

Sending corporate social responsibility signals: What organizational characteristics must be met?

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Abstract

Purpose – This work examines some of the organizational characteristics of companies that send CSR signals. It evaluates five determinants: operating in a highly polluting sector, concentration of ownership structure, corporate reputation, profitability, and size.

Theoretical framework – This empirical research draws upon Signaling Theory and Neo-Institutional Theory.

Design/methodology/approach – By using a combined methodology that analyzes the results of a qualitative comparative analysis and the results of a binary logistic regression model, covering a sample of 95 companies, this study reveals some important aspects of the profile of companies that send CSR signals to society.

Findings – Larger or more profitable companies that operate in a highly polluting sector, have a non-concentrated ownership structure, and have a positive corporate reputation, tend to be more willing to send CSR signals. Furthermore, a positive corporate reputation is a key organizational characteristic for sending CSR signals.

Practical & social implications of the research – Since sending CSR signals is a powerful tool for legitimizing a company's CSR actions, a better understanding about this helps managers and regulators to know the organizational characteristics of companies interested in signaling.

Originality/value – This study's main contribution is to advance the knowledge on the profile of companies that decide to send CSR signals to society. The findings are especially valuable because it is argued that there are specific complementary organizational characteristics when the company decides to send CSR signals.

Keywords – CSR signals, QCA, Signaling Theory, Neo-Institutional Theory, Global Reporting Initiative (GRI).

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Introduction

Companies are increasingly aware of the impact of their activities on society (Hahn & Künen, 2013) as a large amount of information is generated about how they act and most of that information is publicly available and free to access online. However, there is also information that is private and that generates a certain asymmetry between those who possess it and those who could make more rational decisions if they had it (Crisóstomo & Freire, 2015; Stiglitz, 2002). As a result, a significant percentage of companies that implement corporate social responsibility (hereinafter CSR) initiatives decide to publish their sustainability reports as a means of publicizing these CSR practices to the general public and thereby legitimizing their actions in response to social rules and stakeholders' expectations (Aldaz, Alvarez, & Calvo, 2015; Cunha & Moneva, 2018; Deegan & Gordon, 1996; Guthrie & Parker, 1989; Woerkom & Zeijl-Rozema, 2017). CSR initiatives consist of "policies and practices of corporations that reflect the business responsibility for the wider societal good" whose "precise manifestation and direction of this responsibility lie at the discretion of the corporation" (Matten & Moon, 2008, p. 5). Following this definition, this work deals with CSR signals, understood as the voluntary and intentional disclosure of information about the social and environmental behavior and/or performance of a company.

Regarding CSR signals, prior literature has examined the relationship between several organizational characteristics in isolation and the disclosure of CSR practices. For instance, Aldaz et al. (2015) showed that a positive relationship exists between the disclosure of non-financial reports and the company's reputation. However, prior approaches have paid no attention to the effect of a combination of various determinants and have failed to consider that companies that usually send CSR signals differ in many other organizational characteristics from those that do not send CSR signals. This could lead to unspecified models that ignore the effect of complementary organizational mechanisms on the sending of CSR signals. At this point, a question arises: What characteristics must companies fulfil so that they would decide to communicate to society their social and environmental commitment through CSR signals? Drawing upon Signaling Theory and Neo-Institutional Theory, the main aim of this study is to examine whether the sending of CSR signals by companies to society through CSR reports under the GRI

standard is related to certain organizational characteristics that can be combined, such as company size, profitability, corporate reputation, ownership structure (the degree of ownership concentration), and the level of pollution in the sector in which the company operates. To analyze these relationships, a sample of 95 Spanish companies indexed in MERCO, a CSR reputation ranking, was treated empirically through binary logistic regression as well as qualitative comparative analysis (hereinafter, QCA). The QCA technique is especially appropriate to analyze how different combinations of organizational characteristics can determine the sending of CSR signals, since it allows us to know which elements of a configuration are connected to outcomes (Fiss, 2007; Ragin, 1987).

I Literature Review

I.1 Theoretical approaches to disclosing CSR information

This study uses two theoretical frameworks to highlight the importance of making company CSR information public: Signaling Theory and Neo-Institutional Theory.

Signaling Theory (Spence, 1973) consists of a theoretical approach that explains that in the presence of two parties (individuals or organizations) the signaler can decide whether to communicate (signal) or not the information that they have, and the receiver must choose how to interpret that information (Connelly, Certo, Ireland, & Reutzel, 2011). The theoretical approach has been widely used in various academic fields in the area of management, such as human resources management (Ehrhart & Ziegert, 2005; Gomes & Neves, 2011), strategy management (Certo, 2003; Park & Mezas, 2005), and consumer behavior (Cheung, Xiao, & Liu, 2014; Mavlanova, Benbunan-Fich, & Lang, 2016). The five key concepts of Signaling Theory are: (1) the signalers are internal people (i.e., employees, managers, etc.) who have information about individuals, products, or organizations that is not available to agents outside the organization (Spence, 1973; Ross, 1977); (2) the signal is the information that is sent out (Certo, 2003); (3) the receiver receives the information (signal) emitted by the signaler (Connelly et al., 2011); (4) the feedback (Gupta, Govindarajan, & Malhotra, 1999) is the information sent about the success or effectiveness of the communication process; and finally (5) the signaling environment is the

framework in which the previous four concepts are carried out sequentially (Connelly et al., 2011). Figure 1 shows how these elements are interconnected.

Among these five elements of Signaling Theory, this work focuses on the firm's signals, specifically the use of CSR signals. The study defines CSR signals as information regarding the social and environmental behavior and/or performance of a company that decides to transmit it voluntarily and intentionally. The concept that companies can signal their ethical nature through the development and implementation of CSR initiatives began becoming popular in the early nineties (Fombrun & Shanley, 1990). For instance, Fombrun and Shanley (1990) argued that actions such as donating a certain amount of money to charities and public foundations can lead to a company being considered more socially responsible and this would have a positive impact on its reputation. In fact, Zerbinì (2017) sets out an instrumental vision of CSR initiatives as signals that a company sends to society with the aim of revealing certain actions not known by the market, in order to obtain higher performance (Connelly et al., 2011). In addition, Spence (2002) believes that CSR actions can be used by firms to avoid the problem of adverse selection¹.

