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García-Sánchez, Isabel-María; Hussain, Nazim; Martínez-Ferrero, Jennifer; Ruiz-Barbadillo, Emiliano

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# Impact of disclosure and assurance quality of corporate sustainability reports on access to finance

Isabel-María García-Sánchez<sup>1</sup>  | Nazim Hussain<sup>2</sup>  | Jennifer Martínez-Ferrero<sup>1</sup>  | Emiliano Ruiz-Barbadillo<sup>3</sup>

<sup>1</sup>IME (Multidisciplinary Institute for Enterprise), University of Salamanca, Salamanca, Spain

<sup>2</sup>University of Groningen, Groningen, The Netherlands

<sup>3</sup>Department of Economics and Business Administration, University of Cádiz, Cádiz, Spain

## Correspondence

Nazim Hussain, Department of Accounting, Faculty of Economic and Business, University of Groningen, Groningen, The Netherlands. Email: n.hussain@rug.nl

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## Abstract

This paper investigates the impact of corporate social responsibility (CSR) disclosure quantity, quality, and external validation concerning assurance on capital constraints. We examine if these disclosure characteristics matter to the investors in the financial market, then they should be positively evaluated by financial market participants. More specifically, we study the effects of disclosure quantity, quality, and assurance on the access to financial resources for reporting firms. Analysis of data of an international sample for the period of 2007–2016 significantly supports the value relevance idea of CSR disclosure quality. We document that availability of more information about the firm's CSR initiatives eases the financial access. Furthermore, the quality and external assurance of CSR disclosure further strengthen the relationship between disclosure and access to finance. Our paper not only provides support for buying assurance but also argue for better assurance quality.

## KEYWORDS

access to finance, assurance quality, capital constraints, corporate social responsibility report, external assurance

## 1 | INTRODUCTION

Contemporary debate on sustainable corporate development among academics, consultants, and corporate executive has resulted in greater corporate social responsibility (CSR) awareness. This poses emerging challenges for firms to do their business in a more humane, ethical, and responsible way. At the same time, communicating CSR efforts successfully to stakeholders is another challenge for the managers (Adams, Potter, Singh, & York, 2016; Qiu, Shaukat, & Tharyan, 2016). Corporate reporting efforts are costly and time-consuming; however, managers are often unsure if the reports achieve the desired information provision goals. If the information serves stakeholders' needs and offers useful bases for investment decisions, then it should have a relevant effect of a firm's market value (Brooks & Oikonomou, 2018; Li, Gong, Zhang, & Koh, 2018).

Despite great scholarly attention towards the value relevance issue in various fields of business research, the results are still inconclusive (Baboukardos, 2018; Cahan, De Villiers, Jeter, Naiker, & Van Staden, 2016; Clarkson, Fang, Li, & Richardson, 2013). The empirical literature is unable to achieve consensus about the economic consequences of CSR-related disclosure (Hussain, Rigoni, & Cavezzali, 2018). Recently, researchers like Cohen and Simnett (2014) highlighted the need for further research in the field of assurance of CSR reports because of the lack of credibility and reliability of these reports.

To take a step farther for consensus building, this paper aims to investigate the value relevance of sustainability disclosure concerning its quantity, quality, and external validation in terms of assurance by examining their effects on capital constraints. The paper deals with two related research questions: (1) Does sustainability information

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eases the financial access for reporting companies? And (2) does the quality of sustainability disclosure and external assurance further strengthen the relationship between disclosure and access to finance?

Recently, corporations face amplified pressures from numerous stakeholders to be ethical and transparent (Elias, 2004). For this reason, stakeholders expect corporations to disclose financial and nonfinancial information about a firm's strategies and operations (Cormier & Magnan, 2014; Haque, 2017). The traditional practices of preparing financial reports have failed to fully inform the stakeholders (Bernardi & Stark, 2018). This has shifted managers' attention toward new ways of reporting. As a result, many financial reports now contain CSR performance information (Galbreath, 2011; Rupley, Brown, & Marshall, 2012). Majority of large firms have started issuing standalone sustainability reports (KPMG, 2011). These reports are costly to prepare, yet managers are often unsure if reports achieve the desired goals of information dissemination (O'Dwyer, 2002). This managerial, as well as academic skepticism, has led academic scholarship to study the value relevance, the benefits, of CSR reporting in detail during the last couple of decades (see for review, Wang, Dou, & Jia, 2016).

Despite significant scholarly efforts to investigate the usefulness of CSR disclosure, the disagreement prevails about whether and how CSR disclosure influences stakeholders' perception (Luo, Wang, Raitel, & Zheng, 2015) and firm value (Baboukardos, 2018). Some argue that disclosure quantity leads to more informed investment decision (Dugar & Nathan, 1995; Ioannou & Serafeim, 2015), whereas others consider quality as the main factor for the impact of CSR disclosure on corporate value (Gao, Dong, Ni, & Fu, 2016). This tension not only exists regarding quality and quantity but also about firm's initiative to whether disclose such information or not (Cahan et al., 2016). For instance, Wang and Tuttle (2014) and Liesen, Figge, Hoepner, and Patten (2017) are of the view that CSR is important for building a firm's reputation in the financial market. On the other hand, Palmer, Oates, and Portney (1995) consider CSR reporting as an additional cost with no benefits. In this paper, we try to resolve this tension by studying the link of both quantity and quality dimensions of CSR disclosure with financial consequences for reporting firms.

From a pure economic perspective, full disclosure helps firms increase information symmetry (Martínez-Ferrero, Ruiz-Cano, & García-Sánchez, 2016), which escalates awareness about a company's existence in the financial market and its investor base (Merton, 1987). At the same time, superior quality disclosure eases operating cash flows (Lambert, Leuz, & Verrecchia, 2007; Lourenço, Callen, Branco, & Curto, 2014) and lowers financing cost (Dhaliwal, Li, Tsang, & Yang, 2014). Despite these anecdotal shreds of evidence and availability of sustainability information from credible sources, for example, KLD, Bloomberg, and Thomson Reuter's ASSET4, it is not yet clear that how the general investors use this information. Furthermore, such information is not easily understandable by general investors (Luo et al., 2015). Hence, investors are greatly dependent on experts—that is, financial analysts and external monitoring agencies—to interpret the complex CSR information (Dugar & Nathan, 1995).

Despite the continuous production of CSR reports, no empirical investigation fully supports that investors directly rely on CSR information for making their investment decisions (Hodge, Subramaniam, & Stewart, 2009). The basic reason for this lack of confidence could

be the absence of credibility mechanisms (Brown-Liburd & Zamora, 2014). This lack of investors' confidence furnishes an economic rationale for a firm to purchase assurance for its CSR/sustainability report (Simnett, Vanstraelen, & Chua, 2009). In this sense, the assurance is more and more likely to materialize the link between CSR information and shareholder confidence. Although Hodge et al. (2009) acknowledge some limitations associated with the CSR assurance process, there is no availability of generally accepted assurance standards and there is a wide heterogeneity of professional services in the assurance market. Both limitations lead to variations in the type of assurance that resultantly cause uncertainty concerning its quality.

Keeping in view these confusions regarding the value relevance of CSR disclosure quantity, quality, external assurance, and assurance quality, this paper tries to uncover some important aspects about the links between CSR disclosure and financial market reaction by bundling and testing the effects of various characteristics of such disclosure on firm's access to finance. This bundling approach helps us shed light on important aspects of value relevance of CSR reporting. Using 9,744 firm-year observations from 24 different countries and for 10 years, we explore these relationships by employing state-of-the-art generalized method of moments (GMMs). Our results provide strong and robust support for a positive effect of quantity, quality, availability, and quality of external assurance on access to finance. We find strong complementarities between various characteristics of CSR disclosure while affecting access to a firm to financial resources.

Our results have several implications for managers and future researchers. First, the results can help boost the confidence of managers on CSR disclosure and assurance. With these practices, managerial decisions not only generate benefits for society and improve corporate transparency but also reduce capital constraints for reporting firms. Second, for firms, it is in their great interest to know the clear benefits of reporting CSR information with better quality and external assurance. Our results support that the benefits that can be accrued for a firm by higher quality CSR information disclosure are greater than lower quality reporting. Finally, we must be aware of the fact that CSR disclosure is still voluntary in many countries; the assurance market, moreover, is an unregulated market. For these reasons, our results offer interesting insights for policymakers and regulatory bodies, as well as governments. More specifically, the governments and market regulatory actors can help financial market to be efficient by promoting quality aspects of CSR disclosure in an economy.

