substantial proportion of firms already maintain CSR committees at the beginning of the sample (66% in 2018), the staggered design primarily leverages within sample adoption events and should be interpreted as complementary evidence rather than a standalone identification strategy.

4.4.1 | Design and Estimation Approach

Treatment is defined as the first observed transition from no CSR committee to committee presence. The treatment is absorbing. The sample spans 2018–2023 and includes 4254 firm-year observations across 924 firms. We identify 173 adoption events during the sample window, while 751 firms serve as never-treated or not-yet-treated controls. To account for heterogeneous treatment timing and avoid biases associated with TWFE under staggered adoption, we implement the interaction-weighted estimator of Sun and Abraham (2021). This approach addresses the contamination problem identified in recent econometric literature, where conventional TWFE with leads and lags can produce spurious pre-trends when treatment effects vary across adoption cohorts (Baker et al. 2022). To further address observable selection into treatment timing, we combine this approach with IPW, where adoption propensity is estimated using pretreatment firm characteristics (leverage, size, profitability, executive gender diversity, and board policy indicators).

Propensity score distributions exhibit substantial overlap between treated and control firms (Figure 1), and post weighting standardized mean differences fall below 0.10 for all covariates (Table 12, Panel A), indicating satisfactory balance.

4.4.2 | Dynamic Effects and Validation Tests

Table 11 reports event-study estimates relative to adoption. Pretreatment coefficients at $t = -3$ and $t = -2$ are individually insignificant and jointly fail to reject the null of parallel trends (Wald $\chi^2(2) = 0.71$, $p = 0.703$). Figure 2 illustrates the absence of systematic pre-trends. At the time of adoption ($t = 0$), the ATT equals 0.297 (SE = 0.075, $p < 0.001$), corresponding to an immediate increase of approximately 0.30 standard deviations in the ESG–SDG wedge. The effect persists at $t + 1$ (0.253, $p = 0.010$). Estimates at longer horizons are imprecise, reflecting mechanical attrition as staggered timing limits post-treatment observations (Table 12, Panel B).

We conduct two additional validation tests. First, a placebo timing test that artificially backdates treatment by 3 years yields an insignificant coefficient (0.032, $p = 0.917$). Second, permutation-based randomization inference (100 reassignments preserving cohort sizes) produces a null distribution in which only 1% of placebo estimates exceed the observed ATT (Figure 3), yielding a permutation p-value of 0.01. These exercises mitigate concerns that the results reflect spurious timing correlations.

TABLE 10 | Falsification tests: randomization and anticipation.

Panel A: Randomization inference				
Test metric	**Actual coef.**	**Mean placebo**	**Placebo SD**	**Simulated *p*-value**
CSR committee effect	0.208***	0.001	0.042	<0.001
Inference: Actual effect is statistically distinct from random noise.				
Panel B: Anticipation effects (lead test)				
Variable	**Coef.**	**Std. err.**	***t-stat***	***p-value***
Future CSR ($t + 1$)	0.134**	0.059	2.27	0.023
Future Board Skills ($t + 1$)	0.005***	0.001	3.65	<0.001

Note: Panel A reports results from 500 Monte Carlo simulations where the treatment variable is randomly permuted. Panel B reports fixed effects estimates including 1-year forward leads ($t + 1$) to test for anticipation.
***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