Prior literature has highlighted that one of the reasons why some firms decide to send signals about their CSR practices is to be able to influence investors (positively) and rating agencies that participate in the elaboration of stock indexes of socially responsible companies, such as the Dow Jones Sustainability Index or the Financial Times Stock Exchange 4 Good (Hahn & Lülf, 2014). At the same time, companies and other investors often use such sustainability indexes in their decision making

so that the visibility of a CSR signal is highly effective (Connelly et al., 2011; Hahn & Lülf, 2014). Thus, Signaling Theory is an appropriate theoretical approach to explain the importance of a company's disclosure (i.e., signaler) of CSR reports (i.e., signal) in order to convince the audience (i.e., receiver), who could be potential customers, suppliers, investors, governments, or society in general, of the company's social and environmental commitment. That audience could demand the practice be implemented (i.e., feedback), determined also by the context in which the company operates (i.e., signaling environment). Figure 1 shows (in grey font) how those elements are linked to each other.

In addition to Signaling Theory, the theoretical approach of Neo-Institutionalism also serve as an adequate framework to explain what underlies the disclosure of a company's CSR practices since Neo-Institutional Theory attempts to explain why companies seek the homogenization of organizational processes (DiMaggio & Powell, 1983). Matten and Moon (2008) reflected on the tendency toward the homogenization of institutional environments worldwide and indicated "how regulative, normative and cognitive processes lead to increasingly standardized and rationalized practices in organizations across industries and national boundaries" (Matten & Moon, 2008, p.10). That process of similarity among organizations is defined as isomorphism by Institutional Theory (DiMaggio & Powell, 1983; Greenwood & Hinings, 1996). This isomorphism implies that, due to their powerful influence, institutional forces tend to unify the business environment and make all companies behave equally (Shabana, Buchholtz, & Carroll, 2017). From this theoretical perspective, the sending of CSR signals could

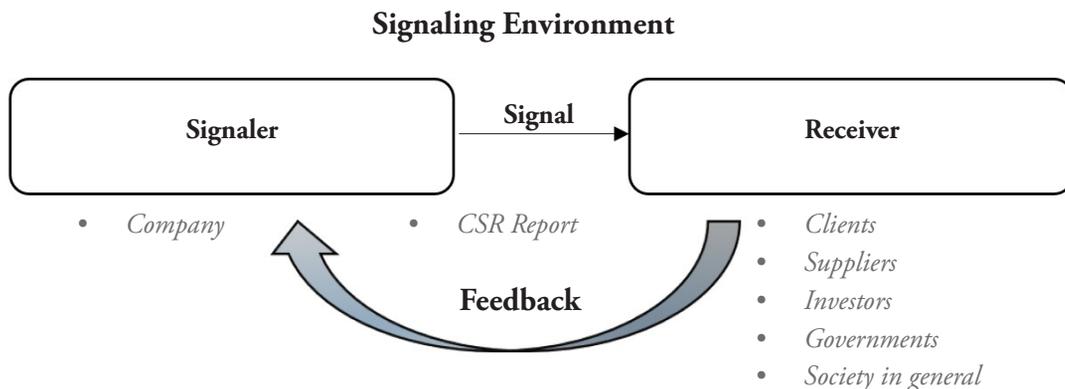


Figure 1. Elements in Signaling Theory and relationship with CSR

Note. Source: Adapted from "Signaling theory: A review and assessment" Connelly, B. L., Certo, S. T., Ireland, R. D., & Reutzel, C. R. (2011), *Journal of Management*, 37(1), 39–67

be labelled as a mimetic isomorphic practice. Mimetic isomorphism refers to how organizations seek to imitate those organizational practices or procedures that have been successful (DiMaggio & Powell, 1983). According to King, Lenox, and Terlaak (2005), there are two types of actions to address institutional pressures and increase legitimacy: internal actions aiming to achieve structural change by adopting trusted and proven strategies within the industry, and external actions aimed at gaining organizational endorsement from external constituents. Thus, following King et al. (2005), as a mimetic isomorphic practice, CSR signals could be seen as internal and external actions carried out at the same time since (1) the disclosure of CSR information could transform processes and strategies within the company and (2) it could legitimate the activity of the company for its stakeholders. The huge increase in the voluntary publication of non-financial or CSR reports by companies exemplifies this mimetic isomorphism: through this disclosure, a CSR signal is sent with the approval of the institutions that promote CSR practices (Kolk, 2005). However, nowadays, in the business as well as the social context, the disclosure of non-financial information has become an essential practice to such an extent that on certain occasions it has ceased to be an example of mimetic isomorphism and has become coercive isomorphism. Coercive isomorphism refers to actions in response to “political impositions, legal rules, and state regulations” (Monticelli, Calixto, Vasconcellos, & Garrido, 2017). In the case of non-financial reports as CSR signaling, several regulatory frameworks oblige some specific companies to issue the non-financial reports that have emerged. As the policy-making process has moved from national levels to that of EU institutions (Doh & Guay, 2006), those companies that fulfill the requirements proposed by Directive 2014/95/EU should disclose non-financial information. However, directives can set a goal, but they cannot impose laws. As a result, specific country-based laws have appeared. For instance, Spanish Law 11/2018 includes a mandatory requirement for the disclosure of non-financial reports by companies with more than 250 employees (and optional disclosure by those where there are more than 500 employees in the same company group), those with a public interest, those with more than 20 million euros in assets, and those with more than 40 million euros in gross income. Therefore, this exemplifies how a CSR signal that is traditionally identified as a practice of mimetic isomorphism has been changed into an example of coercive isomorphism.

1.2 Measuring CSR signals

Prior literature has shown that one of the most used tools for sending CSR signals is the publication of CSR reports by companies (Hahn & Lülfs, 2014; Legendre & Coderre, 2013). However, the usefulness of the CSR reports that companies disclose in order to reduce asymmetric information and thus improve transparency may be questionable, as they do not always aim to promote corporate responsibility but rather procure this information to comply with aesthetic objectives (Hahn & Lülfs, 2014). Additionally, even in the circumstances required by law (e.g., Directive 2014/95/EU) to disclose non-financial reports there is no single recommended standard to follow when doing so.

Nevertheless, several standardized indicators are currently used that have the advantage of homogeneity in the measurements in the face of the subjectivity of the information that companies can publish in their CSR reports without using a standardized model. Some of these measures, which are commonly accepted and used as CSR signals by the literature, are the adoption of environmental certifications such as the ISO 14001 standard or EMAS (Bansal & Hunter, 2003; Vilchez, Darnall, & Correa, 2017), the performance indicators developed by the Global Reporting Initiative (hereinafter GRI) (Hanh & Kühnen, 2013; Michelon, 2011), the adoption of the GRI methodology in company CSR reports (Nikolaeva & Bicho, 2011), and the key environmental performance indicators (KPIs) elaborated by the Government of the United Kingdom (Sun, Salama, Hussainey, & Habbash, 2010), among others. Table 1 shows some CSR signals used by the prior literature.

