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External Assurance and Transparency in CSR Reporting

European Evidence

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The spread of CSR reporting is accompanied by an increase of external assurance. Firms are employing assurance to signal the credibility of their CSR reports towards stakeholders and improve their reputation. Whether this practice is socially and economically beneficial remains up for debate. The research question of this paper concerns whether external assurance is associated with transparency in CSR reports. A panel data model is used to investigate the empirical relationship of external assurance and three indicators of transparency: reporting scope as an indicator for completeness, readability as an indicator for clarity and optimism as an indicator for reporting balance, with the latter two proxies derived from text analysis.
We find an ambiguous relationship between external assurance and reporting transparency: External assurance is positively related to reporting scope and negatively to optimism and readability. This study adds to the scarce literature on external assurance for CSR reporting. We contribute one of the first investigations on how external assurance relates to linguistic aspects of CSR reporting transparency.

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1 Introduction

Reporting on Corporate Social Responsibility (CSR)-related activities and its external assurance present two widespread and at the same time controversial practices (Ball and Craig, 2010; O'Dwyer and Owen, 2005; 2007; Smith *et al.*, 2011; Junior et al., 2014). On the one hand, increasing public awareness for CSR has led many companies to complement their financial disclosure through additional information on their social and/or environmental performance. As of 2017, it has become an established practice among many of the largest companies worldwide (KPMG, 2017). This spread is accompanied by an increased supply of external assurance of CSR reports. The Global Reporting Initiative (GRI) supports assurance as a means to increase the reliability of reports and increase their credibility towards stakeholders (GRI, 2013). Standards for assuring CSR reports have been formulated by AccountAbility and the International Audit Assurance Standards Board (IAASB) and are widely used on an international level (Velte and Stawinoga, 2017). Surveys by KPMG suggest that in 2017, 93% of the worlds' largest 250 firms (as measured by revenue) provided CSR reporting in some form, of which 67% had their reports externally assured (KPMG, 2017).

On the other hand, whether the external assurance of CSR reports present a socially and economically beneficial practice in its current form remains up for debate. Critics argue that, while intended to ensure that companies adhere to principles of content and quality and thus provide transparent reports, assurance may itself fall prey to managerial 'capture'. It may thus be ineffective in safeguarding reporting transparency and gains in credibility largely undue. As noted by Velte and Stawinoga (2017), while CSR reporting assurance is increasingly covered in accounting research, its influence on reporting deserves further attention. Our study thus tackles the question: Are externally assured CSR reports more transparent?

For a sample spanning the CSR reporting of 185 European firms from 2014 to 2016, we analyze the relationship between external assurance and three different indicators of transparency: reporting scope as an indicator for completeness, readability, as an indicator for clarity and optimism as an indicator for balance in reporting. We complement several prior studies that focus on the influence of assurance on the quantity (Michelon *et al.*, 2015) or

content (Moroney *et al.*, 2012; Michelon *et al.*, 2015; Braam *et al.*, 2016; Hummel and Schlick, 2016) of CSR reporting. Our findings show that assurance correlates with an increased scope of company activities covered in CSR reporting as well as with a less optimistic verbal tone, but is also associated with a more complex, less readable language. These findings show statistical significance across several robustness checks.

The remainder of this paper is structured as follows: In section 2, we describe the theoretical background of our analysis and in section 3, we derive the research hypotheses. In section 4, we elaborate our sample selection process, methodology and variables. Section 5 is dedicated to the presentation of our results. Finally, in section 6, we discuss our findings, their potential implications and suggestions for future research. The section also concludes this paper.

2 Theoretical Background

2.1 CSR Reporting, Assurance and Transparency

Unlike financial statements auditing, which presents a compulsory exercise for most companies worldwide, external assurance of CSR reports so far is mostly conducted voluntarily. This lends it to be analyzed through the lenses of agency theory and related conceptions (Cohen and Simnett, 2015; Velte and Stawinoga, 2017). One such approach, promoted by Cohen and Simnett (2015) as well as Velte and Stawinoga (2017) is stakeholder agent theory (Hill and Jones, 1992). In classical agency theory, the role of the 'principal' has traditionally been reserved for firms' shareholders. Under stakeholder agency theory, it is enriched by the broader construct of corporate stakeholders.[1]

[1] Unlike shareholders, many stakeholder groups do not hold immediate financial investments in a company and as such do not possess explicit ownership rights and claims to financial returns. Still, they may still be 'invested' in a number of other ways. For example, employees that lend their skills and basic labor power, communities that provide the space to house corporate facilities or governments that secure the basic public and legal infrastructures that enable economic action all hold a reasonable stake in a firm's success and conduct. They raise their own expectations towards it, that may range from receiving an adequate wage for, compliance with commercial laws and customs or the basic respect for and consideration of the people and natural environment affected by corporate activities (Jensen and Meckling (1976); Hill and Jones (1992); Gray et al. (1995); Velte and Stawinoga (2017)).