The paper is organized as follows: The next section is devoted to the discussion of prior literature and the development of hypotheses. In section 3 we describe our methodology, data, and the analytical strategy. In section 4, we present the empirical findings and discuss the results. In the last section, we provide conclusions, implications, and future research directions.

## 2 | THEORETICAL LENS, LITERATURE REVIEW, AND HYPOTHESIS DEVELOPMENT

The use of theoretical frameworks in exiting research around CSR is very inconstant. In the given research vein, Ioannou and Serafeim (2015) and Luo et al. (2015) use stakeholder theory, Cormier and



Magnan (2014) use legitimacy theory, Jo and Harjoto (2014) use agency and stakeholder framework, Lourenço et al. (2014) use signaling theory and resource-based theory, Cho, Lee, and Pfeiffer (2013) follow information efficiency theory, and Aerts, Cormier, and Magnan (2008) take support from institutional theory. A careful review of extant literature reveals that stakeholder theory is the dominant theoretical perspective to provide the rationale for our research question. Therefore, we use the lens of stakeholder theory to provide novel empirical evidence about the value relevance of CSR reporting extrapolated to access to finance.

In line with the stream of literature about the topic, the delineation provided by Carroll (1979) shows that CSR, by definition, should not be related to financial performance. Although on the other hand, Freeman (1984) suggests that firms should consider not only the profit maximization goals but also the goals of a wider variety of stakeholders. In this sense, if the firm takes care of the wider variety of stakeholders, then it can achieve above-average financial performance goals (Flammer, 2013). This implies that stakeholders are important for the survival of a corporation. Research dealing with stakeholder engagement in strategic corporate decision-making issues greatly supports this fact (Henisz, Dorobantu, & Nartey, 2014). Furthermore, in CSR and financial performance nexus research the stakeholder theory has been proposed as a dominant theory in many ways (for a review, see; Agle et al., 2008).

Particularly, Jones (1995) proposed instrumental stakeholder theory according to which CSR is a corporate instrument that firms use to obtain resources or support from stakeholders. Research in this domain show that stakeholder theory can be divided into two main branches—ethical and managerial (Barako & Brown, 2008). Deegan (2013) and O'Dwyer (2002) named ethical as a normative stakeholder theory and managerial positive stakeholder theory. Normative and positive are “mutually supportive” branches of stakeholder theory, and these branches support transparent and conflict-free management-stakeholder relationship (Donaldson & Preston, 1995, p.6). In this sense, stakeholder theory provides better rationale for the nonfinancial disclosure with financial performance. We use the original premise of stakeholder theory that contends that the firm should meet not only stockholder needs but also those of stakeholders concerning providing high-quality financial and nonfinancial information. Moreover, the stakeholder theory also provides a rationale for linking the nonfinancial disclosure characteristics with financial constraints as the theory posits that firms that care for stakeholders have better survival chances in the financial market (Cheng, Ioannou, & Serafeim, 2014).

We built upon existing knowledge on CSR reporting from several perspectives. From strategic management perspective, Sharfman and Fernando (2008), Cheng et al. (2014), and Luo et al. (2015) argue that CSR information is value relevant and the financial market participants use this information to develop their perception about the focal company. Similarly, Dhaliwal, Radhakrishnan, Tsang, and Yang (2012) and Bernardi and Stark (2018) from the field of accounting and Hartojo and Jo (2015) from a business ethics perspective argue that firms that provide CSR disclosure receive more attention from the security analysts and resultantly are more attractive for the investors.

More specifically, Sharfman and Fernando (2008) note that environmental disclosure negatively affects cost of capital. Luo et al.

(2015) provide qualitative and quantitative evidence about a positive relationship between CSR disclosure and share performance. Likewise, from the accounting perspective, Dhaliwal et al. (2012) and Bernardi and Stark (2018) note better analysts' forecast accuracy in the presence of CSR information. Similarly, Hartojo and Jo (2015) note a significant negative impact of CSR information on forecast error. Most of these studies argue that firms that are careful about their negative effects of operation on economy, physical environment, and society are more attractive for the financial market participants. In this sense, firms can strategically use the CSR activities to display their care about wider variety of stakeholders better and send a positive signal in the financial market.

Although by definition, CSR is not related to financial performance, in literature this relationship has been studied in great detail (see, e.g., Margolis & Walsh, 2003; Brooks & Oikonomou, 2018; Hussain et al., 2018). Yet the consensus regarding the nature of the relationship is missing. This lack of consensus calls for further research. Therefore, we focus on quality as well as the quantity of CSR information in relation to financial constraints. The study of financial constraints is important because it involves frictions in the capital market that can prevent a company from undertaking investment projects due to a scarcity of the necessary financing. This inability to obtain the necessary financing may be due to various other reasons including credit limitations or inability to obtain loans, failure to meet financial market expectations, or liquidity issues due to excessive dependence on bank loans (Lamont, Polk, & Saaá-Requejo, 2001).

Moreover, when determining the conditions of a debt contract, the lender uses all available information to assess the borrower's ability to meet future payment obligations arising from the operation and the potential risks that the company may have. In this sense, the impact that corporate information has in the determination of the conditions agreed upon in credit operations has stimulated research on the relationship between the disclosure, its quality, and the cost of using debt in the capital structure (Goss & Roberts, 2011).

This research stream advances the premise of debt covenant hypothesis: lenders often introduce clauses in debt contracts (debt covenants); these covenants consider that the interest rate supported by the company is linked to the time evolution of certain indicators calculated from their accounting figures, such as profitability and solvency ratios. Recently, CSR has become one of the important indicators of business performance (Wang & Bansal, 2012). Additionally, when determining the conditions of a debt contract, the lender uses all available information to assess the borrower's ability to meet future payment obligations arising from the operation and the potential risks the company may suffer.

In this sense, efficient capital market hypothesis and positive accounting theory support stakeholder theory and posit that more disclosure reduces information asymmetry and improve capital market efficiency (Healy & Palepu, 2001). Yet a critical strand of CSR literature about the usefulness of CSR reporting is fragmented. In this respect, Aerts et al. (2008) provide novel empirical evidence supporting the utility argument of sustainability disclosure. They argue that such disclosure is important for the financial market participants. Similarly, Kim, Li, and Li (2014) argue that it is necessary to bear in

mind that CSR disclosure turns private information into public, decreasing the information risk of uninformed investors.

Despite the theoretical support for CSR disclosure, the controversy regarding the usefulness of such disclosure exists in the recent literature. In this respect, Cormier and Magnan (2014) note that CSR disclosure improves analysts' following and reduces forecast dispersion. Similarly, Dhaliwal et al. (2012) and Ioannou and Serafeim (2015) among many others find that analysts heed CSR information in preparing their recommendations. On the other hand, Campbell and Slack (2011) document that sustainability information is not useful for sell-side security analysts. Similarly, the literature on the use of CSR information by investors is also fragmented. Recently, Flammer (2013) find that investors pay more for the stock of socially responsible firms, whereas Orlitzky (2013) argues that CSR information disclosure creates noise and increases information asymmetry. More recently, Hawn, Chatterji, and Mitchell (2018) show that CSR performance is not important for investors. However, Cheng et al. (2014) document that firms, which disclose more CSR information, face fewer difficulties in accessing finances and vice versa.

Overall, the role of the quantity of CSR information has been widely studied in the existing investment literature (Dhaliwal et al., 2012, 2014) yet the usefulness of the sustainability information for financial market participants is an open-ended empirical research question, which deserves further attention (Jo & Harjoto, 2014). In general, most of the existing investigations support that disclosing CSR reporting is a value-enhancing corporate strategy. Existing evidence also supports that ensuring a higher quality of information could even result in a better investors' valuation of CSR disclosure (Hooks & van Staden, 2011).

