

RESEARCH ARTICLE

Collaborations with nonprofit organizations: Signals or agents of operational change? Empirical evidence from Italian listed enterprises

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Abstract

Collaborations with nonprofits are an avenue for firms to tackle social and environmental issues, and their disclosure is one way through which firms can inform stakeholders of the sustainability of their operations. This paper investigates their signaling function, disentangling it from their transformative role in spurring sustainable operational changes. Econometric analyses on collaborations reported by 118 Italian listed firms in their non-financial disclosures in 2017–2019 confirm their signaling function. Most reported collaborations do not imply firms' operational engagements. Firms' propensity to collaborate is higher when their activities are less observable, institutional monitoring is weak, and alternative signaling mechanisms are absent. However, signaling determinants are weaker when collaborations involve firm-level operational engagements. The study offers exploratory evidence that firms disclose collaborations with nonprofits as signals of sustainability. It offers insights on their dual role, showing that collaborations which spur sustainable operational changes are less likely to be employed as signals.

KEYWORDS

cross-sector partnerships, monitoring, nonprofit, signaling, sustainability

1 | INTRODUCTION

Firms are increasingly expected to innovate their strategy and operations to address urgent sustainability challenges (Bello-Pintado et al., 2023; Bogacki & Letmathe, 2021; UN General Assembly, 2015), also because of increased stringency of policy regulations (Aureli et al., 2020; De Villiers et al., 2024) and demands from their civil society stakeholders (Bello-Pintado et al., 2023; Vitolla et al., 2019). At the same time, firms should give account of their social and environmental performances to their external stakeholders (Aureli et al., 2020; Todaro & Torelli, 2024; Zhang et al., 2021). As a consequence, the growing involvement of business in social and environmental issues (Ringvold et al., 2023) is paralleled by the proliferation

of disclosure instruments (Saulick et al., 2023), and questions on the alignment between disclosed information and the actual sustainable transformation of business practices (Todaro & Torelli, 2024; Ziolo et al., 2024).

A central strategy within firms' corporate social responsibility (CSR) is their engagement in cross-sector partnerships (CSPs) with public and nonprofit organizations (Ordonez-Ponce et al., 2021). In particular, collaborations between firms and nonprofits (Fontana, 2018; Schweitzer & Meng, 2023) have been recognized as a key element of business strategies toward sustainability (den Hond et al., 2015; Feilhauer & Hahn, 2021), and a powerful mean for firms to address emerging sustainability issues (Bruijn et al., 2024; Murphy et al., 2015; Yaziji, 2004). Besides their transformative potential,

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business-nonprofit collaborations are disclosed to inform stakeholders of firms' engagement with sustainability (Schweitzer & Meng, 2023).

Literature increasingly investigates the signaling role of CSR activities (Conte et al., 2023; D'Apice et al., 2021; Shahid et al., 2024; Wang et al., 2023; Zerbini, 2017), in particular when involving credible third parties (Kim, 2021; Xu et al., 2023; Zhu et al., 2023). At the same time, literature on inter-firm collaboration has long argued that collaborations often have a signaling function (Jensen, 2004; Ozmel & Gulati, 2013; Stuart, 2000). However, the signaling function of collaborations with nonprofits has not been investigated by existing literature. Analyzing whether and how signaling—as opposed or additionally to the transformative role in innovating business activities toward sustainability (Schweitzer & Meng, 2023; Watson et al., 2020)—drives firms' collaboration with nonprofits has important implications for scholars and policymakers in assessing the nature of firms' involvement in such collaborations. Similarly to other CSR activities, collaborations with nonprofits could spur firms toward substantial sustainable changes, or could be limited to a symbolic engagement with sustainability (Kaul & Luo, 2018; Luo et al., 2018; Ziolo et al., 2024). This is a particularly urgent issue after recent scandals have casted doubts on firms' substantial contribution to sustainability through business-nonprofit collaboration (Reuters, 2024).

To fill this gap, we model the firm-level decision to enter into collaboration with nonprofits using signaling theory. We then test hypotheses through econometric analyses (Probit and Multinomial Probit) on a novel dataset consisting of collaborations with nonprofits undertaken by Italian listed business enterprises in the period 2017–2019. Results support the hypotheses that collaborations with nonprofits are employed as signals of sustainability. Three-quarters of disclosed collaborations do not imply firms' operational engagement, and more than one-third of collaborating firms only disclose non-operational collaborations. Some conditions increase the propensity to collaborate with nonprofits. First, firms are more likely to enter into collaboration when they do not give alternative signals of sustainability, such as a ISO 14001 or equivalent certification. Second, propensity to collaborate is higher when the observability of firms' activities is lower due to their international dispersion, and when monitoring from formal institutions, that may substitute for collaboration signals, is weaker. We also distinguish between a *substitutive* and a *reinforcing* effect of the monitoring from formal institutions in moderating the relationship between the propensity to collaborate and the dispersion of the firm's network. Finally, we show that the signaling determinants are less systematically linked to the decision to operationally engage in collaborations with nonprofits, suggesting a stronger transformative (rather than signaling) role of operational collaboration—but at the same time raising questions on the credibility of non-operational collaborations as signals.

More in detail, this paper contributes to the literature in three main ways. First, it contributes to business-nonprofit collaboration literature, by proposing and testing a framework of collaboration with nonprofits as a signal of social and environmental sustainability. In doing so, it extends signaling theory, which has been extensively applied to various CSR strategies and to the disclosure of

sustainability (Conte et al., 2023; D'Apice et al., 2021; Wang et al., 2023; Zerbini, 2017), but not yet to business-nonprofit collaboration, and enriches the theoretical outlook in cross-sector collaboration literature (Louche et al., 2021). Second, the paper draws insights into the heterogeneity of business-nonprofit collaborations, distinguishing between those implying firms' operational engagement, and those that contract out efforts to tackle sustainability issues to nonprofits—providing insight on the twofold role of collaborations (signals versus agents of operational change). The study also provides implications for the debate on the credibility of the disclosure of sustainability-related activities, and its relationship with firms' transformation toward substantial sustainability (Todaro & Torelli, 2024; Uyar et al., 2020). In doing so, we underline the need for different theories to frame and explain different types of collaborations driven by different motivations. Finally, the study offers methodological triangulation to the literature on CSPs (Pedersen et al., 2020), which relies predominantly on conceptual or case-based works (Bruijn et al., 2024), with a relative lack of large-scale quantitative studies that may provide more general results, or corroborate theoretical or qualitative findings. For practitioners, results also provide insights for managers willing to credibly inform their stakeholders on their firms' sustainability efforts, showing the conditions under which firms find rational to emit sustainability signals through collaborations with nonprofits. To sum up, the paper builds on the existing studies of collaborations as signals, and aims to extend this literature to the case of collaborations with nonprofits, and at disentangling the signaling value of these collaborations from the effect traditionally emphasized by literature, namely their transformative role (Schweitzer & Meng, 2023; Watson et al., 2020).