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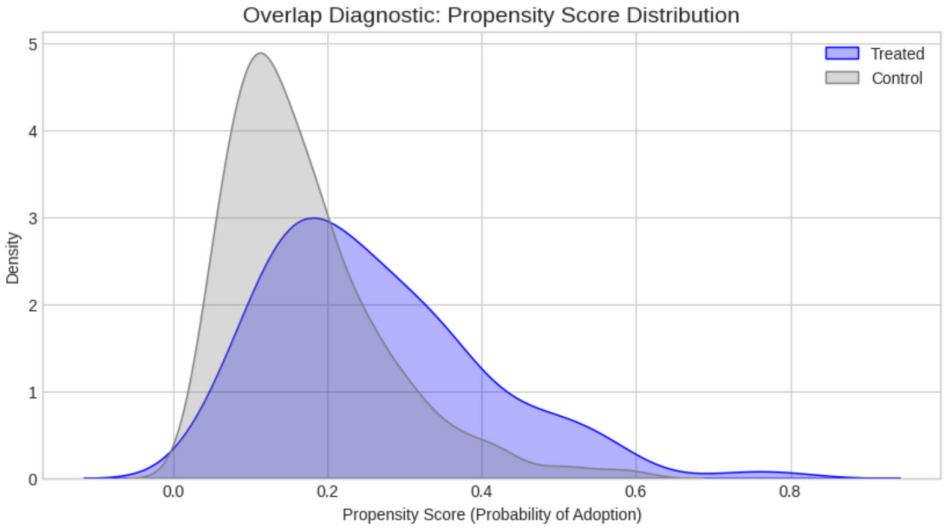

FIGURE 1 | Propensity score distributions: Treated vs. control firms.

TABLE 11 | Causal effects of CSR committee adoption: IPW-weighted (Sun and Abraham 2021) estimates.

Event time	ATT	Std. error	*p*	95% CI	*N* (firms)
Pretreatment period (parallel trends check)					
$t = -3$	−0.708	0.418	0.091	[−1.528, 0.112]	54
$t = -2$	−0.437	0.418	0.296	[−1.256, 0.382]	95
Post-treatment period (causal impact)					
t = 0 (adoption)	**0.297*****	**0.075**	**<0.001**	**[0.150, 0.444]**	173
t = +1	**0.253****	**0.099**	**0.010**	**[0.060, 0.446]**	147
$t = +2$	0.115	0.139	0.407	[−0.157, 0.387]	108
$t = +3$	0.280	0.193	0.147	[−0.098, 0.658]	69
Joint hypothesis tests					
Pre-trends ($t \in \{-3, -2\}$)	Wald $\chi^2(2) = 0.71$, $p = 0.703$ ✓ Parallel trends hold				
Post-treatment ($t \in \{0 \ldots 3\}$)	Wald $\chi^2(4) = 20.60$, $p < 0.001$ ✓ Significant causal effect				
Sample information					
Treated firms	173 adopters across 2019–2023 cohorts				
Control firms	751 never-treated or not-yet-treated firms				
Total observations	4254 firm-years (924 unique firms)				

Note: This table reports the interaction-weighted estimator from Sun and Abraham (2021). The dependent variable is the ESG–SDG Wedge. Control firms are weighted via propensity scores. Standard errors are clustered at the firm level. The sample attrition from 173 firms at $t = 0$ to 69 at $t = 3$ is due to the staggered nature of adoption (late adopters have not yet reached $t = 3$).
***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

4.4.3 | Mechanism and Sensitivity Analyses

To assess whether the DiD evidence aligns with the theoretical interpretation of the wedge, we decompose the dependent variable into its standardized components. Adoption significantly increases ESG ratings (0.356, $p < 0.001$), while effects on SDG performance are weaker and only marginally significant (0.110, $p = 0.088$) (Table 12, Panel C). This asymmetry is consistent with the mechanism suggested by the baseline fixed effects results: CSR committees primarily shift firms toward enhanced external ESG evaluations rather than proportionate improvements in SDG-aligned performance. The estimated treatment effect remains stable when adding firm-specific linear trends (0.283, $p = 0.002$) and when restricting the event window to a balanced sample. Results are also robust to alternative clustering procedures and exclusion of boundary cohorts. Finally, consistent with our heterogeneity analyses in the baseline models, the adoption effect is concentrated among US firms (0.354, $p < 0.001$) and is statistically insignificant among Europe firms, suggesting that institutional context conditions the governance–wedge relationship.