The present study focuses its attention on the specific case of sending CSR signals using the adoption of the GRI methodology in company CSR reports. The interest in GRI is due to the fact that, currently, more than 12,400 companies worldwide (including industry leaders) have adopted GRI as a standard for CSR reporting. For example, large conglomerates and multinational companies such as Adidas, Coca Cola, Ford, Johnson & Johnson, BNP Paribas, Shell, Dell, and Colgate-Palmolive, among others, use GRI standards in their non-financial reports. Furthermore, several works have shown that companies have increased their participation in disclosing environmental and social information over the last few years (Fifka, 2013) and that they are progressively adopting sustainability standards such as (and especially) the GRI

Table 1: *CSR signals and their receivers*

Field	Article	Signal	Receivers
<i>Disclosure</i>	Simaens and Koster (2013)	GRI G3 annual reports	Investors, consumers, employees
<i>“Trust marks”</i>	Wells, Valacich, and Hess (2011)	Corporate webpages	Stakeholders
	Chavez, Wiggins and Yolas (2001)	Membership in business ethics clubs (i.e., Ethics Officer Association)	Investors
	Bansal and Hunter (2003), Michelon (2011), Nikolaeva and Bicho (2011), Legendre and Coderre (2013)	Early adoption of ISO 14001 Adoption of Sustainability Reports (GRI)	Stakeholders Stakeholders
<i>Performance</i>	Hart (1995), Russo and Fouts (1997), Turban and Greening (1997), Hahn and Lülfs (2014), Sun et al. (2010)	Reputation (as a strategic asset)	Shareholders
		Belonging to ratings (i.e., KLD Database)	Stakeholders (potential employees)
		Implementation of environmental KPI's	Stakeholders

Note. Source: Adapted from “CSR Initiatives as Market Signals: A Review and Research Agenda,” Zerbini, F. (2017), *Journal of Business Ethics*, 146(1), 1–23.

guidelines (Marimon, Alonso-Almeida, Rodríguez, & Alejandro, 2012). Therefore, due to their popularity and industry-wide acceptance, the present study considers compliance with GRI standards as an effective measure of CSR signaling.

1.3 Link between GRI and CSR

The GRI proposes that companies comply with certain environmental standards in their CSR reports and provides guidance on what the CSR reports should contain in order to refer to their real environmental actions by standardizing the information presented (GRI, 2011). According to the GRI (2013), G4.0 is the fourth version of the GRI Guide that was presented in May 2013, and its last version in October 2016. Nowadays, there is an updated version called “GRI Standards,” presented in 2018 as an improvement of GRI G4.0, thus representing a substitute of G4.0. The main assumption with respect to the GRI is the provision of balanced information on the organization’s effectiveness with regard to sustainable development, either in the negative or positive sense (GRI, 2016). Both versions, the G4.0 and GRI standards, are the result of consultations and dialogue with hundreds of experts from around the world belonging to companies, unions, academic institutions, the financial sector, and society in general. The goal of the GRI standards is to help produce meaningful, solid, and useful sustainability reports to help make sustainability issues a standard practice.

In relation to CSR, companies whose non-financial reports are adapted to the GRI guidelines disclose the same indicators, which give a chance to compare firms and years and thus increases the utility and usefulness of that information (Fuente, García-Sánchez, & Lozano, 2017). This easy comparison between companies that the GRI offers is an especially important aspect for the adoption of CSR practices because this requirement suggests that companies should provide information about indicators of good performance and not omit bad ones (Fuente et al., 2017). For instance, according to version G4.0, levels that are not exhaustive should be justified, in order to prevent the omission of certain indicators. That way, the G4.0 version of the GRI motivated companies not only to improve their image (Hess, 2008), but also to change their behavior and contribute to global governance mechanisms (Wagner & Seele, 2017). The focus on governance disclosure of G4.0 highlighted the relevance of the implementation and avoidance of greenwashing practices (Seele & Gatti, 2017).

The more a firm discloses reports on responsibility and internal governance, the better it can be held accountable for its actions, so this could be indicated as an improvement in CSR decisions (Wagner & Seele, 2017). Therefore, complying with GRI standards could be interpreted as an effective measure of CSR signaling.

1.4 Hypotheses development

Prior literature has shown how (i.e., means) and why (i.e., reasons) companies decide to use CSR reporting in order to improve their corporate reputation and image (e.g., Aldaz et al., 2015; Cunha & Moneva, 2018). In their theoretical review about sustainability reporting, Hanh and Kühnen (2013) argued that “although researchers analyze the effects of a multitude of determinants, only a few variables (most notably the company’s size, visibility, and sector-affiliation) receive sufficient attention [...] Research on most determinants tends to come to inconsistent findings” (Hanh & Kühnen, 2013, p. 17). The meta-study by Hanh and Kühnen (2013) highlighted that more empirical research is needed concerning the determinants of CSR reporting in companies. Our work attempts to shed light on this topic, analyzing what is the set of organizational determinants that defines the profile of those firms that decide to send CSR signals to society. In doing so, this paper considers three main organizational characteristics: operating in polluting/less polluting industries, the concentration of ownership structure, and corporate reputation. First, hypotheses are introduced related to the relationship between each of these variables (in isolation) and the sending of CSR signals. Next, hypotheses are presented concerning the link between pairs of these characteristics and the sending of CSR signals and, finally, a final hypothesis is presented related to the relationship between the triple combination of these organizational characteristics and the sending of CSR signals.

Operating in polluting sectors and CSR signals

The fact of belonging to or operating in a sector may be relevant when disseminating CSR initiatives since not all economic activities involve the same level of social and environmental impact. In fact, prior literature has measured the sensitivity of specific sectors to some CSR aspects, with the majority of these works focusing on environmental aspects. In general terms, companies that operate in high-risk industries, such as those with high levels of political risk, high levels of pollution, high levels of corruption, visibility for the consumer, or intense competition, are more likely to be under greater pressures from stakeholders (Hanh & Kühnen, 2013; Legendre & Coderre, 2013). For instance, Deegan and Gordon (1996) believed that companies in high-risk industries

reveal a greater quantity and quality of information in their sustainability reports than companies in low-risk industries. Furthermore, Aldaz et al. (2015) surveyed managers from four companies that operate in sectors with a high environmental impact (i.e., oil, chemicals, and energy), noting that in these industries companies seek legitimization through the disclosure of environmental information. Thus, since companies are often driven by mimetic tendencies in their industry (Hanh & Kühnen, 2013), according to the theoretical approach related to Neo-Institutionalism, this paper only focuses on environmental aspects, and it considers that the greater the environmental impact of the sector to which the company belongs, the greater the environmental information that society could demand and the more willing the company will be to send CSR signals. As a result, the first hypothesis indicates that the more polluting the sector is, the more willing the company will be to send CSR signals.