The remainder of the paper is structured as follows. Section 2 presents the background and theory. Section 3 brings forward the hypotheses. Section 4 illustrates the methods. Sections 5 reports the empirical results. Section 6 discusses results, contributions, implications for theory and practice, limitations, and avenues for further research.

2 | BACKGROUND AND THEORY

2.1 | Motivations for business-nonprofit collaboration

Business-nonprofit collaboration assumes heterogeneous forms, in which firms may either have an operational involvement or delegate to the nonprofit the task of tackling the sustainability issue (Austin & Seitanidi, 2012a; Kaul & Luo, 2018). Collaborations with nonprofits may spur operational change in firms, leading to learning and innovation (Schweitzer & Meng, 2023), up to the development of new products (Watson et al., 2020), and business models (Dahan et al., 2010; Perez-Aleman & Sandilands, 2008).

While the theoretical framing of business-nonprofit collaboration is varied, ranging from social network theory (Feilhauer & Hahn, 2021) to transaction costs economics (King, 2007), the bulk of

literature is based on institutional theory and on the resource-based view (RBV)—with scholars recently calling for a more differentiated theoretical outlook on business-nonprofit collaborations (Louche et al., 2021). Literature highlights the role of stakeholder pressures (Arenas et al., 2013; Wassmer et al., 2014), the possibility of obtaining resource advantages (Clarke & MacDonald, 2019), fulfill resource dependencies (den Hond et al., 2015; Selsky & Parker, 2005), or achieve complementarities (Ballesteros & Gatignon, 2019; Dahan et al., 2010). While qualitative studies highlight heterogeneity as a distinctive feature of business-nonprofit collaboration (Austin & Seitanidi, 2012a; Austin & Seitanidi, 2012b), quantitative studies have scarcely responded to the call for a more nuanced view of different collaboration modes.

2.2 | Signaling of corporate sustainability

2.2.1 | Sustainability signals: Motivations and rationality

Signaling theory posits that firms can generate credible signals to provide information on attributes of their products or activities that are not directly observable *ex ante*—a type of information asymmetry known as adverse selection (Akerlof, 1970; Spence, 1978). For example, firms selling high-quality products offer extensive warranties to separate themselves from low-quality sellers who would not be able to afford them (Spence, 1977).

Corporate sustainability has been defined in many different ways (Hockerts & Searcy, 2023), with early contributions focusing on the environment, but gradually extending to incorporate also the social dimension (Bansal & Song, 2017). One influential definition encompassing the three dimensions of social justice, environmental conservation, and economic value is the “triple bottom line” (Elkington, 1998). Since the sustainability of a firm’s activities is a multifaceted and hard-to-observe attribute (Bansal & Song, 2017; Nurunnabi et al., 2020; Zerbini, 2017), primary stakeholders often suffer from adverse selection (Doh et al., 2010; Kaul & Luo, 2018), as they may not be able to distinguish *ex ante* sustainable from unsustainable firms. Adverse selection may affect consumers but also other primary stakeholders,¹ i.e. suppliers (Cole & Aitken, 2019), employees (Carballo-Penela et al., 2023), investors (Hahn et al., 2021; Reimsbach et al., 2018).

Giving signals of sustainability to primary stakeholders may be rational for firms. Primary stakeholders may reward firms through economic mechanisms if they believe they contribute substantially to sustainability (Doh et al., 2010; Kaul & Luo, 2018)—that is, customers may recognize premium prices or increase their loyalty (Heinl et al., 2021), investors may accept lower returns (Vanwalleghem & Mirowska, 2020), motivated workers may agree to lower compensations or have a decreased turnover (Besley & Ghatak, 2005), and firms may become

more attractive for prospective employees (Carballo-Penela et al., 2023; Klimkiewicz & Oltra, 2017; Yasin et al., 2023).

Signaling theory has therefore been used extensively in the literature on strategic CSR (Conte et al., 2023; Gupta & Das, 2024; Zerbini, 2017) to analyze the disclosure of sustainability initiatives, especially in cases of information asymmetry in disperse value chains (Kölbel & Busch, 2021). However, research has paid limited attention to the signaling function of business-nonprofit collaborations despite their key role in firms’ sustainability strategies (Schweitzer & Meng, 2023).

2.2.2 | Credibility of sustainability signals

Literature has provided nuanced accounts on the credibility of sustainability signals in providing information regarding corporate sustainability. Some studies offer a positive overview. For example, higher levels of disclosure have been found to be associated with stronger environmental and social performance (Mahoney et al., 2013; Uyar et al., 2020). Analyzing a sample of 288 US oil and gas firms, Arena et al. (2015) find that positive tone in environmental reporting is a signal of future environmental performance. Similarly, a panel study on 4686 listed companies by Braam and Peeters (2018) found a positive relationship between sustainability performance and third-party assurance on disclosure. Disclosure is more likely to be a credible signal of sustainability when companies are exposed to high scrutiny (Marquis et al., 2016; Marquis & Qian, 2014).

Nevertheless, other studies question the credibility of such signals. For example, Yekini and Jallow (2012) find that higher levels of disclosure of corporate community involvement in annual reports are only weakly associated with project quality, while Xu et al. (2023) find that the signaling effect of green credit policies enhances environmental disclosure but does not reduce carbon emissions intensity. In addition, sustainability reporting may have an insurance-like effect for firms that disclose negative events (Hahn et al., 2021), and even increase the likelihood of irresponsible behavior (Luo et al., 2018).

2.3 | Collaboration as a signal

While literature on business-nonprofit collaboration has not investigated its signaling function, literature on inter-firm collaboration has long argued that alliances may function as credible signals toward stakeholders. Many studies focus on financial markets, showing how collaborations work as signals impacting analysts’ coverage (Jensen, 2004), stock market returns (Ozcan & Overby, 2008; Park & Mezas, 2005), likelihood of startups’ successful exit (Hoehn-Weiss & Karim, 2014), and of future alliance formation (Ozmel & Gulati, 2013). Jolink and Niesten (2021) show that firms engage in inter-firm R&D or production/marketing alliances to give credible signals of respectively environmental or economic value to their stakeholders. A few works focus on disentangling signaling motivations from alternative explanations of collaboration. Studying high-tech firms’ alliances, Stuart

¹We follow a categorization (e.g., D’Souza et al., 2022) naming *primary stakeholders* the ones entertaining formal economic relationships with a firm (customers, suppliers, workers, investors, ...), and *secondary stakeholders* the others (governments and civil society).

(2000) shows they boost firms' innovativeness and growth rates, and at the same time work as a signal for younger and smaller firms—recognizing that collaborations can have both a signaling and a “transformative” function (Stuart, 2000). In their study on startups' strategic alliances, Hoenig and Henkel (2015) show that alliances serve both as a signal toward venture capitalists and as a productive asset enhancing the quality of the technology.