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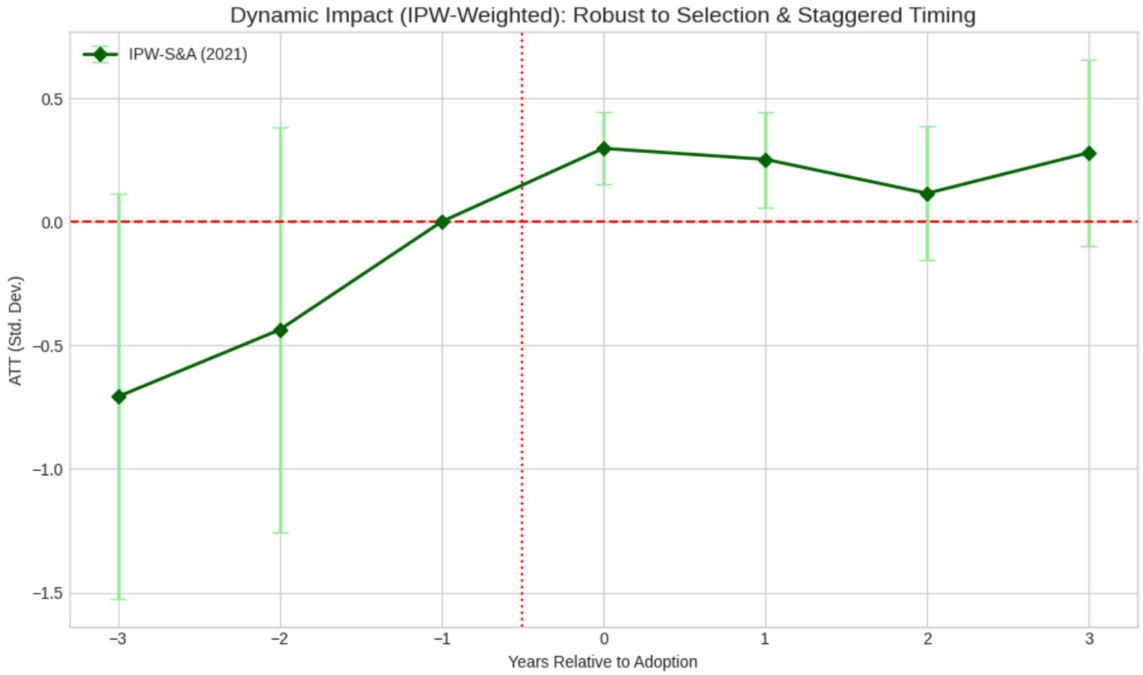

FIGURE 2 | Dynamic treatment effects: IPW-weighted (Sun and Abraham 2021) estimates.

Overall, the staggered adoption evidence reinforces the interpretation that changes in board-level governance structures precede and predict shifts in firms' relative positioning across ESG ratings and SDG performance. While not a fully exogenous shock, the dynamic pattern, absence of pre-trends, placebo tests, and randomization inference collectively strengthen the causal interpretation of our main fixed effects findings.

4.5 | Mechanisms and Construct Validation

The baseline specifications document robust associations between governance structures and the ESG–SDG wedge. Two conceptual questions follow. First, does the wedge reflect economically meaningful divergence in sustainability positioning, or could it be an artifact of normalization and scaling procedures? Second, through what channel do governance structures relate to this divergence do they elevate overall sustainability performance uniformly, or do they shift emphasis toward dimensions more salient to external evaluators? We address these questions through three complementary models: (i) outcome decomposition, (ii) residual-based orthogonalization, and (iii) alternative functional form validation. Together, these tests assess both construct validity and the underlying mechanism linking governance to positioning asymmetry.