H1: Sending CSR signals is positively related to operating in a highly polluting sector.

The concentration of ownership structure and CSR signals

Prior literature has studied the ownership structure of companies as a determinant (i.e., an explanatory variable) of investment in CSR activities (Hanh & Kühnen, 2013). For instance, Crisóstomo and Freire (2015) considered that concentrated structures are associated with greater CSR activities because when there is a smaller number of large controlling shareholders, they are usually more interested in the long-term returns that CSR practices entail due to improvements in corporate reputation and image (Crisóstomo & Freire, 2015). Note that, in the academic literature, a concentrated ownership structure is usually considered when an investor owns more than 20% of the shares with voting rights (Hahn & Kühnen, 2013). However, regarding CSR reporting, a concentrated ownership structure may limit the presentation of CSR reports since the dominant shareholders already have access to the relevant information. Normally, a company with a concentrated ownership structure would not have the need to send excessive CSR signals to markets, since the capital stock is shared among a few shareholders or owners who would not be especially interested in raising external capital (Hahn & Kühnen, 2013). Conversely, “a dispersed ownership structure increases the need to reduce information asymmetry” (Hahn & Kühnen, 2013, p. 12).

Consequently, a dispersed ownership structure implies an incentive for the company to voluntarily provide information to shareholders through its annual reports (Cullen & Christopher, 2002) and its CSR reports. As such, the second hypothesis indicates that the lower the degree of concentration of the ownership structure, the greater willingness there will be to send CSR signals.

H2: Sending CSR signals is positively related to non-concentrated ownership structures.

Corporate reputation and CSR signals

Corporate reputation refers to “the collective opinion of an organization supported by its stakeholders” (Brammer & Millington, 2005, p. 30). CSR actions are a key element in the construction and maintenance of a favorable corporate reputation, which is considered an important strategic resource for a company’s competitive advantage (Aldaz et al., 2015; Sotorrió & Sánchez, 2010; Park, Lee, & Kim, 2014). The literature has identified the two sides of the same coin: on the one hand, several studies have argued that the disclosure of social and environmental aspects can help to legitimize the company’s behavior and improve corporate reputation, especially in cases in which there is worse (social and/or environmental) performance (Aldaz et al., 2015); on the other hand, other studies have shown that firms with good performance may be especially interested in signaling this positive situation (Hahn & Künen, 2013). Thus, the previous results are inconclusive and ambiguous (Hahn & Künen, 2013). At this point, this work considers that firms with a positive corporate reputation will be more likely to send CSR signals because they are interested in disclosing their CSR achievements and exemplary behavior. Therefore, the third hypothesis indicates that the greater the corporate reputation, the greater the willingness to send CSR signals to society.

H3: Sending CSR signals is positively related to a positive corporate reputation.

The combination of organizational characteristics and CSR signals

Based on prior theoretical arguments, this paper considers that companies that operate in more polluting sectors and have a positive corporate reputation will be more likely to send CSR signals because they are concerned about disclosing positive results of their CSR practices as these could represent an example to be followed by the rest

of the competitors in relation to the best CSR practices within a dirty sector. Thus, the following is hypothesized:

Hypothesis 4: The combination of operating in a highly polluting sector and a positive corporate reputation is associated with greater sending of CSR signals than operating in a highly polluting sector or a positive corporate reputation alone.

Similarly, companies that operate in more polluting sectors and have a non-concentrated ownership structure will be more likely to send CSR signals since, in this case, by sending CSR signals companies will satisfy both the demands of stakeholders concerned about the actions of the “dirty” sector and the demands of shareholders with diverse ideas and preferences. Therefore, the fifth hypothesis indicates the following:

Hypothesis 5: The combination of operating in a highly polluting sector and a non-concentrated ownership structure is associated with greater sending of CSR signals than operating in a highly polluting sector or a non-concentrated ownership structure alone.

Furthermore, companies with a positive corporate reputation and with a non-concentrated ownership structure will be more likely to send CSR signals because they will be able to show their CSR achievements to a wide range of shareholders through non-financial reporting. Thus, the following is hypothesized:

Hypothesis 6: The combination of a positive corporate reputation and a non-concentrated ownership structure is associated with greater sending of CSR signals than a positive corporate reputation or a non-concentrated ownership structure alone.

Finally, combining all the previously-mentioned characteristics under a single organizational profile, those companies that simultaneously operate in more polluting sectors, have a positive corporate reputation, and have a non-concentrated ownership structure are the most suitable ones for sending CSR signals. Therefore, the hypothesis related to the combination of the three organizational characteristics indicates the following:

Hypothesis 7: The combination of operating in a highly polluting sector, a positive corporate reputation, and a non-concentrated ownership structure is associated with greater sending of CSR signals than operating in a highly polluting sector, a

positive corporate reputation, or a non-concentrated ownership structure alone.

2 Methods

2.1 Sample

This study used a sample that consists of 95 companies included in a ranking elaborated by the Corporate Reputation Business Monitor (hereinafter, MERCO), similarly to prior studies (Sotorrío & Sánchez, 2010). The MERCO ranking annually measures the corporate reputation of companies operating in Spain and is elaborated by Analysis and Research, one of the most important market research companies in Spain (www.merco.info.es). The 95 companies included in the sample are indexed both in the MERCO Companies Ranking (i.e., which measures global corporate reputation) and in the MERCO Responsibility and Corporate Governance Ranking (i.e., which measures criteria for best practices in CSR). The criteria to be included in these rankings are established by various stakeholders, such as NGOs, government agencies, consultants, academics, investors, and members of the business sector. Knowing that these companies have the best position in terms of CSR, this sample allows for an assessment of whether there is a relationship between the sending of CSR signals (i.e., level of compliance with GRI G4.0, 2016 version) and the previously listed organizational characteristics.