Although these pieces of evidence from various literature strands, very little has been researched about the value relevance of CSR assurance. Firms are spending a huge chunk of their already scarce financial resources on purchasing external assurance for CSR reports. By providing assurance, corporations show a real commitment towards sustainability, as well as they try to improve credibility and consistency of the environmental and social disclosure for stakeholders (Hodge et al., 2009; O'Dwyer & Owen, 2005). By enhancing transparency, firms try reducing the information asymmetry and uncertainty associated with corporate disclosure (Moroney, Windsor, & Aw, 2012; Perego & Kolk, 2012). Yet what value this adds regarding the incremental positive effect on the bottom line is an underexplored research avenue. Dhaliwal et al. (2012) and Brown-Liburd and Zamora (2014) argue that assured CSR/sustainability reports are more trustworthy for investors.

Similarly, Simnett et al. (2009) note that assurance can help reduce the skepticism of the CSR information users and win legitimacy for the firm. Similarly, Mock, Strohm, and Swartz (2007) and Perego and Kolk (2012) argue that external assurance for CSR reports legitimizes the firms' claims about corporate sustainability. But, the above studies do not use holistic approach towards various characteristics of CSR disclosure and their relationship with market reaction.

Reporting more and better quality CSR information as well as getting it externally assured reinforces the credibility and improves confidence and perception of information users (Pflugrath, Roebuck, & Simnett, 2011). The trust generated by the corporate transparency advances understanding of the risks for investors and creditors thus

reduces the cost of the debt for reporting firms (Martínez-Ferrero & García-Sánchez, 2017). Furthermore, enhanced investor confidence may help firms improve their access to financial resources (Cheng et al., 2014).

However, the existence of heterogeneous professional services in the assurance market and the lack of generally accepted standards of assurance indicate that there can be a substantial variation in the main elements of an assurance process including objectives, procedures, scope, and assurance report contents (Hodge et al., 2009). This situation creates doubts about the quality of the assurance. Unlike the financial auditor opinion, assurance is not determined by the opinion issued but by the quality indicators of the report issued. A careful review of the literature shows that very little has been researched on this issue.

Furthermore, how the capital market reacts to assurance quality is still unknown in the existing literature. Despite the lack of previous studies in this vein and based upon the stakeholder theory, we expect that financial market positively reacts to a higher quality of assurance. We expect that higher assurance quality achieves better access to finance because in those firms that provides a greater quality external assurance for their nonfinancial reports. For the financial market, the assurance process in itself could be the factor that increases the credibility of the CSR information, not its quality. At least in part, it could be a result of the multiple options of practitioners, levels, criteria, procedures, and opinions concerning assurance.

Overall, we keep in view the theoretical assertions of stakeholder theory, as well as an efficient market hypothesis, positive accounting theory perspective, and abundant empirical support about the quality of information and its usefulness to develop our hypotheses. We believe that providing higher quality CSR information—disclosure and assurance—leads to better access to financial resources. In other words, our research hypotheses contend that CSR disclosure can ease the financial access for firms. Furthermore, this positive relationship can be reinforced if this CSR disclosure is accompanied by better quality and external assurance. Therefore, we hypothesize following relationships:

**Hypothesis 1.** *Higher amount of CSR disclosure positively impacts access to financial resources.*

**Hypothesis 2.** *Higher quality of CSR disclosure positively impacts access to financial resources.*

**Hypothesis 3.** *External assurance of CSR reports further strengthens the positive impact of CSR disclosure on access to financial resources.*

**Hypothesis 4.** *Higher assurance quality of CSR reports further strengthens the positive impact of CSR disclosure on access to financial resources.*

### 3 | DATA AND METHODOLOGY

#### 3.1 | Sample

We advocate that the prevailing disagreement in the literature can be solved by using specific quality criteria for CSR disclosure. To

accomplish this objective, we aim at providing quantitative evidence on the impact of quantity, quality, and reliability of CSR information on access to finance. We collected the data from two different databases for 10 years (i.e., 2007–2016). First, we gathered archival data from Thomson Reuters EIKON for all firms from the global indices. This comprises 3,594 firms belonging to 31 stock indices. Then, we combine the archival data with the CSR reporting information gathered from the Global Reporting Initiative (GRI) database. The GRI database contains all centrally collected data points for reports published from 1999 until the date for more than 6,000 companies worldwide.

For our first objective that is to examine the impact of CSR disclosure, its quality, and reliability on access to financial resources we use this public data. After dropping missing observations, our final balanced sample contains 9,744 firm-year observations from 1,137 firms. Our sample is quite heterogeneous in terms of operations of sample firms in different sectors as well as different countries. Table 2 provides a detailed description of our study sample concerning time frame, industries, and countries.

Our second objective is to test whether the quality and reliability of CSR information have a positive impact on access to finance. To test the proposed effect, we chose only those companies that disclose their CSR information in standalone CSR reports. However, some do assure such information, whereas others do not. Thus, we removed the firms from our initial sample data of 1,137 firms (9,744 observations) for which assurance data were not available during our selected period. This resulted in 4,076 firm-year observations from 829 firms for the 24 countries and activity sectors.

### 3.2 | Models and analytical technique

The goal of this research is to examine how the CSR disclosure, its quality, and reliability are value relevant for investors by affecting reporting company's access to finances. To achieve this goal, we utilized various regressions models following a sequential logic attending to sample 1 (for hypotheses 1 to 3) and sample 2 (for hypothesis 4).

Using our initial sample, our model 1 examines the impact of the existence of a CSR report on access to finance. After testing this relationship, in model 2, we analyze the effect of the quality of CSR disclosures as well as the moderating role of assurance on the relationship between CSR reporting quality and access to finance. Both models are illustrated below:

$$\begin{aligned} \text{KZ\_Index}_{it} = & \beta_1 \text{CSR}_{it} + \beta_2 \text{Size}_{it} + \beta_3 \text{Leverage}_{it} \\ & + \beta_4 \text{Market\_cap}_{it} + \beta_5 \text{LTD\_CE}_{it} + \beta_6 \text{Loss}_{it} \\ & + \beta_7 \text{Number\_Analysts}_{it} \\ & + \beta_8 \text{Capital\_expenditures}_{it} + \sum_{k=9}^{31} \beta_k \text{Industry}_{kit} \\ & + \sum_{j=32}^{55} \beta_j \text{Country}_{jit} + \sum_{t=56}^{67} \beta_t \text{Year}_t + \mu_{it} + \eta_i, \end{aligned} \quad (\text{Model1})$$

$$\begin{aligned} \text{KZ\_Index}_{it} = & \varphi_1 \text{CSR\_quality}_{it} + \varphi_2 \text{Assurance}_{it} \\ & + \varphi_3 \text{CSR\_quality} * \text{Assurance}_{it} + \varphi_4 \text{Size}_{it} \\ & + \varphi_5 \text{Leverage}_{it} + \varphi_6 \text{Market\_cap}_{it} \\ & + \varphi_7 \text{LTD\_CE}_{it} + \varphi_8 \text{Loss}_{it} \\ & + \varphi_9 \text{Number\_Analysts}_{it} \\ & + \varphi_{10} \text{Capital\_expenditures}_{it} \\ & + \sum_{k=11}^{33} \varphi_k \text{Industry}_{kit} + \sum_{j=34}^{57} \varphi_j \text{Country}_{jit} \\ & + \sum_{t=58}^{67} \varphi_t \text{Year}_t + \mu_{it} + \eta_i. \end{aligned} \quad (\text{Model2})$$

To test the reinforcing role of assurance quality, we used our second sample, that is, firms that disclose CSR information with assurance data. We address the following question: Does the financial market assess assurance or assurance quality? For this, model 3, represented below, regresses the CSR reporting quality, assurance quality, and the interaction between both on access to finance:

$$\begin{aligned} \text{KZ\_Index}_{it} = & \gamma_1 \text{CSR\_quality}_{it} + \gamma_2 \text{AQ}_{it} \\ & + \gamma_3 \text{CSR\_quality} * \text{AQ}_{it} + \gamma_4 \text{Size}_{it} \\ & + \gamma_5 \text{Leverage}_{it} + \gamma_6 \text{Market\_cap}_{it} + \gamma_7 \text{LTD\_CE}_{it} \\ & + \gamma_8 \text{Loss}_{it} + \gamma_9 \text{Number\_Analysts}_{it} \\ & + \gamma_{10} \text{Capital\_expenditures}_{it} \\ & + \sum_{k=11}^{33} \gamma_k \text{Industry}_{kit} + \sum_{j=34}^{57} \gamma_j \text{Country}_{jit} \\ & + \sum_{t=58}^{67} \gamma_t \text{Year}_t + \mu_{it} + \eta_i. \end{aligned} \quad (\text{Model3})$$

All the above models include a firm-specific effect ( $\eta$ ) to control for unobserved heterogeneity, whereas ( $\mu$ ) is the disturbance term. In all models, (i) represents a firm and (t) refers to the time. ( $\beta$ ,  $\varphi$ , and  $\gamma$ ) are the parameters to be estimated.