4.5.1 | Decomposition: ESG Ratings Versus SDG Alignment

If governance structures systematically tilt firm positioning toward externally evaluated sustainability metrics, their associations should be stronger for ESG ratings than for SDG alignment. We therefore re-estimate our baseline specification separately using standardized ESG ratings and standardized SDG scores as dependent variables. Panel A of Table 13 reports the results. CSR Sustainability Committee exhibits a strong positive association with ESG ratings ($\beta = 0.345$, $p < 0.001$) and a weaker association with SDG alignment ($\beta = 0.136$, $p = 0.044$). The ESG coefficient is approximately 2.5 times larger in magnitude. Board Industry-Financial Expertise displays a sharper asymmetry: It is positively associated with ESG ratings ($\beta = 0.004$, $p < 0.001$) but exhibits no statistically significant association with SDG performance ($\beta = -0.0003$, $p = 0.838$).

These results indicate that governance structures are not uniformly correlated with sustainability engagement. Rather, their associations concentrate on ESG ratings the dimension most visible to investors and external raters—consistent with governance channeling attention toward metrics with clearer capital market relevance.

4.5.2 | Abnormal ESG: Residual-Based Validation

While the wedge measure captures relative positioning after within-industry-year standardization, one concern is that it mechanically reflects joint movements in ESG and SDG scores. To isolate the component of ESG ratings orthogonal to SDG engagement, we construct an alternative dependent variable capturing "abnormal" ESG positioning. Specifically, we regress raw ESG ratings on raw SDG scores and firm and year fixed effects. The residual from this regression represents the portion of ESG ratings unexplained by SDG performance within firm and time contexts. This approach follows the logic of the Frisch–Waugh–Lovell theorem, which establishes that partialing out variables through residualization yields coefficients identical to those obtained from the full specification (Lovell 1963). We then re-estimate our baseline governance specification using these residuals as the dependent variable.

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TABLE 12 | DiD diagnostics, mechanisms, and robustness checks.

Panel A: IPW covariate balance (standardized mean differences)				
Covariate	**Unweighted SMD**	**Weighted SMD**	**Target**	**Status**
Leverage (Debt/Assets)	−0.308	−0.008	<0.10	✓ Pass
Firm Size (ln Assets)	−0.539	−0.003	<0.10	✓ Pass
ROA	0.348	0.045	<0.10	✓ Pass
Exec. Gender Diversity	−0.207	0.051	<0.10	✓ Pass
Board Policy Indicators	0.258	0.021	<0.10	✓ Pass
Panel B: Sample attrition by event time				
Event Time	***N (firms)***	**% of $t = 0$**	**Std. error**	**Attrition rate**
$t = 0$	173	100%	0.075	—
$t = +1$	147	85%	0.099	15%
$t = +2$	108	62%	0.139	38%
$t = +3$	69	40%	0.193	60%
Panel C: Robustness and mechanisms				
Specification	**ATT**	**Std. error**	***p-value***	**Inference**
Baseline (Table 11,$t = 0$)	0.297***	0.075	<0.001	Strong effect
+ Firm-specific linear trends	0.283***	0.091	0.002	Robust
Placebo timing ($t - 3$ backdated)	0.032	0.306	0.917	No effect
Balanced window ($t \in \{-2, +2\}$)	0.265**	0.120	0.028	Robust
Permutation test (100 iters)	$p = 0.01$ (True > 99% of placebos)			Robust
Mechanism: Decomposition				
DV = ESG score (Z-score)	0.356***	0.063	<0.001	**Driver**
DV = SDG score (Z-score)	0.110*	0.064	0.088	Weak/null
Heterogeneity: Context				
US firms only	0.354***	0.089	<0.001	Driver
Non-US firms only	0.111	0.124	0.371	Insignificant