2.2 Variables

Dependent variable: Sending of CSR signals

Nowadays, the trend among companies is to be more open, and this can be directly associated with the adoption of voluntary standards such as the GRI (Hahn & Künen, 2013; Kolk, 2010). In fact, according to Hahn and Künen (2013, p. 5), “today the GRI is regarded as the de facto global standard for sustainability reporting.” Therefore, CSR signals are measured by the level of compliance with the GRI G4.0 standards in the 2016 edition, hence following prior literature (e.g., Nikolaeva & Bicho, 2011; Michelon, 2011). Note that even though it is not the last version of the GRI, the fourth version was chosen because there are accurate data for measuring this variable. The last version (i.e., GRI Standards) was released in 2018 and there are not enough data that comply with this new version. Information about compliance with GRI G4.0 was obtained from the GRI database. The values of this variable ranged from 1 to 4 and are shown in Table 2.

Subsequently, this variable (with four categories) was transformed into a dichotomous variable, combining categories 1 and 2 (i.e., GRI G4.0 is “not applied,” or is “only mentioned” in the CSR report; 50.52% of the cases in the sample) under the value “0,” referring to “no sending of CSR signals.” On the other hand, categories 3 and 4 (i.e., GRI G4.0 criteria are met in an “essential”

Table 2: Values for level of compliance with GRI G4.0 (2016 edition)

Level of compliance	Value	Definition	% of cases in the MERCO sample
Non-compliance with GRI G4.0	1	Companies whose CSR reports do not meet the GRI G4.0 criteria or do not state their level of implementation.	44.21%
Mention compliance with GRI G4.0	2	Companies in whose CSR reports the GRI G4.0 criteria are mentioned, but all requirements for full compliance are not met.	6.31%
“In accordance” with GRI G4.0	3	Companies whose CSR reports comply with the GRI G4.0 requirements “in accordance” with the standard, but in an “essential” manner, that is, when the report discloses certain general information about its management (at least one indicator) for each identified material aspect.	13.69%
“Exhaustive” implementation of GRI G4.0	4	Companies that apply the GRI G4.0 standard “exhaustively” in their CSR reports, that is, when the report discloses both the general content about its management and all the indicators that are related to each identified material aspect.	35.79%

Note. Source: Adapted from “GRI’s G4 Guidelines: the impact on reporting,” KPMG, 2013 <https://assets.kpmg/content/dam/kpmg/pdf/2013/06/g4-the-impact-on-reporting-v2.pdf>

or “exhaustive” manner without one necessarily being better than the other; 49.48% of the cases in the sample were also combined under the value “1,” referring to the “sending of CSR signals.”

Highly polluting sector

Prior literature has considered the influence of the social and environmental sensitivity of specific sectors in the analysis of CSR practices. At this point, it is essential to note that the majority of these works have focused on environmental aspects. Similar to prior studies (e.g., Vílchez et al., 2017; Cunha & Moneva, 2018), in order to determine whether the sector in which the company operates is (or is not) highly polluting, this study followed the classification of Mani and Wheeler (1997), in which highly polluting sectors are considered as “those with low elasticities of substitution between the use of the environment and other productive factors” (Mani & Wheeler, 1997, p. 216). Based on this classification, two types of industries are distinguished: highly polluting or “dirty” sectors and less polluting or “clean” sectors. Some examples of highly polluting sectors are the chemical, rubber, plastics, and fuel industries (Cunha & Moneva, 2018; Mani & Wheeler, 1997), while less polluting sectors include the production of medical instruments, watches, and other appliances. Data belonging to the sector were extracted from EIKON database. This database is a widely-used database in the academic arena (García, Mendes-Da-Silva, & Orsato, 2017; Miralles-Quirós, Miralles-Quirós, & Gonçalves, 2018). It has been elaborated since 2002 by Thomson Reuters and compiles not only economic and financial information from more than 6,000 companies around the world, but also environmental, social, and corporate governance data. For the case of the sector, if the company belongs to a highly polluting sector, the value was “1.” Otherwise, the value was “0.”

Concentration of ownership structure

According to Hahn and Künen (2013), a concentrated ownership structure is considered when there is at least one owner who owns 20% or more of the total shares (with voting rights). To measure the “level of concentration of the ownership structure” variable, this study used data about the ownership structure of the companies included in the sample for the 2016 fiscal year, obtained from the EIKON database. In doing so, a dichotomous variable was created, in which if the

ownership structure is concentrated, the variable was given a value of “1,” and “0” otherwise.

Corporate reputation

To measure corporate reputation, this study used the ESG controversies score elaborated by the EIKON database. According to EIKON, this variable indicates the company’s exposure to environmental, social, and governance controversies and negative events reflected in global media (Refinitiv, 2019). The ESG controversies scores were obtained from the EIKON database. The values of this variable ranged from A to D (in each category there are three sublevels; for instance, in category A, there are A+, A, and A-) and are shown in Table 3. A score of A+ means there is no incongruence between the CSR performance disclosed by the company and what the media says about that specific company. Meanwhile, a score of D- means that there is a big difference between the information disclosed by the company and what society says about it. This categorical variable was transformed into a dichotomous one, considering the median of the score as a reference point. For a reputation higher than the median, the variable took a value equal to “1,” which means a positive corporate reputation. Otherwise, it was scored as “0.” At this point, 30.53% of the cases in the sample were scored as “positive corporate reputation.” To control for reverse causality, the dependent/outcome variable (i.e., sending CSR signals) was gathered in the year 2016, but corporate reputation was gathered in 2015, as reputation values from prior years could influence the company’s decision on signaling CSR practices (Aouadi & Marsat, 2018).

Table 3: Range of Scores

ESG Controversies Score	Minimum value	Maximum Value
D-	0.000000	0.833333
D	0.833333	0.166666
D+	0.166666	0.250000
C-	0.250000	0.333333
C	0.333333	0.416666
C+	0.416666	0.500000
B-	0.500000	0.583333
B	0.583333	0.666666
B+	0.666666	0.750000
A-	0.750000	0.833333
A	0.833333	0.916666
A+	0.916666	1



Control variables

In addition to the previous explanatory variables, company size and profitability, which are two control variables that have been traditionally included in empirical analyses about CSR reporting, are also considered (Crisóstomo & Freire, 2015; Hahn & Kühnen, 2013; Sotorrió & Sánchez, 2010).