In all models, we use dependence techniques for panel data. Panel data have better explanatory power than time series and cross-sectional data. More specifically, panel data analysis allows control for unobserved heterogeneity, that is, characteristics of each company that are time invariant. It also eliminates the bias of aggregation that is common in time series analysis. Keeping in view the merits of panel data analysis, we apply various regression models. We follow Arellano and Bond (1991) and use the dynamic panel estimator. This estimator is based on the GMMs. As a suitable instrument in our analytical model, we use lagged values of the right-hand side variables. The major reason of the use of these instruments is their insignificant correlation with the error term while deriving the estimator.

### 3.3 | Measurement of variables

#### 3.3.1 | Access to finance: Capital constraints

Following Kaplan and Zingales (1997), we measure the KZ index as a reverse measure of access to finance for every firm every year. This measure is a result of a linear combination of five accounting ratios: cash holding to total capital, cash flow to total capital, debt to total capital, dividends to total capital, and market to book ratio. We calculate the regression coefficients to construct the index. Besides, we follow Cheng et al. (2014) to calculate the “KZ\_Index” as follows:

$$\begin{aligned} \text{KZ\_Index} = & -1.002 \frac{\text{CF}_{it}}{\text{A}_{it-1}} - 39.638 \frac{\text{DIV}_{it}}{\text{A}_{it-1}} - 1.315 \frac{\text{C}_{it}}{\text{A}_{it-1}} + 3.139 \text{LEV}_{it} \\ & + 0.283 \text{Q}_{it} \end{aligned}$$

In the above equation, “CF” represents cash flow, “A” represents total assets, “DIV” represents the cash dividends paid by the company in current year, “C” represents cash balances, “LEV” represents the level of leverage in firm's capital structure, and “Q” represents the market value of equity. From the above equation, the higher value of the KZ index indicates more constraints a firm faces to access finances.

### 3.3.2 | CSR Disclosure

One of the main independent variables is CSR disclosure ("CSRD"). Following Kolk and Perego (2010) and Gamerschlag, Möller, and Verbeeten (2011), we operationalize CSRD as a dummy variable to measure the availability of a firm's CSR, environmental, or sustainability report. If a firm has issued a standalone report, it takes value 1 and 0 otherwise.

### 3.3.3 | Quality of CSR disclosure

The remarkable increase in the attention of several stakeholders' groups has led corporations to increase the volume and quality of CSR disclosure, although no worldwide generally acceptable sustainability-reporting standard for compiling and presenting CSR information is available. Some standard setters like GRI have started facilitating this process through GRI guidelines. The data presented in the sustainability report under such guidelines have been widely used to assess the degree and quality of CSR disclosure (e.g., Cuadrado-Ballesteros, Rodríguez-Ariza, & García-Sánchez, 2015; Hussain, Rigoni, & Orij, 2018; Legendre & Coderre, 2012).

Following the convention, we also rely on the reports to operationalize the independent variable, "CSR quality." We gathered sustainability reports from companies' websites and website of corporateregister.com.<sup>1</sup> In the second step of data gathering, for every year, we review the CSR reports of every company in the sample. In the third step, we compare the information against the recommendations of the G3, G3.1, and G4 guidelines. To do so, we first determined the level of the application according to GRI guidelines to ensure that our scoring is consistent with GRI standards. We further ranked C, B, or A, according to the application of GRI standards. Level C represents the lowest level of application of GRI standards in the standalone report. Similarly, levels B and A reflect medium- and high-quality reports, respectively.

Table 1 presents the detail of the scoring process. We follow Cuadrado-Ballesteros et al. (2015) and many others for the scoring procedure. In this process, we distinguish and assign a score for the quantity of reporting data between reporting and nonreporting companies in a specific year. We assign 0 point for nonreporter and 25 points for those companies that publish some information but whose reports do not comply with the GRI guidelines. In the next step, we read and assign a score to the reports that comply with GRI guidelines with levels A, B, or C. We assign 50 points for level C reports, 75 points for level B, and 100 points for level A application. Thus, the disclosure level is measured on an ordinal scale values: 0, 25, 50, 75, or 100.

Furthermore, under recent G4 guidelines, there are two options to prepare CSR/sustainability reports, that is, the core option and the comprehensive option. Both these options aim at identifying material aspects related to corporate sustainability engagement and are applicable to all corporations regardless of their size, sector, or location. These reflect the organization's economic, environmental, and social

**TABLE 1** Categories of the quality of CSR disclosure variable

CSR_quality values	Type of CSR report
CSR_quality = 0	When company has not disclosed any CSR information
CSR_quality = 25	When company discloses some CSR information but report does not follow GRI guidelines.
CSR_quality = 50	When company follows GRI guidelines to disclose CSR information. The level of application is C for reporting. That is, reports provided are very basic information. The sustainability report includes information on a minimum of any 10 indicators. This disclosure should include at least one indicator from each pillar: social, economic, and environmental. The disclosed performance indicators should have 7 out of the 10 from the GRI guidelines.
CSR_quality = 75	Following the B level of the GRI guidelines firm provides a complete report which contains information on: Profile disclosure, disclosures on management approach, performance indicators, and sector supplement performance indicators: a minimum of any 20 performance indicators out of which 14 must be from the GRI guidelines.
CSR_quality = 100	Following the A level of the GRI guidelines firm provides an advanced level report. More specifically, the report is complete and follows all indicators according to GRI guidelines. Furthermore, this report follows comprehensive approach.

Note. CSR. corporate social responsibility; GRI, Global Reporting Initiative. Source: Cuadrado-Ballesteros et al. (2015) and Martínez-Ferrero et al. (2016).

impacts. Furthermore, these aspects practically guide the decision-making process of major stakeholders.

We assign 75 points to the reports that are following G4 guidelines with the core option, whereas the companies that prepare reports in accordance with G4 guidelines with the comprehensive option have been given 100 points. The difference between the core and the comprehensive option is clearly described in G4 guidelines. Under the core option framework, firms are obliged to disclose information about their core operations' related data in a qualitative and quantitative form. The comprehensive option includes the core option and requires additional standard disclosures. The additional disclosure includes information regarding a firm's ethics and integrity, strategy and analysis, and governance. Moreover, under this option, a comprehensive performance disclosure is demanded.

### 3.3.4 | Assurance

As a measure of disclosure quality, we use the external assurance for a standalone sustainability report. At each level of the above application, a "plus" (+) sign is available (ex., C+, B+, and A+) if external assurance was available for a given sustainability report for a specific year. In line with Kolk and Perego (2010) and Zorio, García-Benau, and Sierra (2013), we operationalized assurance as a dummy variable "Assurance" that takes value 1 when the external assurance was available and 0 otherwise.

<sup>1</sup>Corporateregister.com is one of the biggest directories that collect full text sustainability report of reporting companies across the globe.



### 3.3.5 | Assurance quality

Visibility of the assurance engagement can only be generated through the assurance statement. The empirical examination of the assurance statement to understand the quality is one of the many approaches in the CSR assurance literature (Gürtürk & Hahn, 2016; Perego & Kolk, 2012). Based on the evaluation framework by O'Dwyer and Owen (2005), the content analysis is a useful way to evaluate the quality of assurance reports.

Hence, based on the content analysis and the items in Table 2, we create an index referred as "AQ." The 12 items used are relevant measures to understand the quality of assurance reports. This approach is consistent with the assurance quality index suggested

by O'Dwyer and Owen (2005) and Zorio et al. (2013). As defined by common CSR reporting guidelines (see, AccountAbility, 2003GRI, 2006). These items set a minimum standard of a statement quality (Perego & Kolk, 2012) and define assurance procedures, a reporting format, opinions, and recommendations. We include these items and the coding rules in Table 2. The score obtained from the content analysis ranges from 0 to 23.