Note: Panel A reports covariate balance before and after Inverse Probability Weighting (IPW); all covariates achieve standardized mean differences (SMD) below the 0.10 threshold. Panel B documents how staggered adoption leads to sample attrition at later event times, explaining the widening standard errors in Figure 2. Panel C presents robustness tests and mechanism analysis, showing that the "Wedge" is driven by a sharp increase in ESG ratings (0.356) rather than SDG performance (0.110). ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel B of Table 13 reports the results. Both governance variables remain strongly positively associated with abnormal ESG ratings: CSR Sustainability Committee ($\beta = 6.815$, $p < 0.001$) and Board Industry-Financial Expertise ($\beta = 0.063$, $p < 0.001$). Because the dependent variable is orthogonal to SDG performance by construction, these coefficients indicate that governance structures predict the component of ESG ratings that exceeds what would be expected given firms' SDG foundations. This finding mitigates concerns that governance simply increases sustainability metrics proportionally and instead supports an interpretation of asymmetric positioning.

4.5.3 | Rank-Based Functional Form Validation

Our primary wedge measure relies on z-score standardization within industry-year cells, which preserves cardinal distance but assumes comparability of dispersion across contexts. To assess robustness to distributional assumptions, we construct an alternative rank-based measure by converting ESG ratings and SDG scores into within-industry-year percentiles (0–100 scale) and computing the percentile gap. Panel C of Table 13 presents results using this rank-based gap. Despite the nonlinear transformation, both governance variables retain statistical significance: CSR Sustainability Committee ($\beta = 4.968$, $p = 0.020$) and Board Industry-Financial Expertise ($\beta = 0.109$, $p = 0.028$). Coefficient magnitudes differ mechanically due to scale differences, but qualitative inferences remain unchanged.

This robustness demonstrates that the documented associations do not depend on cardinal scaling assumptions or distributional properties of z-scores; they persist when focusing purely on ordinal positioning.

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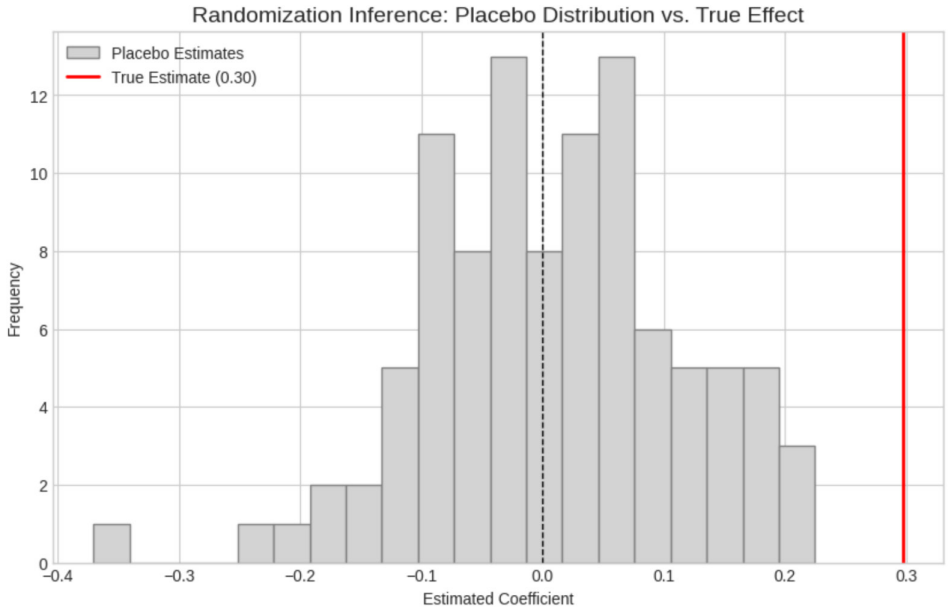

FIGURE 3 | Randomization inference: placebo distribution vs. true effect.

TABLE 13 | Mechanism and construct validation: decomposition, residuals, and ranks.