In relation to profitability, Legendre and Coderre (2013) argued that companies with profits equal to or higher than the industry average tend to be more likely to disclose information about their environmental and social performance and thus be able to legitimize their activities. Furthermore, profitable companies have more financial resources to bear the costs of reporting (Hahn & Kühnen, 2013). To measure the “profitability” variable, this study used “pretax income” for the 2016 fiscal year. This variable was obtained from the EIKON database. Pretax income, also called “profit before taxes,” is calculated by subtracting from the company’s income all operating expenses, including interest and depreciation, resulting from company sales. This variable was subsequently transformed into a dichotomous one, considering the median² of the pretax income as the reference score. If the company had a pretax income higher than the median, this variable was given the value “1”; otherwise, the value was “0.”

In relation to company size, it is assumed that larger companies can cause larger social and environmental impacts (Crisóstomo & Freire, 2015; Hahn & Kühnen, 2013). To measure size, this study used the total number of employees in the 2016 fiscal year. The information was obtained from EIKON database. This variable was subsequently transformed into a dichotomous one, considering as a reference point the median of the total number of employees. If the number of employees was above the median, the variable took the value “1,” and if it was below, the variable took the value “0.” Note

that, similarly to profitability, there was considerable variability between the number of employees of the largest companies in the sample and the number of companies with the lowest number of employees, despite the fact that 93.68% of the companies in the sample were large (i.e., more than 250 employees). For this reason, the median was established as the cut off value. Table 4 shows correlations as well as descriptive statistics.

2.3 Techniques used

To empirically support the hypotheses, this work used two different techniques: binary logistic regression for testing Hypothesis 1, Hypothesis 2, and Hypothesis 3, and qualitative comparative analysis (QCA) for testing the rest of the hypotheses.

On the one hand, the individual effects of the three organizational characteristics on the sending of CSR signals were tested using stepwise binary logistic regression. The non-linear nature of the logistic transformation requires that a procedure be used iteratively to estimate the coefficients more reliably than the one provided by the least squares method (by minimizing the differences between real and predicted values), so that the value of the likelihood is used to calculate the goodness of fit of the model (Hair, Anderson, Tathan, & Black, 1999). This technique is useful when it comes to predicting the relationship between a dichotomous dependent variable (in this work, the sending of CSR signals through compliance with GRI G4.0) and a set of explanatory variables. In the base model (step 1), the variables “operating in a highly polluting sector” and “ownership structure” were included. In the full model (step 2), in addition to the aforementioned variables, size, profitability, and corporate reputation were added.

On the other hand, QCA was run to test the hypotheses related to the effects of the simultaneous

Table 4: Correlations and descriptive statistics

N = 95 companies	Mean	S.D.	1	2	3	4	5	6
1. Compliance with GRI-G4	.490	.503	1					
2. Higly polluting sector	.280	.453	.217*	1				
3. Ownership structure	.550	.500	.033	-.086	1			
4. Reputation	.305	.463	.350*	.241*	.051	1		
5. Profitability	.557	.500	.109	.098	-.487**	-.007	1	
6. Size	.530	.502	-.137	.029	-.467**	-.118	0.508**	1

Note. **p<0.01, *p<0.05



combination of the three organizational characteristics on the sending of CSR signals. QCA is based on the assumption that “organizations are best understood as clusters of interconnected structures and practices, rather than as modular or loosely coupled entities whose components can be understood in isolation” (Fiss, 2007, p. 1180). By using the QCA methodology it is possible to analyze the distinct combination of organizational characteristics and their relationship with the outcome variable (Fiss, 2007). QCA is a technique developed by Ragin (1987), and it is especially suitable for studying the causal contribution of different configurations of conditions (in this case, operating in a highly polluting sector, a non-concentrated ownership structure, and having a positive corporate reputation) to an outcome of interest (in this case, the sending of CSR signals). According to Delmas and Pekovic (2018, p. 229), “QCA offers a means of addressing how sets of organizational elements in combination produce a joint effect on performance. [...] instead of disaggregating cases into a number of independent variables, the QCA approach conceptualizes them as combinations of attributes presented by their set memberships.”

3 Results

Binary logistic regression

The goodness to fit of the model is shown in Table 5 through the classification table. These results showed the successes between what was predicted and what was observed. In this case, the percentage of success of the classification was 68.2% for the full model. The minimum value requested in this table is 50% for a good measure of goodness to fit of the model, so that the results obtained comply with the minimum required.

Table 6 shows the results of the binary logistic regression. R² values are especially useful when comparing the values of two models that use the same sample, where the best fit is in those models with the highest R². In this case, the increase in the Nagelkerke R² value (i.e., R² = .166 in the base model to R² = .238 in the full model) showed that the inclusion of the size, profitability, and reputation variables improved the explanatory quality of the model. The estimated coefficients, that is, the values in the column called “Exp (B)” in Table 6, can be used to determine the odds ratio of each explanatory variable

Table 5: Classification Table for Full Model

		Predicted		Correct %
		No CSR Signal	CSR Signal	
Observed CSR Signal	No CSR Signal	27	13	67.5
	14	31	68.9	
Global %				68.2

Table 6: Results of Logistic Binary Regression

Dependent Variable: CSR Signals Explanatory Variables	Base Model			Full Model		
	B	S.D.	Exp(B)	B	S.D.	Exp(B)
1. Highly polluting sector	0.648	0.520	1.912	0.646	0.531	1.909
2. Ownership structure	0.200	0.470	1.221	0.156	0.597	1.169
3. Corporate reputation	1.398	0.520	4.048***	1.452	0.554	4.271***
4. Profitability				1.228	0.649	3.416*
5. Size				-1.211	0.670	0.298*
6. Constant	-0.628	0.398	0.533	-0.637	0.690	0.529
-2 log likelihood	106.233 ^a			100.876 ^a		
Cox & Snell R ²	0.125			0.178		
Nagelkerke R ²	0.166			0.238		

Note.**p<0.01, *p<0.1



introduced in the model (Hair et al., 1999). Therefore, Exp (B) represents the relationship between the change in the probability of the dependent variable (i.e., the sending of CSR signals) when there is a unit change in the explanatory variable if this is statistically significant.

Exp (B) gives the odds ratio of the dependent variable. Prior studies that have used binary logistic regression (Neves & Albuquerque, 2019; Wuerges & Borba, 2014) have considered that a positive relationship exists when Exp (B) is higher than “1.” If the value is below “1,” it reveals a negative relationship between the dependent and explanatory variable. When exploring the variable “operating in a highly polluting sector” (B = .646; Exp (B) = 1.909, $p > .1$), no relationship was confirmed by the binary logistic regression. Consequently, Hypothesis 1, which stated that the sending of CSR signals is positively related to operating in a highly polluting sector, was not supported. Similarly to Hypothesis 1, Hypothesis 2, which stated that the sending of CSR signals is positively related to a non-concentrated ownership structure, was not statistically supported since the relationship between the dependent variable and the level of concentration in the ownership structure was not statistically significant (B = .156; Exp (B) = 1.169, $p > .1$).