Business-nonprofit collaboration can serve as a credible signal of sustainability when it is observable and more costly for unsustainable firms (Hahn et al., 2021; Yang et al., 2024). We follow here a similar reasoning to Yang et al. (2024) when discussing government funding for eco-friendly innovation. Sustainability signals involving third parties are generally considered more credible (Luffarelli & Awaysheh, 2018). Business-nonprofit collaborations require firms to engage with an independent third party – the partner nonprofit – making them costlier than symbolic sustainability efforts (Kaul & Luo, 2018). These partnerships entail greater proximity, information sharing, and mutual monitoring also outside of the alliance (Milne et al., 1996; Rivera-Santos & Rufin, 2010), exposing both firms and nonprofits to reputational risks if sustainability expectations are not met (Herlin, 2015). Thus, firms with unsustainable activities may not easily find nonprofit partners willing to collaborate (Van Huijstee & Glasbergen, 2010) and have a higher likelihood of sustaining reputational costs when engaging in such collaborations. Therefore, while we do not claim all business-nonprofit collaborations are evidence of substantial commitment to sustainability, we argue that their inherent characteristics make them likely to be perceived as credible signals by primary stakeholders.

3 | HYPOTHESES

3.1 | Dispersion

Adverse selection toward corporate sustainability is especially severe in firms with dispersed international networks (Doh et al., 2010; Strike et al., 2006; Yang et al., 2020), whose operations are observable only to a limited extent by primary stakeholders (Balineau & Dufeu, 2010; Riaz et al., 2015). Indeed, geographical distance hampers direct observation (Abramo et al., 2011; El Ghouli et al., 2013; Owen & Yawson, 2013), while cultural and institutional distances limit the possibility to rely on common formal and informal mechanisms of enforcement and monitoring (Zyglidopoulos, 2002). Information asymmetries can arise at multiple levels in firms that operate dispersed value chains (Riaz et al., 2015), for example, regarding product quality and traceability (Gachukia, 2015; Tse & Tan, 2012), respect of labor standards (Balineau & Dufeu, 2010), or environmental performance (Yu et al., 2021). Further, not signaling the sustainability of their activities may carry higher costs for firms with dispersed operations. Indeed, absent signals, they are more likely to become targets of activists (Bruijn et al., 2024), facing a higher probability of monetary (communication, legal, demand reduction) and non-monetary (reputational) costs (Daubanes & Rochet, 2019).

However, as firms scale internationally their operations and their impact on communities and on the environment increases, they become more likely to be monitored closely by “watchdog” secondary stakeholders (Bruijn et al., 2024; Miller & Skinner, 2015). We argue that such scrutiny works as a *substitutive* mechanism to signaling in conveying information to primary stakeholders, mitigating the adverse selection suffered by primary stakeholders and reducing the incentives to emit signals (Doh et al., 2010; Montiel et al., 2012; Nikolaou & Kazantzidis, 2016). We expect this mitigating effect to kick in for firms after they reach a certain level of dispersion. Examples of large MNEs targeted by watchdogs include Coca-Cola—the US beverage company—which shut down its Indian plants after local activists accused it of overexploiting water resources and polluting groundwater (Berglund, 2017), and Shell, the UK oil and gas company targeted by Greenpeace for the Brent Spar disposal decision (Zyglidopoulos, 2002). We therefore expect the effect of dispersion on the propensity to enter into collaboration with nonprofits to have an inverse U-shaped form.

H1. The dispersion of their operations has an *inverse U-shaped* relationship with firms' propensity to enter in a collaboration with a nonprofit.

3.2 | Alternative signals

The need to give signals of sustainability through collaboration may be reduced if firms are already putting in place alternative mechanisms to signal to their primary stakeholders the sustainability of their activities. Literature recognizes that the usage of certain signals becomes less prominent once an alternative signal is provided or when information is provided through an alternative channel (Colombo et al., 2023).

This phenomenon can be observed across various contexts where signaling mechanisms are employed to convey information to stakeholders. For instance, in the realm of product maintenance and consumer assurance, reparability communications can serve as a substitute for warranties, especially when extending warranties is not feasible. By emphasizing the ease with which products can be repaired, firms can assure customers of the product's longevity and reliability without necessarily offering extended warranties (Munten & Vanhamme, 2023), effectively reducing the need for traditional warranty signals. Similarly, in the context of startup financing, the signaling power of patents is crucial in the early stages. Patents serve as a strong indicator of innovation and potential market value, helping startups attract initial investments. However, as startups progress and more comprehensive information on their track record becomes available during later financing rounds, the reliance on patents as a signal diminishes (Colombo et al., 2023), as investors have access to a broader set of information. This principle can be applied to sustainability signaling as well, where the need to signal sustainability through collaborations may decrease when alternative mechanisms

are put in place to deliver to primary stakeholders information on the firms' activities.

We therefore formulate the following hypothesis:

H2. The presence of alternative signaling mechanisms has a *negative* relationship with firms' propensity to enter in a collaboration with a nonprofit.

3.3 | Institutional quality

Information costs may increase if the firm's operations are spread in countries where formal institutions are weak (Köbel & Busch, 2021; Rana & Sørensen, 2021). Strong formal institutions enact laws and regulations, and monitor the compliance of societal actors, including firms (Grzymala-Busse, 2010; Moussa et al., 2022). If monitoring institutions are weak, the quantity and quality of the information regarding firms' activities is lower (Goedhuys & Sleuwaegen, 2016; Montiel et al., 2012; Reddy & Fabian, 2020), as primary stakeholders cannot rely on the stringency of the regulatory environment and on the reliability of the monitoring process. There are many exemplary cases of firms behaving irresponsibly in countries with weaker institutions, sometimes leading to serious accidents—such as Union Carbide, the US chemical firm, in India, or ExxonMobil, the US oil and gas company, in Nigeria.

We therefore expect the presence of strong institutions, and their monitoring role, to reduce adverse selection and to substitute for the role of collaboration-based signals.

H3. The institutional quality in the countries where firms operate has a *negative* relationship with firms' propensity to enter in a collaboration with a nonprofit.

We expect this effect to be particularly strong for firms with very disperse operations, where the role of strong monitoring by formal institutions in mitigating adverse selection suffered by primary stakeholders—and therefore in reducing the incentive to collaboration-based signaling—is even more important (Doh et al., 2010; Hegde & McDermott, 2004; Strike et al., 2006).

H4. The institutional quality in the countries where a firm operates *negatively* moderates the relationship between the dispersion of operations and firms' propensity to enter in a collaboration with a nonprofit.