Panel A: Decomposition (separate dependent variables)				
	Z_ESG		**Z_SDG**	
Variable	**Coef.**	***p-value***	**Coef.**	***p-value***
CSR Committee	0.345***	<0.001	0.136**	0.044
Board Expertise	0.004***	<0.001	−0.0003	0.838
Ratio (ESG/SDG)	2.5× stronger		—	
Inference	Governance tilts toward investor-salient ESG metrics			
Panel B: Abnormal ESG (residual from ESG~ SDG)				
Variable	**Coef.**	**Std. error**	***t-stat***	***p-value***
CSR Committee	6.815***	1.283	5.31	<0.001
Board Expertise	0.063***	0.018	3.46	<0.001
DV Construction	Residuals = ESG unexplained by SDG (orthogonalized)			
Inference	Governance predicts ESG beyond SDG foundations			
Panel C: Rank-based gap (percentile transformation)				
Variable	**Coef.**	**Std. error**	***t-stat***	***p-value***
CSR Committee	4.968**	2.127	2.34	0.020
Board Expertise	0.109**	0.049	2.21	0.028
DV Construction	Percentile rank gap (0–100 scale, ordinal positioning)			
Inference	Robust to distributional assumptions and z-score normalization			
Controls	All panels include baseline controls + firm and year FE			
Observations	4404 firm-years across 951 firms			

Note: Panel A decomposes wedge into ESG and SDG components; governance associates 2.5× more strongly with ESG ratings. Panel B uses abnormal ESG (residuals from ESG regressed on SDG) as dependent variable, isolating ESG positioning unexplained by SDG foundations. Panel C employs rank-based gap (within-industry-year percentiles), validating robustness to z-score standardization. Convergence across approaches confirms: (1) Governance effects concentrate on investor-salient ESG metrics, (2) wedge captures genuine positioning asymmetry, and (3) findings are not artifacts of functional form. All specifications include baseline controls, firm and year fixed effects, and cluster standard errors at firm level.
***, **, and * = 1%, 5%, and 10% significance.

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4.5.4 | Synthesis

Taken together, these exercises provide convergent evidence on both construct validity and mechanism. First, decomposition results show that governance effects are materially stronger for ESG ratings than for SDG alignment. Second, residual-based tests confirm that governance predicts the component of ESG positioning unexplained by underlying SDG engagement. Third, rank-based validation demonstrates that findings are not artifacts of normalization or functional form. Collectively, the evidence supports the interpretation that governance structures are associated with systematic shifts in firms' relative sustainability positioning specifically, greater alignment with investor-salient ESG metrics relative to SDG-oriented performance. These results reinforce the substantive meaning of the ESG–SDG wedge and clarify the channel through which governance relates to sustainability disclosure and positioning.

5 | Conclusion

This study examines whether board-level governance structures shape firms' relative positioning across investor-oriented ESG ratings and normative SDG alignment—two coexisting sustainability frameworks that differ in capital market salience and stakeholder audience. Drawing on institutional logics theory and the attention-based view of the firm (Thornton et al. 2012; Ocasio 1997), we theorize that formal governance mechanisms channel limited board attention toward evaluative criteria embedded in capital market processes. Analyzing 4404 firm-year observations from 951 firms across US and European markets during 2018–2023, we document robust evidence that CSR committees and board financial expertise are positively associated with the ESG-SDG wedge. Baseline fixed effects estimates reveal associations of 0.21 standard deviations, while staggered difference-in-differences analysis of 173 committee adoption events yields causal effects of 0.30 standard deviations with validated parallel trends. Mechanism analyses demonstrate asymmetric effects—governance associates 2.5 times more strongly with ESG ratings than SDG alignment—and institutional moderation tests show associations concentrate among US firms (3.7-fold stronger than non-US contexts). These patterns persist across extensive robustness checks including alternative estimators, distributional analyses, PSM, falsification tests, and omitted variable sensitivity thresholds exceeding conventional benchmarks by factors of 24–113.