Hypothesis 3, which stated that the sending of CSR signals is positively related to a positive corporate reputation, was supported as the relationship between the dependent variable and a positive corporate reputation was positive and statistically significant (B = 1.452; Exp (B) = 4.271, $p < .01$), as Table 6 shows.

Furthermore, in relation to the control variables, on the one hand, the results show a positive and statistically significant relationship between sending CSR signals and

profitability (B = 1.228; Exp (B) = 3.416, $p < .1$). On the other hand, they show a negative and statistically significant relationship between sending CSR signals and company size (B = -1.211; Exp (B) = 0.298, $p < .1$).

To sum up, the results of the logistic regression showed that companies with a positive corporate reputation tend to send CSR signals through compliance with the GRI G4.0 criteria in their non-financial reports. However, according to the sample, neither the concentration of ownership structure nor the type of sector in which the company operates are statistically significant characteristics in isolation for determining the sending of CSR signals to society.

Qualitative Comparative Analysis

The results of the QCA regarding the influence of the combination of the three organizational characteristics on sending CSR signals are shown in Table 7. Black points represent the presence of a condition while white points indicate the negation (or absence) of causal conditions. Blank spaces indicate the irrelevance of a condition. Table 7 exhibits two solutions achieving sufficient consistency for the entire sample. The consistency criteria mean the relationship of the subsample that indicates a needed condition among the variables. Following Ragin (2008), this study considered 0.75 as the minimum value for consistency. Furthermore, the coverage index indicates the gross odds of the results given by the solution. As Table 7 shows, the total solution (of all combinations of conditions) has a consistency of 0.86 and coverage of 0.39, indicating that 86% of the cases of the outcome have one of these combinations and that the solution accounts for a 39% of all cases with a result of state action, indicating

Table 7: QCA results

Group	Path number	Name of construct			Consistency	Solution	
		Sector	Structure	Reputation		Coverage	Consistency
Entire sample	1	•		•	0.77	0.39	0.86
	2		•	•	0.88		
More profitable	1	•	o	•	1	0.25	1
	2	o	•	•	1		
Less Profitable	1		•	•	0.9	0.53	0.9
Larger companies	1	•	o	•	1	0.18	1
	2	o	•	•	1		
Smaller companies	1	o		•	1	0.5	0.92
	2		•	•	0.91		

Note. Black circles “•” indicate the presence of causal conditions. White circles “o” indicate the absence or negation of causal conditions. The blank cells represent “not significant for solution.” QCA = qualitative comparative analysis.

that the most effective configurations explain a large proportion of the sending of CSR signals. Consistently with the findings of the binary logistic regression, no condition alone is sufficient to account for sending CSR signals, which means that configurations of organizational characteristics are associated with sending CSR signals rather than each organizational characteristic in isolation.

Configuration 1 suggests that companies that operate in a highly polluting sector and that have a positive corporate reputation are members of the set of companies that send CSR signals. For companies in Configuration 1, the effect of the condition “concentration of ownership structure” on the sending of CSR signals is irrelevant. This configuration empirically supports Hypothesis 4, which stated that the combination of operating in a highly polluting sector and a positive corporate reputation is associated with greater sending of CSR signals than operating in a highly polluting sector or a positive corporate reputation alone. The Spanish company Acciona is a good example of this configuration since it operates in the energy sector, and it has a positive corporate reputation, which lead to it sending CSR signals.

Since Hypotheses 5, 6, and 7 were not supported by the full sample, we decided to split the sample according to the control variables profitability and size. The results of this split are shown in the next section.

Additional Tests

As the results of the binary logistic regression showed that company profitability and size were significant for the sending of CSR signals, four additional versions of the QCA model were evaluated to analyze the robustness of this solution by splitting the sample according to different levels of company profitability and size, respectively, which were the control variables in the logistic regression. The results of these splits are shown in Table 7.

Focusing on the subsample of the “more profitable” companies, the findings suggest one causal path can be considered empirically significant. Configuration 1 combines operating in a highly polluting sector, a non-concentrated structure (i.e., the absence of a concentrated structure), and a positive corporate reputation in companies with a bigger size than the median of the sample. The total consistency is 1 and, according to the raw coverage, it covers 25% of the cases associated with the outcome in the subsample of the biggest companies. Thus, this result supports Hypothesis 7, which stated that the combination of operating in a

highly polluting sector, a positive corporate reputation, and a non-concentrated ownership structure is associated with greater levels of sending CSR signals than each of these organizational characteristics alone. The Spanish oil company Repsol is a clear example of this organizational profile since it is a company that operates in the energy sector, has a non-concentrated ownership structure, and has a positive corporate reputation.

Focusing on the subsample of the biggest companies, the findings suggest that one causal path can be considered as empirically significant. This configuration combines operating in a highly polluting sector, a non-concentrated structure (i.e., the absence of a non-concentrated structure), and a positive corporate reputation in companies with bigger sizes than the median of the sample. ACS, a big Spanish company that operates in the infrastructure and construction sector and has a concentrated ownership structure and a positive corporate reputation, could serve as an example of this organizational profile. The total consistency is 1 and, according to the raw coverage, it covers 18% of the cases associated with the outcome in the subsample of the biggest companies. Similarly to the most profitable subsample, Hypothesis 7 was empirically supported.

These findings showed substantially different combinations of each path (comparing them to the results of the entire sample) in function of profitability and size. This highlighted that these organizational characteristics were essential to be incorporated in the analysis of the set of organizational characteristics that must be met for CSR signals to be sent.

Overall, these results are consistent in showing the sending of CSR signals for a combination of organizational characteristics. In all the cases, reputation is combined with the other variables, thus indicating complementarity between these organizational characteristics. However, sector and ownership structure tend to be combined with reputation (one or two at a time), thus indicating potential substitutability between these characteristics.