4 | METHODS

4.1 | Data collection

A dataset of collaborations undertaken and reported by Italian listed firms in the 2017–2019 period has been built to test hypotheses. Italy is one of the 10 largest economies in the world according to the

World Bank 2022 GDP estimates,² and has a prominent third sector, employing almost 3 million FTE workers, the second largest in the EU after Germany (Salamon, 2016), making it an interesting context to study business-nonprofit interactions. Furthermore, the Italian parliament has recently approved a Law (DDL Beneficenza–Charity Law) to enhance the transparency of philanthropic endeavors, after scandals related to the unclear communication of such initiatives (Reuters, 2024). While the subject of this scandal is narrow compared to the broader realm of business-nonprofit collaboration, its large echo is widely believed to have decreased public trust in the third sector as a whole—especially regarding relationships with the business sector.³ Therefore, the Italian context emerges as very relevant to investigate the signaling function of business-nonprofit collaboration and the relationship with its transformative role as agent of operational change for the business sector.

To retrieve business-nonprofit collaborations, and since our purpose is to study collaborations as a signal toward primary stakeholders, we relied on firms' non-financial disclosure (NFD) as source. Corporate reporting is highlighted as one of the main instruments for signaling sustainability (Hahn et al., 2021; Khan et al., 2020; Saxton et al., 2019; Zhang et al., 2021). We therefore manually scanned the NFDs of listed firms in the three main Italian Stock Exchange indexes—FTSE-MIB, comprising the 40 listed firms with the largest market capitalization, FTSE-MID CAP, comprising the 60 following largest companies, and FTSE-STAR, comprising medium-capitalization companies. We chose to focus on listed firms because they have stricter and more homogeneous disclosure requirements (Carmo & Miguéis, 2022). Following other studies (e.g., Attig et al., 2016) and to capture voluntary engagement in sustainability, financial firms were excluded as they belong to a heavily regulated sector. This left us with a total of 118 firms, for which we scanned all NFDs available for a 3-year period (2017–2019), starting from the year in which the EU Non Financial Reporting Directive (Directive 2014/95/EU)—implemented in Italy through Legislative Decree No. 254/2016—came into force, mandating listed companies above certain size thresholds to publish yearly NFDs.

We retrieved a total of 606 collaborations undertaken by 86 firms, as well as 32 non-collaborating firms, for a total of 638 observations. Only collaborations involving nonprofits acting in the general interest (social or environmental sustainability) were included.⁴ Information was triangulated scanning firms' websites and media sources (Lexis-Nexis news database and online editions of the main five Italian newspapers) for firms without available NFDs and for a random sample of firms to check the reliability and completeness of NFDs. Authors were supported by three research assistants during data collection, involving different researchers in each phase to cross-check, discuss divergences, and ensure the accuracy of retrieved data. Table A1 in the Appendix reports the data collection process, including the sources used for triangulation. The dataset was complemented with other

²https://databankfiles.worldbank.org/public/ddpext_download/GDP.pdf.

³<https://www.vita.it/reputazione-falsa-illusione-caso-ferragni-non-tochera-non-profit/>.

⁴Collaborations involving as the nonprofit side corporate foundations or business associations—formally nonprofit organizations—have been excluded for this reason.

sources to retrieve firm- and context-level variables (Section “Variables and measures”).

4.2 | Variables and measures

4.2.1 | Dependent variables

The dependent variable for the main analysis is *collaboration*, a binary variable that assumes a value of 1 for observations where the firm reports at least one active nonprofit collaboration in the analyzed period, and 0 otherwise. To single out collaborations in which firms show an operational involvement, we also coded a dependent variable of operational engagement (*operational*), coded by clustering the collaborations into groups based on the description reported in DNFs. Due to the unstandardized nature of our data, we had to rely on manual coding for this step. A first coding run was conducted by three research assistants who came up with a set of keywords to cluster collaborations according to seven categories based on the literature on taxonomies of business-nonprofit collaboration (Austin, 2000; Austin & Seitanidi, 2012a; Austin & Seitanidi, 2012b; Seitanidi & Ryan, 2007; Wymer & Samu, 2003). The two authors then revised independently the allocation of collaborations to clusters, discussing ambiguous cases until agreement was reached. Table A2 in the Appendix reports the clusters and the related classification in detail, along with the keywords used for the coding.

4.2.2 | Independent variables

The *dispersion* was measured as the number of geographical areas in which the firm is active, weighted by the distance from the home country. This indicator is meant to synthetically represent both the size and the spread of the operations of the firm. The countries in which the firms are active have been retrieved from the Bureau van Dijk *Orbis* database. Areas were constructed through the CAGE (Cultural, Administrative, Geographical, Economic) distance indicator from the NYU Stern Globalization Explorer, dividing countries into six clusters of distance from the home country of the firms (Italy).⁵ The indicator is computed as the number of areas in which the firm is present, with more distant areas being given larger weight in the calculation.

The presence of alternative sustainability signals was coded through the *sustsignal* variable. Sustainability certifications (Montiel et al., 2012; Moratis, 2018; Nikolaou & Kazantzidis, 2016; Riaz & Saeed, 2020) and commitments (Janney et al., 2009; Orzes et al., 2018, 2020) are recognized by literature as prominent signals of sustainability. We measured this through a binary variable retrieved from the *Refinitiv* ESG database, which reports whether firms have a

ISO 14001 or equivalent certification for their environmental management systems, and whether the company appears as signatory of the United Nations Global Compact, a commitment to follow responsible social and environmental practices along the supply chain and to produce yearly advancement reports on related sustainability performances. We corroborated the measure by checking firms' websites and the UN Global Compact website. The variable assumes value 1 if the firm has adopted at least one of this two instruments in the analyzed period, and 0 otherwise.

Institutional quality (*instqual*) was operationalized using data for 2017 from the World Bank's World Governance Indicators (WGI), which provide yearly country-level data on the following indexes: Voice & Accountability, Political Stability and Lack of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. Following a common approach in the literature, we computed the synthetic country-level indicator as the first factor from a Principal Component Analysis of the six indexes to avoid multicollinearity (Saeed et al., 2022; Tashman et al., 2019). We computed the firm-level value as the average index for the countries in which the firm is active.

4.2.3 | Control variables

We control for a series of firm-level variables that may influence the choice to enter into nonprofit collaboration. Firm size was measured as the natural logarithm of the number of employees in 2017, retrieved from *Orbis*. Using the natural logarithm of size is common in empirical econometric applications (Wooldridge, 2015, p. 193). Size is commonly included as a control in studies related to firms' propensity of firms to engage in CSR (den Hond et al., 2015), as larger firms are expected to have greater CSR capabilities (Aldama et al., 2009; Odziemkowska, 2022). *Profitability*, measured as the average net profit margin in the 2017–2019 period retrieved from *Orbis*, was also controlled for. Firm *age*, retrieved from *Orbis* and corroborated through corporate documentation, was also included. It has indeed been highlighted as relevant for the engagement of firms in sustainability (Robinson & Wood, 2018; Withisuphakorn & Jiraporn, 2016). Another binary control variable is *b2c*, coding whether a firm has a B2C orientation. Indeed, proximity to consumers is a relevant variable in driving business-nonprofit collaboration choices (den Hond et al., 2015). We included a *repcrisis* binary variable to control for alternative legitimacy-based explanations of collaboration (Lin & Darnall, 2015). The variable was coded through queries on Google and Lexis-Nexis news databases to find reports of reputational accidents linked to the firm. The logic behind this choice is that only information readily available through commonly used media sources would have a significant impact on the stakeholders' perception of the firm (Etter et al., 2019; Van der Meer & Verhoeven, 2014). The queries included the firm's name with the words “scandal,” “fraud,” “accident,” “boycott,” and “reputation.” The variable was coded as 1 if the company had a reputational crisis in the time frame starting from 2 years before the observed period.