### 3.3.6 | Control variables

We also include many control variables to account for possible alternative explanations. We selected our controls after a careful review of the literature (see for comparison, Dhaliwal et al., 2012; Cheng et al.,

**TABLE 2** The quality of assurance reports, a context index

Ranking criteria	Definition	Scale (total 23 points)
1 Addressee	Information about party to whom the assurance statement formally addresses	0 No reference 1 Addressee is mentioned as "the readers" 2 Specific stakeholder is mentioned
2 Assuror's Responsibilities	Explicit statement that the reporter is responsible to express an opinion on the subject matter.	0 No reference 1 Reference
3 Assuror's Independence	Statement expressing the independence of all the involved parties.	0 No reference 1 Mere statement expressing that independence 2 Compliance with IESBA and IFAC code of ethics
4 Assurance engagement Objective	Explicit objective to be achieved through the engagement.	0 No reference 1 Limited assurance 2 Reasonable assurance
5 Assurance engagement scope	Assurance statement coverage	0 No reference 1 Reference to specific environmental pollution section 2 Reference to multiple specific sections 3 Reference to entire report
6 Criteria	A reference to particular criteria against which the sustainability report has been prepared.	0 No reference 1 Reference to publicly specific nonpublic criteria 2 Reference to publicly available criteria.
7 Assurance standard(s)	Following commonly used standard are available to govern the work of assuror: AA1000AS, IAE3000, etc.	0 No reference provided 1 Reference to nonpublic criteria 2 Reference to publicly available local criteria 3 Reference to generally acceptable standards like; AA1000AS and IAE3000
8 Work summary	Explanation of the actions taken to arrive at a conclusion	0 No reference 1 Reference available
9 Materiality	Degree of information provision on materiality level.	0 No reference 1 Reference limited to a broad statement. Furthermore, there is a mentioning that assuror has not confirm that all material issues are included. 2 Reference and explanation of materiality setting or reference limited to a broad statement and stakeholder perspective introduced. 3 A clear Reference and explanation of materiality setting. The materiality setting from a stakeholder perspective introduced.
10 Completeness	All material aspects are covered by the assurance report.	0 No reference 1 Reference
11 Responsiveness to stakeholder	A clear statement that refers to the firm's ways to identify stakeholder interests and concerns	0 No reference 1 Reference
12 General opinion	Statement expressing the result of the assurance exercise.	0 No reference 1 A general remark or a statement stating the opinion of the assurance provider (e.g., "XY's report is a fair presentation of XY's CSR performance"). 2 More detailed explanatory statement that includes recommendations for improvement.

Note. Source: Martínez-Ferrero et al. (2018)



2014; Hartojo & Jo, 2015). Our main control variables included “Size” measured as a measure of firm size and determined as the natural logarithm of total assets and “Leverage” measured as the total debt to total equity ratio. We include these controls because the bigger firms with less debt in the capital structure have more resources to invest in nonprofit making activities (Hussain et al., 2018). Similarly, market capitalization “Market\_cap” and “LTD\_CE” are included in the model. We measure them as the market to book ratio and long-term debt divided by common equity respectively. We also include “Loss” that takes value 1 if the firm reports negative earnings in a year and 0 otherwise. As an external governance mechanism, we include the natural logarithm of the number of analysts following the firm through a year represented as “Number\_Analysts.” The data for this variable were retrieved from I/B/E/S database. “Capital\_expenditures” was measured as the capital expenditure expense divided by total sales to control for firms capital needs. Finally, to control for variation across time “Year,” country “Country,” and industry “Industry,” we include dummies.

## 4 | RESULTS

### 4.1 | Descriptive analyses

In Table 3, we present the year-wise, industry-wise, and country-wise distribution of all variables, that is, CSR reporting, quality of CSR disclosure, assurance, and assurance quality. We observe a yearly increase in the proportion of firms that voluntarily report CSR information as well as the quality of information and credibility (by external assurance and its quality) of this disclosure. The distribution by activity sector indicates that “household and personal products” show the greater percentage of firms disclosing CSR reports, with superior information quality and with a greater inclination to assure them. However, concerning assurance quality, retailing and telecommunications services are the industries with higher mean values. Finland, Luxembourg, Italy, Mexico, and South Africa show that the 100% of observations belong to firms that disclosure CSR information. However, the quality of CSR reporting is higher in Finland and Luxembourg. Italy shows the highest rate of external assurance, but the higher quality values correspond to Finland, Singapore, and Spain.

The correlation matrix and descriptive statistics of all variables are presented in Table 4. The correlation coefficients only indicate low- or moderate-level associations between different constructs.

### 4.2 | The impact on capital constraints of CSR reporting: The quality of information and assurance

We now summarize the main results of our paper. Model 1 aims to test how CSR reports easing the financial access for reporting companies, whereas Model 2 aims to examine how the quality of this voluntary reporting, as well as its external assurance, strengthens the relation between disclosure and access to finance. Finally, Model 3 aims to analyze the impact of assurance quality.

Table 5 shows the results of the impact of CSR information on access to finance. In Model 1, CSRD is negative and significant in explaining capital constraints ( $\beta_1 = -0.081$ ,  $p < 0.05$ ). Moreover, accounting for the elasticity value, that is, how an economic variable responds to a change in another, we can infer a reduction of around 8.1% in capital constraints when a firm issues a standalone report. Therefore, we support hypothesis 1 and confirm that the CSR disclosure eases the financial access for reporting companies.

However, the value of this reporting is also conditioned on the quality and credibility of information disseminated. In Model 2, “CSRD\_quality” is negative and significant in explaining the access to finance with better conditions ( $\beta_1 = -0.004$ ,  $p < 0.01$ ). This supports our hypothesis 2 that the higher quality of CSR reporting has a positive and significant relationship with the access to financial resources. Given the lack of credibility and user's confidence in the information of CSR, when we examine whether the impact of assurance statement amplifies the previous relationships, we found an interesting result. On the one hand, we acknowledge the need of accounting the effect of external assurance. Model 2 also provides that “Assurance” negatively impacts capital constraints ( $\beta_2 = -0.196$ ,  $p < 0.01$ ). That means that the external assurance ensures the credibility of CSR information and favors access to finance with lower capital constraints. Furthermore, the test of the complementary or substitutive relationship between both reveals that the interaction term “CSRD\_quality \* Assurance” has a negative effect on capital constraints ( $\beta_3 = -0.005$ ,  $p < 0.01$ ). We then calculated the coefficients that revealed that financial access is better for the superior quality of CSR information. This effect is even higher when firms externally assured their reports ( $\beta_1 = -0.004 + \beta_3 = -0.005 = -0.009$ ) than when assurance is not available ( $\beta_1 = -0.004$ ).

When we examine the elasticity values of each indicator, the following can be inferred: First we observe a reduction of around 5% in capital constraints when the information of CSR document is of higher quality in terms of comparability and reliability. Secondly, we observe a reduction of around 19% when firms assure their CSR statements. Finally, we observe a reduction of 9% in capital constraints when the higher quality is complemented by the assurance process (4% + 5%). This confirms our third hypothesis that the external assurance of CSR reporting further strengthens the relationship between the CSR information quality and access to financial resources. The lower capital constraints that arise from a higher information quality are even reinforced by the existence of an external process of assurance.

Finally, in Model 3 the “CSRD\_quality” has a negative impact on the access to finance with better conditions ( $\gamma_1 = -1.53e-08$ ,  $p < 0.01$ ). It also reveals that the “AQ” indicator negatively influences capital constraints ( $\gamma_2 = -5.08e-08$ ,  $p < 0.01$ ). The interaction indicator “CSRD\_quality \* AQ” shows a negative effect on capital constraints ( $\gamma_3 = -5.60e-10$ ,  $p < 0.05$ ). The calculation of the magnitude reveals that the lower capital constraints as result of superior quality of CSR information is even greater when assurance is of greater quality ( $\gamma_1 = -1.53e-08 + \gamma_3 = -5.60e-10 = -1.586e-08$ ) than when the quality of assurance is lower ( $\gamma_1 = -1.53e-08$ ).