These findings advance theoretical understanding along three dimensions. First, we challenge prevailing assumptions that specialized board committees uniformly enhance nonfinancial performance across all sustainability dimensions. Prior research documents positive associations between governance structures and ESG ratings (Orazalin 2020; Iliev and Roth 2023), but treats sustainability as unidimensional. By decomposing sustainability into investor-facing evaluation and normative commitment, we reveal that governance structures create differential emphasis across frameworks rather than proportionate improvement. This extends attention-based theories (Tuggle et al. 2010) by demonstrating that oversight mechanisms systematically channel attention toward criteria with clearer external consequences and benchmarking infrastructure. Second, we provide granular empirical evidence that firms under multiple coexisting evaluative frameworks exhibit governance-driven prioritization reflecting the relative dominance of financial materiality versus normative developmental logics. Our within-country identification combined with institutional moderation isolates how board structures interact with country-level pressures to shape positioning (Aguilera and Jackson 2010). Third, we introduce the ESG-SDG wedge as a novel construct enabling future research to examine whether divergence reflects strategic trade-offs, symbolic adoption, or substantive differences in stakeholder responsiveness.

Practical implications extend to investors, boards, and regulators. For asset managers, our evidence cautions that ESG ratings may not comprehensively capture sustainability engagement when boards prioritize externally evaluated metrics over broader commitments. Firms with strong governance oversight may exhibit relatively weaker SDG alignment compared to their ESG ratings, suggesting that SDG-aligned investment mandates should complement commercial scores with direct assessment of disclosure breadth (Dyck et al. 2019). This recommendation gains urgency in light of recent evidence that substantive SDG disclosures are positively associated with firm market value in European capital markets (Gabrielli et al. 2026), suggesting that governance-driven deprioritization of SDG engagement may carry valuation consequences not captured by ESG ratings alone. For boards, the findings underscore that formal CSR committees may inadvertently concentrate oversight on rating-visible metrics while allocating less attention to development goals lacking standardized infrastructure. Boards seeking balanced engagement should explicitly structure committee mandates to encompass both financial materiality considerations and stakeholder-oriented objectives through dual reporting mechanisms. For policymakers, our evidence of governance-driven prioritization and institutional heterogeneity informs debates surrounding mandatory disclosure. Recent initiatives seek to harmonize standards and integrate SDG frameworks (Christensen et al. 2021), yet effectiveness depends on whether governance structures create systematic asymmetries. Explicit mandates requiring board-level SDG oversight or integrating SDG metrics into compensation frameworks may counterbalance the dominant emphasis on investor-oriented ESG ratings.

We acknowledge several limitations. First, while our fixed effects and difference-in-differences designs address time-invariant heterogeneity and validate parallel trends, time-varying unobservables could bias estimates. Our robustness battery mitigates these concerns, but future research could exploit quasi-experimental shocks such as regulatory reforms mandating committee formation to strengthen causal identification. Second, our SDG measure relies on binary indicators of declared support rather than operational impact or resource allocation intensity, reflecting data constraints common in SDG research (Rosati and Faria 2019). Future studies could construct continuous engagement measures through operational indicators or textual analysis quantifying commitment depth.

An adjacent analytical challenge involves determining whether the documented governance–wedge dynamics signify a genuine diversion of board-level focus toward capital-market-favored ESG criteria, or if they merely capture structural disparities in

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the measurement and monitoring of these distinct sustainability paradigms. Commercial ESG evaluations rely on standardized external assessment, employing industry-calibrated standardization and peer benchmarking, and are increasingly integrated into institutional screening routines, capital allocation, and executive remuneration. Conversely, normative SDG alignment relies heavily on firm-issued indicators that map the sheer breadth of stated commitments rather than auditing substantive operational depth. Consequently, these metrics often operate without comparable external oversight or competitive benchmarking. If one adopts a strictly measurement-driven perspective, formal governance architectures might conceivably foster symmetric enhancements across all sustainability domains. Under such a scenario, the ESG–SDG wedge would largely materialize as a mechanical artifact: granular, third-party ESG scoring would seamlessly register performance gains, whereas equivalent progress on the SDG front would remain obscured by the blunt nature of binary indicators.