⁵Countries were divided into the following clusters: Cluster 1 made up by countries with CAGE distance lower than 2,000 from Italy; Cluster 2 distance between 2,000 and 4,000; Cluster 3 distance between 4,000 and 6,000; Cluster 4 distance between 6,000 and 8,000; Cluster 5 distance between 8,000 and 10,000; Cluster 6 distance higher than 10,000.

TABLE 1 Descriptive statistics and pairwise correlations.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) <i>Collaboration</i>	1												
(2) <i>Operational</i>	0.13	1											
(3) <i>Dispersion</i>	0.10	-0.03	1										
(4) <i>Sustsignal</i>	0.09	0.09	0.42	1									
(5) <i>Instqual</i>	0.00	-0.04	-0.06	-0.14	1								
(6) <i>Size</i>	0.27	0.05	0.63	0.48	-0.03	1							
(7) <i>Profitability</i>	0.01	0.05	0.02	0.29	-0.11	-0.17	1						
(8) <i>Age</i>	0.02	-0.06	0.35	0.34	-0.08	0.21	-0.04	1					
(9) <i>B2c</i>	0.08	0.03	0.16	0.27	-0.13	0.38	-0.06	0.41	1				
(10) <i>Reprcrisis</i>	0.17	0.02	0.15	0.30	-0.27	0.42	0.02	0.20	0.23	1			
(11) <i>Foundation</i>	0.13	0.03	0.15	0.36	-0.09	0.45	0.03	0.15	0.20	0.55	1		
(12) <i>Esg</i>	0.19	0.00	0.40	0.73	-0.08	0.61	0.18	0.21	0.34	0.39	0.55	1	
(13) <i>Vol_discl</i>	0.17	0.13	0.32	0.35	-0.26	0.39	0.16	0.20	0.17	0.11	0.17	0.30	1
N	638	638	638	638	638	638	638	638	638	638	638	638	638
Mean	0.95	0.25	6.16	0.61	0.60	8.14	9.57	51.46	0.42	0.42	0.41	41.06	0.62
Std. Dev.	0.22	0.43	2.90	0.49	0.30	1.61	10.84	35.04	0.49	0.49	0.49	32.05	0.49
Min	0	0	1	0	-0.32	0	-54.90	3	0	0	0	0	0
Max	1	1	9	1	1.31	11.06	50.78	145	1	1	1	91.65	1

Other three variables, *foundation*, *ESG*, and *vol_discl*, indicating respectively whether the firm has a related corporate foundation (from corporate documentation), the average ESG score in the 2017–2019 period (from *Refinitiv* ESG database) and whether the firm published voluntary NFD before the reference period (from *Refinitiv* ESG database, corroborated through corporate disclosure on online archives), are included to control for sustainability orientation, a relevant driver of cross-sector collaboration (den Hond et al., 2015), and to mitigate endogeneity issues. We finally include *industry* dummies to control for industry fixed effects. Descriptive statistics and pairwise correlations are reported in Table 1.

4.3 | Models

Hypotheses were tested through econometric analyses using limited dependent variable models (Probit models and Multinomial Probit models). Limited dependent variable models are models that allow to perform econometric analyses when the dependent variable assumes a limited number of possible outcomes (Wooldridge, 2015, p. 583). In particular, Probit models are used to study a dependent variable that has a binary outcome, while Multinomial Probit models are a generalization that allows to study a dependent categorical variable which can have more than two outcomes. Therefore, Probit models are used in our analysis to study the binary choice to enter (or not) into collaboration, while Multinomial Probit models are used to study the choice between three alternative options, that is, entering into non-operational collaboration, entering into operational collaboration, not entering into collaboration. Standard errors were clustered by firm to

TABLE 2 Descriptive analysis on the sample, distinguishing between non-operational and operational collaborations.

	Non-operational	Operational	Total
# Reported	449 (74.09%)	157 (25.91%)	606
Per collaborating firm	5.68	2.75	7.05
Per firm	3.81	1.33	5.14

TABLE 3 Preliminary descriptive evidence on non-operational versus operational collaborations.

	Non-operational	Operational
<i>Dispersion</i>	1.251	1.244
<i>Sustsignal</i>	1.128	1.727
<i>Instqual</i>	0.911	1.024

take into account the mutual dependence of observations related to different collaborations undertaken by the same firm.

5 | RESULTS

5.1 | Descriptive evidence

Table 2 reports descriptive evidence on the data. Almost three quarters of collaborations reported by Italian listed firms are non-operational (449 out of 606; 74.09%). 72.88% of the firms (86 out of 118) report at least one active collaboration. 79 firms (66.95%) report



TABLE 4 Results of Probit models.

	Model (1) <i>collaboration</i>	Model (2) <i>collaboration</i>	Model (3) <i>collaboration</i>
<i>Dispersion</i>	0.683** (0.284)	0.692** (0.299)	0.667** (0.330)
<i>Dispersion</i> ²	−0.070*** (0.027)	−0.068** (0.028)	−0.087*** (0.033)
<i>Sustsignal</i>		−0.976** (0.397)	−1.159*** (0.383)
<i>Instqual</i>			−2.086* (1.176)
<i>Dispersion*instqual</i>			0.397* (0.214)
<i>Size</i>	0.581*** (0.151)	0.663*** (0.156)	0.748*** (0.182)
<i>Profitability</i>	0.011 (0.014)	0.035* (0.018)	0.040** (0.020)
<i>Age</i>	−0.011* (0.006)	−0.007 (0.007)	−0.006 (0.007)
<i>B2c</i>	−0.751* (0.418)	−1.062** (0.438)	−1.186** (0.463)
<i>Scandal</i>	1.509*** (0.512)	1.836*** (0.659)	2.231*** (0.661)
<i>Foundation</i>	−0.386 (0.479)	−0.474 (0.521)	−0.566 (0.509)
<i>Esg</i>	0.012* (0.007)	0.016** (0.008)	0.014* (0.008)
<i>Vol_discl</i>	0.130 (0.396)	0.247 (0.431)	0.312 (0.443)
<i>Industry dummies</i>	Yes	Yes	Yes
<i>Constant</i>	−2.517** (1.186)	−2.985** (1.220)	−2.893** (1.297)
χ^2	45.20***	55.40***	62.98***
<i>Log pseudolikelihood</i>	−75.47	−71.93	−69.39
<i>Pseudo-R</i> ²	0.406	0.433	0.453
<i>Observations</i>	638	638	638

Note: Robust standard errors clustered by firm in parentheses.