However, we must be aware of the fact that coefficients are not relevant in terms of their magnitude. Moreover, when we examine the elasticity's values of each indicator, the insignificant effect regarding the coefficient is again reported because the reduction in the

**TABLE 3** Distribution of CSR report, quality and assurance, and attributes by year, sector, and country

	CSRD		CSRD_quality		Assurance		AQ	
	Freq.	%	Mean	SD	Freq.	%	Mean	SD
Year								
2007	222	34.63	14.59	26.48	103	16.07	12.169	5.537
2008	398	53.14	21.46	28.66	153	20.43	11.878	5.444
2009	475	54.54	2089	27.27	184	21.13	12.824	5.235
2010	565	59.41	21.74	26.10	222	23.34	12.084	5.312
2011	663	66.04	24.58	27.39	275	27.69	11.737	5.142
2012	714	68.00	25.31	27.32	319	30.38	12.464	4.997
2013	736	67.96	25.31	27.49	363	33.52	11.486	5.405
2014	763	67.82	25.00	27.01	389	34.58	11.975	5.169
2015	793	69.87	33.06	36.89	397	81.52	12.423	4.940
2016	799	70.40	35.03	38.67	405	82.82	12.793	5.156
Industry								
Automobiles and components	171	70.08	23.48	24.74	105	48.84	13.345	4.559
Capital goods	738	70.69	24.77	26.05	358	39.00	13.337	4.774
commercial and professional services	144	55.81	24.07	30.73	55	24.89	10.955	5.287
Consumer durables and apparel	201	62.62	20.37	23.81	101	36.07	11.138	5.449
Consumer services	175	51.17	22.03	31.90	58	20.57	6.879	4.021
Diversified financials	91	42.52	11.55	15.49	23	14.44	12.400	6.620
Energy	496	55.11	22.51	30.16	205	26.94	12.714	5.055
Food and staples retailing	165	69.92	26.69	29.32	72	34.62	12.500	5.354
Food, beverage and tobacco	342	74.51	29.58	29.89	156	38.14	10.962	5.774
Health care equipment and services	183	42.86	12.91	21.14	39	11.11	11.600	5.758
Household and personal products	136	89.47	39.90	32.29	83	58.87	11.517	4.838
Insurance	13	30.95	7.32	11.52	0	0		
Materials	836	69.38	30.11	32.78	386	36.52	11.778	4.888
Media	155	52.89	15.13	23.35	59	21.69	10.593	4.854
Pharmaceuticals, biotechnology, and Life	254	71.35	29.55	30.22	145	45.17	12.962	4.481
Real estate	299	61.78	29.99	35.08	137	31.79	12.850	5.275
Retailing	180	40.45	13.86	24.03	65	18.11	14.086	4.997
Semiconductors and semiconductors equipment	120	70.59	36.68	37.90	46	30.46	13.308	3.35
Software and services	182	40.72	15.69	26.03	51	13.86	10.545	5.535
Technology hardware and equipment	227	74.18	29.07	30.03	120	44.61	11.956	4.487
Telecommunication services	233	76.39	39.55	36.83	155	54.20	14.177	4.511
Transportation	258	68.80	28.02	30.90	119	36.50	11.314	5.092
Utilities	529	77.45	30.53	30.54	272	44.44	13.342	5.488
Country								
Australia	514	49.97	21.70	31.73	227	27.25	11.983	4.703
Belgium	9	90.00	60.00	42.82	7	70.00	12.667	5.774
Canada	545	36.50	14.88	27.13	124	12.34	13.105	4.411
China	166	45.36	13.95	21.28	27	9.93	11.556	5.411
Finland	4	100.00	62.50	43.30	3	75.00	16.333	0.557
France	267	91.13	37.15	30.49	228	78.35	14.902	3.330
Germany	197	94.26	50.49	35.26	134	65.69	14.143	5.063
Honh Kong	132	59.46	33.90	39.57	76	37.62	13.915	5.569
Ireland	74	67.89	24.76	26.74	34	34.34	13.722	4.456
Italy	20	100.00	32.50	23.08	20	100.00	12.000	6.403
Japan	883	93.64	33.45	26.46	553	65.68	11.505	5.545

(Continues)

TABLE 3 (Continued)

	CSR		CSR_quality		Assurance		AQ	
	Freq.	%	Mean	SD	Freq.	%	Mean	SD
Luxembourg	4	100.00	62.50	43.30	3	75.00	-	-
Mexico	8	100.00	25.00	0.00	3	37.50	-	-
Netherlands	150	89.29	37.05	29.84	115	71.88	9.833	4.462
New Zealand	18	40.91	7.43	11.58	0	0	-	-
Papua New Guinea	6	75.00	31.25	32.02	5	62.50	10.333	4.967
Russia	115	79.31	23.04	19.22	16	12.60	15.500	1.732
Singapore	125	64.43	29.92	33.70	37	21.14	16.8809	2.522
South Africa	130	100.00	37.89	27.15	62	50.41	11.667	5.489
Spain	163	96.45	42.71	30.75	14	85.89	16.400	4.840
Sweden	174	83.25	40.70	33.52	83	42.35	9.348	3.039
Switzerland	114	81.43	37.50	32.09	74	55.64	9.112	5.137
UK	563	84.92	28.38	24.56	353	57.49	14.216	5.159
USA	1,838	54.01	21.27	28.85	489	16.73	9.983	4.608

Note.

Sample 1: Companies that disclose and do not disclose corporate social responsibility (CSR) information: 9,744 observations of 1,137 companies in 2007–2016.

Sample 2: Companies that disclose CSR information with assurance data: 4,076 observations of 829 companies in 2007–2016.

capital constraints never overcomes the value of 0.01%. Firms may provide voluntary an assurance statement to increase transparency and confidence and then to improve the access to finance. With it, firms reinforce the value relevance of CSR reporting by ensuring its reliability. However, investors and stakeholders do not have the skills and knowledge about the specific assurance content: a lack of cognitive and professional abilities that is reinforced with the wide diversity existing around the assurance (criteria, processes, standards, assurers, conclusions, and so on) and ends up preventing the external users positively value it. Therefore, despite our earlier result of the lower capital constraints of higher quality and credibility of CSR information, evidence cannot be obtained regarding assurance quality as we proposed in our fourth hypothesis.

### 4.3 | Robustness check

One of the potential limitations of this paper could be related to the measurement of disclosure quality, which is based on content analysis. To measure the quality, we rely only on the adherence to GRI guidelines to assess the degree and quality of CSR disclosure. To overcome such limitation, and as a sensitivity analysis, we provide evidence-based upon alternative measure CSR disclosure quantity and quality. For this purpose, we use Thomson Reuters' environmental, social, and governance "ESG" score. ESG score represents a company's CSR performance based on reported data in the public domain.<sup>2</sup> "ESG" score is derived from the scores of 10 performance categories. These performance categories include use of resources, greenhouse and other emissions, sustainable innovations, responsible management, shareholders' relationship management, CSR strategy, workforce-

related issues, human rights, community development, and product responsibility. A combination of the scores of 10 performance categories is weighted proportionately to the count the total score. These performance categories are compartmented in three main pillar scores and the final ESG score. This score is widely considered as the representation of a company's ESG performance and commitment. The "ESG" score ranges from 0.1 to 100 based on 10 categories data points that Thomson Reuters assigns. ESG score is minimum for those that report a minimum amount of social and environmental data and the maximum range for those that report every data point.

Building upon this alternative measure of CSR data, Models 2 and 3 are again tested (Model 1 is not regressed because it only examines the impact of the reporting, without accounting for its quality). Results are reported in Table 6 that clearly support the previous findings. Model 2 confirms that the higher availability of information leads to better financial market response ( $\beta_1 = -0.016$ ). This better response is translated into lower difficulties in accessing finances. Moreover, this effect is even higher when firms externally assured their reports ( $\beta_1 = -0.016 + \beta_3 = -0.019 = -0.035$ ) than when assurance is not available ( $\beta_1 = -0.016$ ). Meanwhile, results of Model 3 shows that the lower capital constraints as a result of superior comparability and availability of CSR information are even greater when assurance is of greater quality ( $\gamma_1 = -2.34e-08 + \gamma_3 = -1.92e-09 = -2.532e-08$ ) than when the quality of assurance is lower ( $\gamma_1 = -2.34e-08$ ). However, again, coefficients are not relevant concerning their magnitude, and thus, there is an extremely low relationship between assurance quality and access to financial capital for the firms that encourage assurance for their CSR reports.