To interrogate this alternative hypothesis, we implement a triad of converging empirical checks. Initially, the mechanism decomposition presented in Table 13, Panel A, reveals that the correlation between governance configurations and standardized ESG scores outpaces the linkage with SDG alignment by a factor of roughly 2.5. Such pronounced magnitude divergence strongly contradicts the premise of uniform, underlying performance enhancements being differentially logged by distinct measurement regimes. Next, the abnormal ESG modeling (Table 13, Panel B) mathematically extracts the variation in ESG ratings that remains strictly orthogonal to SDG commitments. The results confirm that governance variables successfully predict this isolated, SDG-independent component. This dynamic implies that board structures actively cultivate ESG-specific competitive advantages that exceed any baseline predictable by general normative engagement. Finally, substituting rank-based percentile gaps (Table 13, Panel C) confirms that these baseline findings are fully robust, indicating they are not merely the byproduct of z-score normalization anomalies or specific distributional assumptions. Collectively, this empirical triad points toward a genuine, asymmetric reallocation of strategic attention rather than uniform progress masked by divergent evaluative frameworks. Nevertheless, we concede that capturing SDG alignment via binary variables inherently reflects the surface-level breadth of corporate pledges rather than granular operational integration. Disentangling these mechanisms with greater precision constitutes an important frontier for subsequent scholarship. Future investigations could resolve this limitation by deploying continuous impact metrics, leveraging computational linguistics to gauge commitment intensity, or tracking the longitudinal flow of SDG-dedicated capital expenditures. Taken together, these tests provide consistent—though not definitive—evidence that the observed ESG-SDG wedge reflects genuine reallocation of governance attention, rather than solely differences in measurement or observability.

Third, our institutional moderation aggregates non-US observations across 24 countries with heterogeneous traditions. Finer-grained analyses isolating specific features such as legal origins or ownership concentration could clarify which dimensions most strongly condition governance–sustainability relationships. Fourth, while mechanism analyses demonstrate asymmetric associations, we do not directly observe cognitive processes or deliberative structures. Qualitative research employing director interviews or board meeting analysis could illuminate attention channeling microfoundations.

Future research could extend our findings along several dimensions. First, examining whether ESG-SDG divergence affects cost of capital, institutional ownership, or stakeholder engagement would clarify economic consequences of framework prioritization. If markets penalize large wedges as incomplete commitment signals, boards face incentives to harmonize positioning; conversely, if investors primarily value ESG while discounting SDG alignment, wedges may persist without discipline. Second, exploring heterogeneity across ESG pillars and specific SDG goals could identify whether prioritization concentrates in particular dimensions or operates uniformly—environmental performance may exhibit stronger sensitivity due to clearer materiality linkages (Khan et al. 2016). Third, examining alternative governance mechanisms such as institutional investor engagement or CEO incentive structures could clarify whether associations reflect board-level attention exclusively or broader organizational dynamics. Fourth, extending analysis to private firms or emerging markets would test generalizability beyond publicly listed firms in developed markets and illuminate whether relationships depend critically on external monitoring intensity.

Despite these limitations, our study provides robust evidence that board-level governance structures are associated with systematic divergence between investor-oriented ESG ratings and normative SDG alignment, with effects concentrated in contexts where financial materiality logics dominate. These findings challenge assumptions that specialized oversight uniformly enhances nonfinancial performance and underscore that governance mechanisms under constrained attention systematically favor evaluative criteria embedded in capital market processes. As sustainability reporting evolves and regulatory harmonization advances, understanding how governance shapes positioning across coexisting institutional frameworks remains essential for interpreting the meaning and consequences of corporate sustainability engagement.

Endnotes

[1] Refinitiv database, "Environmental, Social and Governance (ESG) Scores from Refinitiv: Methodology."

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