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

at least one non-operational collaboration (on average: 3.81 per firm), and 57 firms (48.31%) report at least one operational collaboration (on average: 1.33 per firm). 30 firms (25.42%) report only non-operational collaborations, while just 8 firms (6.78%) report only operational collaborations, and 48 firms report both types (40.68%). Table 3 reports further descriptive evidence on the differences between the two types of collaborations. The table reports, for each of the main explanatory variables, in the two columns respectively the ratio between the average value assumed by the variable for a firm reporting non-operational (versus not reporting any) or operational collaboration (versus not reporting any).

It may be noted that, while no substantial difference emerges for the *dispersion* variable, the other two variables take different values (Table 3). In particular, the presence of other sustainability signaling mechanisms is 12.8% higher in firms entering into a non-operational collaboration than in firms not reporting such collaborations, while the it is 72.7% higher in firms that collaborate operationally compared to firms that do not. Finally, the institutional quality variable shows two opposite paths: firms entering in non-operational collaborations have on average a level of institutional quality around 9% lower than firms that do not, while firms entering into operational collaborations have a value 2.4% larger than non-collaborating ones. These preliminary

results suggest a different function of operational collaborations compared to non-operational ones and in particular a less prominent signaling function. The econometric analysis in the next section deepens the analysis more systematically.

5.2 | Econometric analysis

5.2.1 | Main analysis: Probit models

Table 4 reports the results of Probit models, which show the significance of firm-level variables in explaining collaboration with nonprofits (*collaboration* dependent variable). Three increasingly complex models, (1) to (3), were specified to test the hypotheses, introducing independent variables sequentially to evaluate the significance of each coefficient (Jaccard & Turrisi, 2003). For conciseness, we only discuss in detail the most complete specification—Model (3).

Results confirm a significant inverse U-shaped relation between the dispersion of the firm and the likelihood of forming a collaboration with nonprofits, as both the linear and quadratic term are statistically significant (linear term: $p < 0.05$; quadratic term: $p < 0.01$). This allows to confirm H1. The *sustsignal* coefficient is negative and strongly significant ($p < 0.01$), confirming H2. Results finally confirm a statistically significant negative relationship ($p < 0.1$) between institutional quality and the likelihood of entering into collaboration, confirming H3. The interaction term between dispersion and institutional quality is positive and statistically significant ($p < 0.1$). Since the interpretation of interactions in non-linear models is not straightforward (Hoetker, 2007), the propensity to enter into collaboration depending on the dispersion level was plotted for different values of institutional quality (Figure 1). Focusing on high institutional quality, propensity to collaborate with nonprofits is found to vary positively with dispersion until a high dispersion level where it saturates. High institutional quality

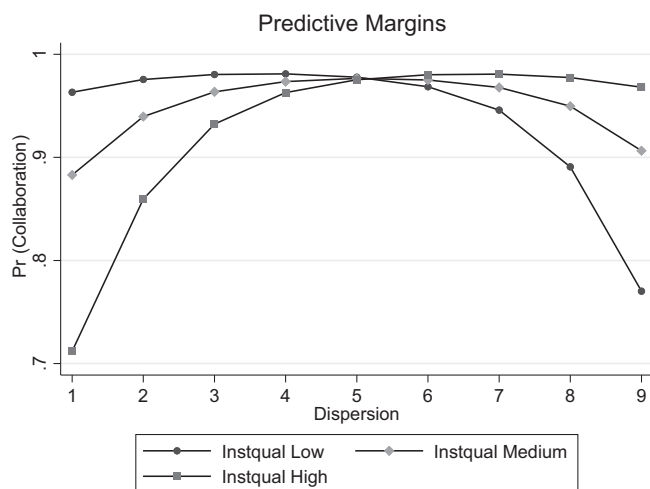


FIGURE 1 Propensity of entering into a nonprofit collaboration depending on the dispersion for different levels of institutional quality. Other variables are set to zero. Medium = Mean; Low = Mean−SD; High = Mean+SD.

negatively moderates the relationship between dispersion and the propensity to enter into collaboration for relatively low levels of dispersion, as hypothesized. However, it positively moderates the relationship beyond this value. This result is discussed in depth in Section 6.

Some control variables display statistically significant coefficients. We do not discuss them in detail for conciseness and to avoid a straightforward interpretation of causally ambiguous mechanisms (Hünernmund & Louw, 2023).

5.2.2 | Further analysis: Operational and non-operational collaborations

Table 5 reports the results of Multinomial Probit models. In Model (1), the base case is lack of collaboration with nonprofits, while the two columns show estimates for non-operational and operational collaboration. Model (2) in the third column is obtained by estimating a Multinomial Probit model with base case non-operational collaboration and as dependent variable operational collaboration (the other column—no collaboration—is omitted as it is the inverse of the first column of Model (1)).

Results for Model (1) confirm the explanatory power of our model in describing the entrance into non-operational collaboration—as both the effect size and p -values for all coefficients related to the main explanatory variables improve. However, the model does not explain comprehensively the entrance in operational collaboration. Model (2) further shows that the availability of alternative signaling mechanisms significantly ($p < 0.01$) drives operational rather than non-operational collaborations.

6 | DISCUSSION AND CONCLUSIONS

6.1 | Discussion of main empirical findings and contributions to theory

The study contributes to the literature by providing rich empirical findings on the drivers of firms' engagement in collaboration with nonprofits, and contributes to theory by proposing a novel application of signaling theory to study this corporate decision as a way to provide primary stakeholders with a signal of sustainability. In doing so, we answer to recent calls for a more varied theoretical framing of cross-sector collaboration (Louche et al., 2021), for the provision of large-scale quantitative data and analyses on cross-sector collaboration (Pedersen et al., 2020) and on interactions between business, especially MNEs, and civil society actors (Bruijn et al., 2024), and for more research on the relationship between the disclosure of sustainability-oriented activities and the substantial sustainable transformation of business enterprises (Amin et al., 2024; Uyar et al., 2020; Zhu et al., 2023). The paper further gives insight into the credibility of sustainability signals emitted through third parties such as nonprofits (Zhu et al., 2023).

TABLE 5 Results of Multinomial Probit models. The base case is no collaboration for Model (1), non-operational collaboration for Model (2). The column related to the “no collaboration” outcome for Model (2) is omitted as it is the inverse of the first column in Model (1).