### 4.4 | Discussion of results

Overall, our results empirically support the premise of value relevance of CSR reporting, its quality, and credibility; we note that the

<sup>2</sup>Currently, there are several ESG data providers, a summary of each of these providers is beyond the scope of this paper. Some of the major well-known ESG rating agencies are (1) Bloomberg, (2) DowJones Sustainability Index (DJSI), (3) MSCI ESG Research, (4) Thomson Reuters ESG Research Data, and (5) RepRisk.



TABLE 4 Descriptive statistics and bivariate correlations

	Descriptive statistics		Bivariate correlations											
	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	
1. KZ_index	0.027	0.646	1											
2. CSRD	0.629	0.483	-0.026	1										
3. CSRD_quality	25.10	30.087	-0.013	0.664***	1									
4. Assurance	0.333	0.471	-0.016	0.4974***	0.416***	1								
5. AQ	12.295	5.180	-0.067	0.100***	0.061*	0.172***	1							
6. Size	2086.774	619.356	-0.013	0.085***	0.054***	0.078***	0.042	1						
7. Leverage	8.042	824982	-0.003	0.013	0.009	0.018*	0.052	-0.002	1					
8. Market_cap	54.061	202.078	0.023	-0.017	-0.006	-0.027**	-0.004	-0.019*	-0.016	1				
9. LTD_CE	33.639	82.277	-0.002	0.012	0.010	0.014	0.052	-0.006	0.997***	-0.0121	1			
10. Loss	0.019	0.138	-0.003	-0.041***	-0.016	0.021*	0.046	-0.003	-0.068	0.010	-0.069***	1		
11. Number_Analysts	17.349	8.838	0.021	0.244	0.214***	0.263***	0.0101***	0.085***	0.003***	0.134	0.004	0.009	1	
12. Capital_expenditures	-44.026	23.779	0.001	0.012	0.011	0.014	-0.099***	-0.009	0.001	0.006	0.000	0.003	-0.034***	1

Note. Bivariate correlation tables also include the 10 dummy variables that represent sample years, 23 dummy variables that refer to each activity sector, and 24 dummy variables that represent countries of origin. However, results are deleted because of space limitations, but they are available for readers under request. Anyway, all of them are lower than 0.3.

Sample 1: Companies that disclose and do not disclose corporate social responsibility (CSR) information: 9,744 observations of 1,137 companies in 2007-2016.

Sample 2: Companies that disclose CSR information with assurance data: 4,076 observations of 829 companies in 2007-2016.

\*Statistically significant at 90%. \*\*Statistically significant at 95%. \*\*\*Statistically significant at 99%.

**TABLE 5** Multivariate analyses

	Model 1			Model 2			Model 3		
	Coef.	SE	Elasticities $\partial(y)/\partial(\ln x)$	Coef.	SE	Elasticities $\partial(y)/\partial(\ln x)$	Coef.	SE	Elasticities $\partial(y)/\partial(\ln x)$
Main Variables									
CSR	-0.081**	0.034	-0.081						
CSR_quality				-0.004***	0.001	-0.005	-1.53e-08***	3.2e-09	-9.12e-07
Assurance				-0.196***	0.057	-0.196			
CSR_quality * Assurance				-0.005***	0.002	-0.005			
AQ							-5.08e08***	1.53e-08	-6.33e-07
CSR_quality * AQ							-5.60e-10**	2.48e-10	-4.18e-7
Control Variables									
Size	-0.001*	0.001	-0.001	-0.001	0.001	-0.001	-1.87e10**	6.61e-11	-4.01e-07
Leverage	0.001	0.001	0.000	0.001	0.001	0.001	3.08e-08***	1.45e-09	1.43e-06
Market_cap	0.001***	0.001	0.001	0.001***	0.001	0.001	9.16e-10***	1.92e-10	3.84-08
LTD_CE	-4.51e-08	7.85-e08	-4.51e-08	-6.42e-08	8.06e-08	-6.42--08	4.78e-12***	1.70e-12	1.82-07
Loss	0.091	0.159	0.091	0.078	0.162	0.078	-	-	-
Number_Analysts	0.009***	0.003	0.009	0.013***	0.003	0.013	-6.89e-10	5.30e-09	-1.47e-08
Capital_expenditures	-0.002	0.002	-0.02	-0.004	0.003	-0.004	-3.17e07***	7.37e08	4.86e-08
Controlled by year, industry and country									
AR(2) Arellano-Bond test	Pr > z = 0.663			Pr > z = 0.591			Pr > z = 0.553		

Note. The impact of corporate social responsibility (CSR) disclosure, quality, and reliability on capital constraints.

Sample 1 (Models 1 and 2): Companies that disclose and do not disclose CSR information: 9,744 observations of 1,137 companies in 2007-2016.

Sample 2 (Model 3): Companies that disclose CSR information with assurance data: 4,076 observations of 829 companies in 2007-2016.

\*Statistically significant at 90%. \*\*Statistically significant at 95%. \*\*\*Statistically significant at 99%.

**TABLE 6** Sensitivity analyses

	Model 2			Model 3		
	Coef.	SE	Elasticities $\partial(y)/\partial(\ln x)$	Coef.	Std. Err.	Elasticities $\partial(y)/\partial(\ln x)$
Main variables						
ESG	-0.016***	0.003	-0.016	-2.34e-08**	1.03e-08	-2.34e-08
Assurance	-1.227***	0.408	-1.227			
ESG * Assurance	-0.019***	0.006	-0.019			
AQ				-2.25e-07***	5.70e-08	-2.25e-07
ESG * AQ				-1.92e-09**	7.69e-10	-1.92e-09
Control variables						
Size	-0.001	0.001	-0.000	2.62e-10***	4.70e-11	2.62e-10
Leverage	0.001	0.001	0.000	3.30e-08***	2.07e-09	3.30e-08
Market_cap	0.001***	0.001	0.000	3.65e-09***	3.18e-10	3.65e-09
LTD_CE	-7.57e-08	8.25e-08	-7.57e-08	-1.94e-12	2.33e-12	-1.94e-12
Loss	-0.036	0.165	-0.036	-	-	-
Number_Analysts	0.011***	0.003	0.011	2.60e-08***	4.70e-09	2.60e-08
Capital_expenditures	0.001	0.002	0.001	-8.94e-08	7.22e-08	-8.94e-08
Controlled by year, industry, and country						
AR(2) Arellano-Bond test	Pr > z = 0.757			Pr > z = 0.984		

Note. The impact of corporate social responsibility (CSR) disclosure quantity and quality on capital constraints (environmental, social, and governance [ESG] data).

Sample 1 (Model 2): Companies that disclose and do not disclose CSR information: 9,744 observations of 1,137 companies in 2007-2016.

Sample 2 (Model 3): Companies that disclose CSR information with assurance data: 4,076 observations of 829 companies in 2007-2016.

\*Statistically significant at 90%. \*\*Statistically significant at 95%. \*\*\*Statistically significant at 99%.

voluntary disclosure of CSR enhances the access to financial resources. We also find that the quality of this information regarding credibility measured by external assurance achieves a greater benefit by decreasing capital constraints to a greater extent.

Our first finding related to the positive assessment of CSR information for investors is in line with prior work of Sharma and Fernando (2008), Dhaliwal et al. (2012), and Hartojo and Jo (2015), CSR reporting receives a positive attention from the financial market participants that resultantly improve the access to finance by better informing the investors. Our findings are in line with those obtained by Cheng et al. (2014), who note the lower difficulties in accessing finance for firms that voluntarily disclose CSR information. Our results also advance the understanding by complementing results related to other disclosure characteristics. Healy and Palepu (2001) and Kim et al. (2014) argue that by turning private into public information, CSR disclosure reduces information asymmetries, forecast errors, and information risk that means improved access to financial resources, that is, lower capital constraints. Our results support the premise that the CSR disclosure influences stakeholder's perceptions (cf. Cormier & Magnan, 2014; Luo et al., 2015). But, our second and third major findings suggest that the quality, as well as the assurance of this information, is the main determinants, which impact the capital constraints with better intensity.