Firms thus use CSR reporting as a signal towards these groups to decrease information asymmetries on their social and environmental conduct and secure their continued support. Such signaling is only credible when CSR reporting is relatively more costly for 'poor' social/environmental performers in relation to 'good' ones (Spence, 1973). Otherwise, it would represent 'cheap talk' and be considered easily negligible (Crawford and Sobel, 1982).

Firms are facing increasing public and legislative pressure to verify that their CSR reporting indeed provides incremental information. External assurance is promoted as an instrument to secure the transparency of CSR reports (Hahn *et al.*, 2015; Cohen and Simnett, 2015; Michelon *et al.*, 2015; Braam *et al.*, 2016; Velte and Stawinoga, 2017) and increase their 'recognition, trust and credibility' (GRI, 2013) towards stakeholders. In contrast, referring to its voluntary nature, critics suggest that CSR assurance may follow a 'symbolic' approach to legitimization (Ashfort and Gibbs, 1990; Michelon *et al.*, 2015). Corporate managers initiate assurance, pay the assurance providers and decide on the scope of assurance (Jones and Solomon, 2010). As a result, assurance providers' independence is often impaired. Their work may be vulnerable to managerial 'capture' (Smith *et al.*, 2011) and be ineffective in securing or improving the transparency of CSR reporting (Ball and Craig, 2010; O'Dwyer and Owen, 2005, 2007; Smith *et al.*, 2011).

2.2 Empirical Research on Assurance and CSR Reporting

While scientific research on CSR assurance is broad and growing, its association with transparency in CSR reporting has scarcely been investigated empirically (Velte and Stawinoga, 2017). Few studies have considered an association between assurance and CSR reporting (and related forms of disclosure, such as integrated reporting), and those that do so far tend to find a positive association. Moroney *et al.* (2012) and Braam *et al.* (2016) investigate the influence of assurance on the contents of environmental reporting as measured by a disclosure content index developed by Clarkson *et al.* (2008), in Australia and the Netherlands, respectively. Both find that assurance is associated with an increased extent of objective and verifiable environmental disclosure. Similarly, Hummel and Schlick (2016), for a sample of

European firms, use a content indexing scheme to distinguish 'high' (as proxied for by the amount of numerical information) from 'low' (non-numerical information) social and environmental disclosure. They find that assurance correlates with increased levels of 'high-quality' and reduced levels of 'low-quality' disclosure. Gerwanski *et al.* (2019) find that assurance may positively affect the quality of materiality disclosure within integrated reports. In contrast, Michelon *et al.* (2015) investigate the impact of assurance on the relative quantity, topical density, accuracy and managerial orientation of sustainability reports and find no statistically significant relationship with any of these measures.

We recognize the value of these investigations, but suggest that further research is needed in this area for several reasons. First, five studies, (Moroney *et al.*, 2012; Braam *et al.*, 2016; Hummel and Schlick, 2016; Velte, 2018; Gerwanski *et al.*, 2019) find a positive impact of assurance on reporting transparency while one —across several proxies —finds no relation at all. This encourages us to believe there exists further demand for investigation to contribute to the overall conclusion on this issue. Second, studies' contents range from purely environmental reporting (Moroney *et al.*, 2012; Braam *et al.*, 2016) to environmental and social reporting (Hummel and Schlick, 2016; Michelon *et al.*, 2015) and integrated reporting (Gerwanski *et al.*, 2019). This naturally impedes their comparability and provides a strong justification to complement any of these three areas of research. Third, various other ways in which transparency may find its expression in CSR reporting remains underresearched as of yet. The studies conducted provide insights on the association of assurance with CSR reporting quantity (Michelon *et al.*, 2015), specific aspects of reporting (Michelon *et al.*, 2015; Gerwanski *et al.*, 2019) and the content-related depth of CSR reporting (Moroney *et al.*, 2012; Michelon *et al.*, 2015; Braam *et al.*, 2016; Hummel and Schlick, 2016). Such approaches work well for capturing the substantial character of the information disclosed within a report.

Yet, the narrative and discretionary nature of CSR reporting (Cho *et al.*, 2010) suggest its overall verbal tone or rhetoric makeup may also play a role in how transparently information is actually transmitted, even when formally disclosed (Davis *et al.*, 2012; Arena *et al.*, 2015). This aspect appears to have been considered only scarcely for external assurance. To the best

of our knowledge, Velte (2018) provides the only study of this kind: For an European sample, he shows that assurance is associated with an improved readability within integrated reports. Without further inquiries, the complex relation between assurance and CSR reporting will not be fully understood. Thus, the influence of external assurance on the readability of CSR reports needs to be investigated.