	Model (1)		Model (2) Operational
	Non-operational	Operational	
<i>Dispersion</i>	0.850** (0.428)	0.919** (0.460)	0.069 (0.204)
<i>Dispersion</i> ²	-0.113*** (0.043)	-0.114** (0.045)	-0.001 (0.019)
<i>Sustsignal</i>	-1.845*** (0.519)	-0.787 (0.524)	1.058*** (0.279)
<i>Instqual</i>	-3.009* (1.567)	-2.131 (1.648)	0.878 (0.758)
<i>Dispersion*instqual</i>	0.552* (0.284)	0.410 (0.288)	-0.142 (0.132)
<i>Size</i>	0.976*** (0.243)	0.975*** (0.249)	-0.001 (0.123)
<i>Profitability</i>	0.049* (0.025)	0.053** (0.026)	0.004 (0.011)
<i>Age</i>	-0.005 (0.009)	-0.013 (0.009)	-0.008** (0.003)
<i>B2c</i>	-1.537** (0.599)	-1.327** (0.621)	0.210 (0.285)
<i>Scandal</i>	2.824*** (0.840)	2.749*** (0.867)	-0.075 (0.256)
<i>Foundation</i>	-0.710 (0.660)	-0.705 (0.667)	0.005 (0.246)
<i>Esg</i>	0.022** (0.011)	0.012 (0.010)	-0.010* (0.005)
<i>Vol_discl</i>	0.693 (0.580)	0.236 (0.575)	0.458* (0.254)
<i>Industry dummies</i>	Yes	Yes	Yes
<i>Constant</i>	-3.742** (1.721)	-5.607*** (1.992)	-1.866 (1.182)
χ^2	200.98***	200.98***	200.98***
<i>Log pseudolikelihood</i>	-390.17	-390.17	-390.17
<i>Observations</i>	638	638	638

Note: Robust standard errors clustered by firm in parentheses.

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

The study provides nuance on the heterogeneous nature and multiple functions of business-nonprofit collaborations. Indeed, results support the signaling view of collaborations, while also suggesting a potentially different role for operational collaborations. Most disclosed collaborations are non-operational. We show that the propensity to collaboration with nonprofits is larger when the firm's primary stakeholders suffer from a larger adverse selection toward the firm's activities, and cannot rely on alternative signals from the firm or institutional monitoring mechanisms to substitute for collaboration-based signals. We demonstrate an inverted U-shaped relationship between

the dispersion of firms' operations and the propensity to enter into nonprofit collaboration, which we attribute to the substitutive effect of greater scrutiny from watchdog stakeholders as the international visibility of the firm increases. Such findings complement literature on MNEs, sustainability and signaling (Attig et al., 2016; Doh et al., 2010; Forcadell et al., 2023; Zerbini, 2017). While existing literature points out the information asymmetries generated by international operations (Forcadell et al., 2023; Gachukia, 2015; Yu et al., 2021), our study provides exploratory evidence that firms aim at mitigating such information asymmetries through collaborations with nonprofits.

The mitigating effect of the scrutiny is further shown by the results on institutional quality, which contribute to the literature on the role of third parties in reducing information asymmetries (Doh et al., 2010; Reddy & Fabian, 2020; Xu et al., 2023; Zhu et al., 2023).

However, we find evidence of a decoupling in the function of business-nonprofit collaborations, in the sense that the collaborations that are used to signal sustainability are not the ones actually spurring operational transformations toward sustainability. Literature generally recognizes a higher credibility to sustainability signals giving through third parties (Xu et al., 2023; Zhu et al., 2023), which explains why firms may find it rational to emit sustainability signals through collaboration with nonprofits. However, the observed decoupling of signaling and transformation in business-nonprofit collaboration suggests that a more profound evaluation may be needed in order to properly assess its credibility. Our findings are also aligned with the literature that suggests that when firms cannot rely on strong formal institutions they are more likely to turn to informal institutions and civil society organizations as primary partners (Ballesteros & Gatignon, 2019; Dahan et al., 2010; Lashitew et al., 2022), and complement existing literature on the role of civil society organizations in the non-market strategies of business enterprises (Bruijn et al., 2024).

The analysis of the interaction term between institutional quality and dispersion demands a complex interpretation, whose results integrate and extend existing literature on the relationship between business sustainability and institutional pressures (Khan et al., 2021; Neri et al., 2024). Initially, high institutional quality *negatively* moderates the relationship between dispersion and propensity to collaborate. This effect is dominant for firms with scarcely to moderately dispersed operations, where the monitoring and control actions of formal institutions mitigate information asymmetries suffered by stakeholders and reduce the need to signal sustainability through collaborations. We call this a *substitution* effect (in a “monitoring” dynamic) between formal institutional monitoring and collaboration signals. This is in line with literature highlighting the role of a strong institutional context in enhancing the observability of firm's actions (Forcadell et al., 2023; Marquis et al., 2016; Reddy & Fabian, 2020). Instead, the *positive* moderation exerted by high institutional quality when a dispersion threshold level is passed suggests that when the quality of formal institutions increases, very dispersed firms are subject to stronger pressure to behave responsibly (Beddewela & Fairbrass, 2016; Reddy & Fabian, 2020; Rentizelas et al., 2020), increasing incentives to give a signal of sustainability through collaboration. This effect is stronger for very dispersed firms because they have to signal a certain degree of sustainability across multiple countries, with potentially large differences in terms of formal regulations and informal norms (Zyglidopoulos, 2002). Furthermore, many sustainability issues, such as environment protection or the mitigation of threats to human rights and health, have cross-border implications (Hitz & Smith, 2004; Montiel et al., 2021; Morens & Fauci, 2013), and are of interest for governments also beyond their legislative borders. For example, Nestlé, the Swiss food and beverage MNE, was accused of unethical advertising of its infant products in low-income countries (Boyd, 2012). Following consumer boycotts and pressure from

governments and intergovernmental organizations, the company committed to a code of conduct for ethical advertising by signing a joint agreement with several NGOs (Sikkink, 1986). We call this a *reinforcing* effect (in a “pressure” dynamic) on the propensity to collaboration signals coming from formal institutional monitoring. Altogether, these findings bring novel evidence on the interplay between institutional scrutiny and the provision of sustainability signals, and highlight the role of strong formal institutions in both mitigating information asymmetries suffered by primary stakeholders through their monitoring role (Marquis et al., 2016) and in pressuring firms to demonstrate commitment on pressing sustainability issues (Castaldi et al., 2022; Montiel et al., 2021).

If the analysis narrows to operational collaborations, the explanatory power of signaling determinants is weaker. The signaling determinants related to the institutional context fail to systematically explain operational collaborations. Further, the presence of alternative signals does not reduce the propensity to operational collaboration, but significantly increases it when compared to non-operational collaborations. Our interpretation of this difference is that operational collaborations support business transformation toward sustainability and therefore their activation is not systematically related to signaling needs. In other words, it becomes an asset with “productive effects” when the firm allocates operational resources to the collaboration (Hoenig & Henkel, 2015). The operational relationship with nonprofits acts as a transformational agent toward sustainability, bringing process, product, and business model innovation (Dionisio & de Vargas, 2022; Watson et al., 2020). This latter result raises the question on the conditions underlying the credibility of collaborations with nonprofits as signals of sustainability, and on whether a complementary operational engagement is also necessary. This is particularly important also because only a quarter of reported collaborations imply an operational change in business operations, and more than one third of collaborating firms only report non-operational collaborations.