4 Conclusions and Discussion

4.1 Theoretical contribution

Drawing upon the theoretical framework of Signaling Theory and Neo-Institutionalism, it is argued that sending CSR signals is the outcome of having a positive corporate reputation combined with other

organizational characteristics, specifically operating in a highly polluting sector, having a non-concentrated ownership structure, company size, and level of profitability. Also, this paper discusses the ways in which configurations of the characteristics can facilitate the sending of CSR signals, since the objective of this paper was to determine a set of the characteristics that distinguish the profile of those companies that decide to send signals about their CSR behavior.

The results contribute to prior literature in several ways. Firstly, the findings show that a positive corporate reputation, size, and profitability are organizational characteristics that are separately related to the sending of CSR signals via compliance with the GRI G4.0 standards in non-financial reports. Furthermore, there is a set of organizational characteristics that in combination could lead companies to be more inclined to send CSR signals. Specifically in our sample, the combination of operating in a highly polluting sector and having a positive corporate reputation is associated with sending CSR signals. Similarly, the results show that the combination of operating in a highly polluting sector, having a positive corporate reputation, and having a non-concentrated ownership structure is associated with sending CSR signals for larger sized companies or those with high profitability. As a consequence, the findings provide additional support to the study of Hahn and Kühnen (2013), who argued that more empirical outputs about the determinants of sustainability reporting are needed due to inconclusive results. In fact, this work went beyond the recommendation of Hahn and Kühnen (2013) since it provided a joint analysis of several organizational determinants, offering several behavioral profiles for the sending of CSR signals.

Secondly, the results highlight the key role of a positive corporate reputation as the basis for sending CSR signals. This finding supports prior literature that has analyzed the relationship between corporate reputation and the disclosure of CSR information in isolation (i.e., Aldaz et al., 2015; Sotorrió & Sánchez, 2010). The present study took a step further on this issue, since the results showed that a positive corporate reputation is a necessary condition for sending CSR signals in combination with other organizational characteristics. This highlights the complementarity among organizational characteristics in relation to the sending of CSR signals through compliance with the GRI standards. At this point, the results are in agreement with Delmas and Pekovic (2018, p. 217), who

argued that “researchers need to open the organizational black box to understand how environmental practices interact with the organizational context in which they are implemented.”

Moreover, related to Neo-Institutional Theory, this added the value of understanding the main isomorphic behaviors that may occur concerning organizational characteristics. Those processes of isomorphism could lead the adoption of GRI to be taken as a homogenized standard in both those countries in which non-financial reporting is a mandatory requirement and those countries in which it is not already mandatory. Prior literature based on Neo-Institutional Theory has argued that CSR reporting could constitute a competitive advantage based on differentiation (Shabana et al., 2017). However, this study argues that engagement in this kind of reporting is already a coercive isomorphism in some regions (such as in the EU). Therefore, as it is mandatory, this means the activity of sharing CSR reports is no longer a competitive advantage based on differentiation.

Finally, this study paid special attention to which organizational determinants could characterize environmental reporting by using a combined methodological approach formed of binary logistic regression and the QCA technique. From a methodological perspective, by employing QCA, the results contributed to a better understanding of which organizational characteristics must be combined for the sending of CSR signals. QCA is an especially useful method for understanding the drivers and impact of the adoption of CSR practices due to the multifaceted nature of the concept (Delmas & Pekovic, 2018).

This study is not exempt from limitations, which can be solved in future research. First, the results are based on a sample of 95 companies operating in Spain. It would be obvious and advisable to expand the current sample globally in order to be able to generalize at an international level. Second, concerning the variables that were not empirically supported, future research may be required to develop additional analyses that corroborate the results. For instance, in the case of the degree of concentration of the ownership structure, the results did not empirically support any positive relationship between sending CSR signals and the concentration of the ownership structure. It is important to note that a criterion was established that may have been overly conservative when determining

the degree of concentration (i.e., 20%). Consequently, in future research this limit could be reduced.

Third, and connected with the previous limitation, this paper only considered the environmental sensitivity of the sectors (that is, this study only focused on the environmental aspect rather than a broader concept of CSR), presenting the idea that highly polluting sectors are environmentally sensitive while less polluting sectors are not. However, other social factors that can characterize the sensitivity of some sectors, such as the level of corruption or the use of child labor, were not considered in this work. These social aspects were left out of the analysis, but it is essential to be aware that their inclusion to measure the CSR sensitivity of the industry could change the current findings of this research (i.e., H1 could go from being unsupported to being supported if social aspects were considered). Future studies should analyze this type of CSR sensitivity instead of only considering environmental impacts.

Finally, this work studied various organizational characteristics, although other variables that may influence the sending of CSR signals might be highly interesting. These could be: (1) the types of legal forms, e.g., are public limited companies more likely to send out CSR signals than private companies?; (2) the degree of concentration in the sector, e.g., do companies in highly competitive sectors that have more aggressive competition have a tendency to send a greater number of CSR signals?; (3) the characteristics of managers, e.g., what attributes do executives who are inclined to send CSR signals have?; (4) the degree of diversification of the sectors in which they operate, e.g., does greater diversification lead to a willingness to send CSR signals?; (5) the degree of company innovation, e.g., are innovative companies interested in sending CSR signals to a greater extent than non-innovative companies?; among others.

4.2 Implications for practitioners and regulators

The results of this study have interesting implications for both managers and public regulators. From the viewpoint of practitioners, it is shown that the GRI standards have become a benchmark to follow in environmental matters for companies with positive corporate reputations. Since well-recognized companies tend to use GRI standards as a CSR signal, this can be

understood as a tool for attracting and retaining talented employees, since complying with GRI standards can be interpreted as being more transparent for society. On the other hand, CSR signals using GRI standards are usually reliable so they can initially serve to respond to the environmental information demands of stakeholders and, second, to legitimize company actions and thus improve corporate reputation. This can help companies achieve better conditions and obtain greater profitability. For public regulators and promoters of the GRI, the results of this study are especially interesting, since they demonstrate that CSR reports that employ GRI can be used to encourage companies to adhere to higher levels of compliance and thus improve their transparency, even if it has changed into a coercive isomorphism in the case of the EU. In addition, by adhering to a higher level of disclosure for industry regulators and other companies, others could be convinced to adopt the same strategy in order to have better performance, through mimetic isomorphism in the case of non-EU countries, where it may not be mandatory to publish non-financial reports.

Endnotes

- 1: The adverse selection is related to the description of situations in which information cannot distinguish the good or bad quality of what is offered by another agent (Requejo, 2001).
- 2: Note that the median was established as a reference since there is considerable variability in the values for “income before taxes” of the sample and this means the arithmetic mean is not a representative reference point.

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