On the one hand, we follow the recommendation of Jo and Harjoto (2014) and examine the quality of information. Additionally, work of Dhaliwal et al. (2012) motivates our analysis to examine the fact that the effect of CSR reporting could disappear in the long-term; therefore, the better approach is to assess the quality effect. We contribute to this empirical debate about the effects of quantity and quality of CSR disclosure on better firm performance. Our evidence documents that the higher quality of information leads to better financial market response. This better response is translated into lower difficulties in accessing finances.

Our results support the premise of the strong utility of external assurance as a valid complementary determinant in decreasing capital constraints for reporting firms. Our results are in line with the argument of Hodge et al. (2009) that the assurance benefits CSR reporting by increasing the credibility of information and improving the confidence in disclosed information. Thus, the better access to finance is expected when assurance is provided. Although, there are very few studies available that explicitly provide any evidence about the effect of assurance on the credibility of CSR reports. Yet most of the previous studies argue that assurance can improve the confidence of investors and users of CSR information (Brown-Liburd & Zamora, 2014; Mock et al., 2007; Simnett et al., 2009). Our findings support a benefit of CSR and usefulness of assurance regarding the impact on investors' confidence and the eventual effect on capital constraints.

One most important and interesting finding we observed is an insignificant relationship between assurance quality and access to financial capital for the firms that encourage assurance for their CSR reports. The possible explanation of the no relationship could be the lack of expertise and specific knowledge of general investors for understanding the complex information of assurance reports. In this regards, Luo et al. (2015) argue that general investors are greatly dependent upon experts to translate the CSR-related information into

an understandable version for them. For financial market participants, the assurance availability in itself is a factor that generates credibility of the CSR information. Investors positively react to the provision of external assurance but seem indifferent about the details of assurance quality. In other words, assurance provision for CSR reports eases funds attraction for focal firm.

But, the basic reason for this result could be the wide heterogeneity in the assurance process. In this respect, Manetti and Becatti (2009) point out that it is difficult achieving an absolute assurance given the specific characteristics of the subject matter together with the inherent limitations of the control systems. Along the same lines, other authors such as O'Dwyer and Owen (2005) and Kolk and Perego (2010) noted that there is clear assurance diversity regarding the way to render the conclusions and the information content. Given its voluntary nature, there is no universally accepted assurance standard, which limits its comparability and makes it difficult for investors to interpret the content of the assurance statement. The lack of the abovementioned standard could closely determine the perception of the credibility and the confidence that can be placed by stakeholders in the sustainability assurance report.

## 5 | CONCLUDING REMARKS

For a sample of international firms from 2007 to 2016, our findings reveal the following: First, we document that CSR information eases the financial access for reporting companies. Second, the quality of CSR disclosure and its external assurance further strengthen the relationship between disclosure and access to finance. Third, we are not able to support that a higher quality of assurance decreases the financial restrictions of a firm. We conclude that financial market does not assess assurance quality as a mechanism for increasing investor's confidence in CSR information, but the availability of assurance does.

Based upon the observed results, we advocate that the prevailing controversy regarding the value relevance of CSR disclosure in the literature can be solved by studying the CSR and financial outcomes relationship from a multidimensional perspective. In this sense, we contribute to the literature in different ways. First, from our analysis of an international sample, this research exposes that how such reporting can better achieve the goals of communicating CSR-related activities in a way that meet the informational needs of a wide range of audience in general and investors in particular. In this research, we analyze the impact on access to finance of CSR information. Value relevance can be referred to the usefulness of sustainability information for financial market participants (Carnevale, Mazza, & Venturini, 2012). In line with this definition, we consider sustainability information to be value relevant if it improves access to finances for a CSR reporting firm. In this regard, although there is limited literature available; this paper extends the literature on the relationship between quality, quantity, and reliability of CSR disclosure and access to financial capital (Cheng et al., 2014).

To validate our proposed idea of bundling, we bundle up the quantity with quality of information and its external validation. The results show a strong complementarity between these characteristics of CSR information. This is our second major contribution to extant

literature. The investigation of quality and quantity of CSR disclosure, as well as the presence of external assurance and the quality of assurance, helps us explain the phenomenon in more detail as compared with existing studies. We note that firms that are engaged in extensive reporting of the CSR information in standalone sustainability report face less difficulty in attracting investors. Besides, the quality of this reporting and the external verification improve the positive effect of CSR disclosure on the access to financial resources. Thus, from the perspective of the CSR disclosure, we contribute by examining not only the impact of reporting on access to finance but also the disclosure quality and reliability. These aspects of CSR disclosure have been largely ignored in the existing literature. This study helps to advance the understanding of the role that the quality of CSR disclosure and assurance play in producing credible sustainability reports and confidence in the financial market in such reports.

Our third major contribution to the existing literature is the confirmation of the effect of assurance on the link between CSR disclosure and financial market outcomes. We note that the presence, although not its quality, of assurance, is of great importance for the financial market participants. Firms can win the trust of investors by devoting some extra efforts to provide external assurance for their CSR reports. These fact-based pieces of evidence can clear up the confusion about the value relevance of CSR information as well as the economic benefits of providing more reliable sustainability-related information. In this regard, we provide novel results regarding the effect of assurance by showing that the market positively reacts to a firm's CSR commitment represented by the quality and reliability of CSR information. Thus, our paper extends and further develops the existing research on CSR assurance (cf. Simnett et al., 2009). Our research can be seen as an answer to the call of Hasan et al. (2005) for an empirical investigation about the economic benefits of sustainability disclosure.

As a final contribution, this paper uses state of the art methodology by testing simultaneous equations for the panel data of sustainability disclosure. The test was based on the GMM estimator proposed by Arellano and Bond (1991), which resolves the issue of endogeneity. In this way, our study is unlike the prior studies, which have only utilized the descriptive analysis for instance content analysis or survey (Pflugrath et al., 2011). Our analysis is enriched due to our focus on the temporal dimension of the data, especially in a period of great change. Analyzing a range of years instead of a single year (Hodge et al., 2009) helped us update the period hitherto analyzed (Mock et al., 2007).

Our results have several implications for managers and future researcher. First, the results can help boost the confidence of managers on CSR disclosure and assurance. With these practices, managerial decisions not only generate benefits for society and improve corporate transparency but also reduce capital constraints for reporting firms. The firms that provide better quality credible CSR information can attract more investments, have better survival chances, and face lower cost of financing (Sharfman & Fernando, 2008). Second, for firms, it is in their great interest to know the clear benefits of reporting CSR information with better quality and external assurance. Our results support that the benefits that can be accrued for a firm by higher quality CSR information disclosure are greater than lower quality reporting. Finally, we must be aware of the fact that

CSR disclosure is still voluntary in many countries; the assurance market, moreover, is an unregulated market. For these reasons, our results offer interesting insights for policymakers and regulatory bodies, as well as governments. More specifically, the governments and market regulatory actors can help financial market to be efficient by promoting quality aspects of CSR disclosure in a focal economy.

Even though our study contributes towards existing literature, it suffers from some limitations, and one should thoughtfully interpret our findings. The first issue is the absence of generalizable and reliable measures of quality of CSR reporting as well of assurance quality. A debate is still ongoing to find the best measurement of such constructs and items. Despite the fact that the dummy variable of disclosure quantity can be criticized, using an alternative measure of disclosure based on ESG scores does not yield different results. Thus, we claim a positive impact of disclosure quantity, quality, and validity on financial access. We encourage future researchers to use alternative measures to assess the CSR information quality and assurance quality rather than relying on a single disclosure measure to draw useful conclusions.

Moreover, although we identified access to finance as an outcome of CSR disclosure, there could be other potential outcomes that future studies can examine to enrich the understanding. Finally, despite our contribution of using an international sample, the relations proposed are not tested considering the institutional factors and their implications such as the stakeholder orientation of countries, corporate governance, cultural values, and/or ownership concentration. Future studies can benefit from our recommendations and can advance the literature.

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## CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

## COMPLIANCE WITH ETHICAL STANDARDS

This article does not contain any studies with human participants or animals performed by any of the authors.

## ORCID

Isabel-María García-Sánchez  <https://orcid.org/0000-0003-4711-8631>

Nazim Hussain  <https://orcid.org/0000-0003-2873-5001>

Jennifer Martínez-Ferrero  <https://orcid.org/0000-0001-8387-1466>

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