6.2 | Implications for managers and policymakers

The study carries several implications for business managers, especially MNEs', and policymakers across higher- and lower-quality institutional contexts. Regarding managers, the study demonstrates the value of business-nonprofit collaboration in situations of limited observability of business activities. Managers should recognize the strategic signaling role of business-nonprofit collaboration, especially when expanding their operations in distant or institutionally weak countries where there is a lack of alternative monitoring mechanisms. They should also recognize that primary stakeholder may view different types of sustainability signals as redundant, and therefore not necessary at the same time to convey the same kind of information. At the same time, managers should be aware of a possible saturation in the incentive to signal through collaborations in cases of very high degrees of dispersion. Finally, the results on the different types of collaboration invite managers to reflect on the nuanced role of nonprofit collaboration, which can serve both as a signal and as an instrument

for operational change. Regarding policymakers and informal institutions, the study provides evidence of both a *substitutive* and *reinforcing* role of their monitoring and pressure functions is moderating the firms' propensity to signaling through collaboration. This invites monitoring stakeholders to consider the implications of this effects when designing policies or monitoring actions to enhance sustainability practices. The potential for a dual role of collaborations should also be recognized, and the signaling of sustainability through non-operational collaborations should be questioned by monitoring stakeholders.

6.3 | Limitations and suggestions for further research

As usual, the study suffers from limitations. First, it is based on a geographically bounded sample. Future extensions could consider alternative contexts to derive insights into cross-country differences. The study mitigates this limitation by focusing on medium-large MNEs, by taking into account the dispersion of their operations and the quality of institutions across their geographical spread, and providing therefore results that are not specific to the home country of firms. A related limitation is that the study, like others in literature (den Hond et al., 2015), focuses on medium-large firms, which hampers an evaluation of firm-level characteristics across a more diverse sample of firms. Second, the study is cross-sectional. The timeframe is not large enough to monitor our variables of interest—the operational or non-operational engagement in business-nonprofit collaboration—longitudinally, and the study is cross-sectional also to mitigate the risk of introducing confounding factors related to changing organizational orientations or evolving contextual elements, but future studies could explore the longitudinal evolution of these collaborations across a longer period. We further chose to model and study econometrically the collaboration as a discrete choice due to data limitation. However, further studies could draw insights also on the number of collaborations as a way to give stronger signals. Another limitation in our data is that, given the phenomenon investigated, we sometimes had to rely on unstandardized data and sources. We hope that this work can be a step into gathering more structured quantitative evidence on cross-sector collaboration. Further, the study focuses on the firm-level perspective, and does not consider the perspective of partner nonprofits. Further studies could delve into partner-level motivations and characteristics, for example, by investigating the partner-level variables that lead to collaboration formation. Moreover, as common in deductive quantitative studies, results may suffer from confirmation biases. We mitigate this issue by controlling for alternative explanations of collaboration, and employing a wide array of controls from literature. However, we recognize that the interpretation of our results may be filtered by the chosen theoretical lens, and further research employing alternative theoretical frameworks is welcome. For example, alternative theoretical frameworks may interpret differently the inverse U-shaped relationship with the dispersion variable. Finally, the study does not extend its focus to the supply chains of firms. Given the increasing need to understand how sustainable practices spread along

value chains to first and second-tier suppliers (Castaldi et al., 2022), further extensions could analyze how business-nonprofit collaborations impact on supplier networks.

ACKNOWLEDGMENTS

The authors wish to thank research assistants Giulio Raffone, Martina Sandrin and Beatrice Vender for their support during the data collection. Furthermore, the authors thank participants and reviewers at the IABS 2022 Conference in San Francisco, California, and at the ISBEE 2022 Congress in Bilbao, Spain, for their insightful comments on earlier versions of this work. Open access publishing facilitated by Politecnico di Milano, as part of the Wiley - CRUI-CARE agreement.

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How to cite this article: Garrone, P., & Rizzuni, A. (2024).

Collaborations with nonprofit organizations: Signals or agents of operational change? Empirical evidence from Italian listed enterprises. *Corporate Social Responsibility and Environmental Management*, 1–17. <https://doi.org/10.1002/csr.2972>

APPENDIX A

TABLE A1 Overview of main data sources to retrieve collaborations (authors' own elaboration).

Data source	Description	Role in the analysis
<i>Firms' non-financial disclosures</i>	Non-financial disclosures published by 118 Italian listed firms in the FTSE MIB, STAR and MID CAP Indexes for the period 2017–19	<ul style="list-style-type: none"> Retrieval of firms' collaborative ties with nonprofits Keyword-based clustering and coding of collaborations
<i>Firms' websites</i>	Websites of firms, focusing on sustainability and stakeholder relationships sections	<ul style="list-style-type: none"> Triangulation of data retrieved from NFDs for a random sample of firms Used as main source in case of partial or no availability of NFDs
<i>Media sources</i>	Lexis-Nexis news database; online editions on main 5 Italian newspapers selected according to their diffusion and geographical scope (<i>Il Sole 24 Ore</i> , <i>Il Corriere della Sera</i> , <i>La Repubblica</i> , <i>Il Resto del Carlino</i> , <i>Il Messaggero</i>)	<ul style="list-style-type: none"> Triangulation of data retrieved from NFDs for a random sample of firms Used as main source in case of partial or no availability of NFDs

TABLE A2 List of clusters used to code the *operational* variable (own elaboration of definitions by Austin & Seitanidi, 2012a, Austin & Seitanidi, 2012b; Austin, 2000; Seitanidi & Ryan, 2007; Wymer & Samu, 2003).

Type of collaboration	Operational	Description and examples of keywords
<i>Philanthropic donations</i>	No	Firms donate cash or equivalent in-kind resources to nonprofits. Keywords: <i>philanthropy</i> , <i>donation</i> , <i>gift</i> , <i>contribution</i> and synonyms
<i>Sponsorship</i>	No	Firms transfer cash to nonprofits in exchange for advertising. Keywords: <i>sponsor</i> and synonyms
<i>Cause-related marketing</i>	No	Firms transfer cash to nonprofits whenever consumers purchase products or services from the company. Keywords: <i>portion/percentage of revenues/profits</i> and similar
<i>Sustainability consulting</i>	Yes	Firms involve nonprofits to provide to the company or its employees consultancy to change products, processes and operations toward social or environmental sustainability. Keywords: <i>consultancy</i> , <i>assistance</i> and synonyms
<i>Sustainability certifications and memberships</i>	Yes	Firms are recognized by nonprofits for their efforts and commitments in changing their products, processes and operations toward social or environmental sustainability. Keywords: <i>certification</i> , <i>member</i> , <i>join</i> and synonyms
<i>Joint projects</i>	Yes	Firms get involved in social or environmental sustainability projects together with nonprofits. These encompass inclusion projects (of suppliers, customers, workers), drafting of sustainability protocols, circular economy projects, development of innovative products and technologies. Keywords: mostly by difference; various based on the type of project.