3 Research question and hypothesis development

We pick up and contribute to this relatively young conversation. As our main research question, we examine if and how external assurance is associated with the transparency of CSR reports. However, transparency is an elusive concept and may only be measured indirectly. As one of the major standard setters in the field, the GRI has defined a set of principles of reporting content and quality that, if applied collectively, contribute to the transparency of CSR reporting. In the following, we base our choice of indicators for transparency on selected reporting principles as developed by the GRI and formulate our research hypotheses in relation to them.[2] Details on the dependent variables employed to operationalize our hypotheses are given in section 4.3.

3.1 Completeness and Reporting Scope

Completeness presents a principle of reporting content and is applied when it comes to define what information has to be included in a company's report about its activities, impacts and the expectations it faces from its stakeholders (GRI, 2018). Specifically, the completeness principle denotes that a CSR report should "(...) include coverage of material topics and their Boundaries, sufficient to reflect significant economic, environmental, and social impacts, and to enable stakeholders to assess the reporting organization's performance (...)." (GRI, 2018). According to the GRI, completeness is secured in an information gathering process

[2] We base our following elaborations on the formulation of the reporting principles as found in the GRI reporting standards, as published in October 2016. Reporting principles did not change with transitions from previous iterations, such as G 3.1 or G4 of the GRI Reporting Guidelines, which were in effect during our investigated period (2014-2016).

when data is collected for all entities in- and outside the firm whose activities in relation to it significantly contribute to said impacts (GRI, 2018). Based on this guidance, as our proxy for completeness, we employ the scope of reporting, which we define as the relative coverage of a company's activities covered in its CSR reporting.

Assurance providers should take the completeness of reporting into consideration during their assurance engagement. Consequently, they should insist on the inclusion of certain activities into the reporting scope when an omission would result in incomplete disclosure of the companies' impacts and leave stakeholder expectations neglected. As a result, assured reports should display a higher relative coverage of company activities. This logic is similar to suggestions by Moroney *et al.* (2012), Braam *et al.* (2016) or Hummel and Schlick (2016), that assurance should contribute to the extent of CSR reporting, that is, the amount (or 'breadth') of information provided therein. We therefore formulate our first hypothesis as follows:

H1: *External assurance is positively associated with the scope of CSR reporting.*

3.2 Clarity and Readability

Clarity constitutes a major principle of reporting quality. These principles sketch the expectations raised towards information included in a CSR report, including its proper presentation. They also apply to and should guide the processes to gather and prepare information for disclosure within a given report. The clarity principle itself denotes that information should be made available "in a manner that is understandable and accessible to stakeholders (...)." and comprehensible to those "who have a reasonable understanding of the organization and its activities." (GRI, 2018). A common proxy for clarity in reporting is the readability of the narrative disclosure contained in it (Rutherford, 2003). Complex and convoluted phrasing makes it harder to read and understand a text, and extract given information from it. Poor readability in a text may therefore effectively work as a form of obfuscation (Merkl-Davies and Brennan, 2007).

It is ambiguous how external assurance affects the readability of CSR reports. From a stakeholder perspective, assurance providers should consider the clarity of the reporting under their review and persuade preparers to draft statements that readers can readily access. Although he does not explicitly formulate any hypotheses on the relationship between assurance and readability of CSR reports, the findings of Velte (2018) support this notion. Alternatively, it may be that assurance providers – intentionally or unwittingly – contribute to making CSR reports less readable: Assurance is often conducted by members of the auditing profession, which itself holds an affinity for judicial language and technical 'jargon' terms. Barnett and Loeffler (1979) point out that auditing statements are formulated in a manner that is hard to read or understand. This affinity may lead assurance providers to promote a similar language within reports themselves and decrease their clarity towards readers. Similarly, as Smith *et al.* (2011) point out, there may also exist situations of 'professional capture' by assurance providers. As assurance providers intent to be perceived as holding special expertise to preserve their position within the market, they may effectively offer assurance with an attitude of consultancy and actively cooperate with report preparers. Since negative information may hold reputational or even legal consequences for companies, they may advise companies to obfuscate respective disclosure to mitigate such risks. Based on these diverging predictions, we formulate our second, undirected hypothesis as follows:

H2: *External assurance is associated with readability of CSR reporting.*

3.3 Balance and Optimism

As a second principle of reporting quality, we consider the balance of CSR reports. To the GRI, to be considered balanced, a report should "reflect positive and negative aspects of the reporting organization's performance to enable a reasoned assessment of overall performance." (GRI, 2018). To this end, report preparers should avoid to compile or formulate information for the report in a form that transports an (unduly) optimistic image of the company and its activities. Notably, it should abstain from any form of "selections, omissions,

or presentation formats" that could further such a biased impression. One way to evaluate the balance of a report is through its verbal tone. Verbal tone may find its expression in a heightened use of positively connoted words and a decreased use of negatively connoted ones (Hildebrandt and Snyder, 1981; Merkl-Davies and Brennan, 2007; Cho *et al.*, 2010), which overall can make the message of a report appear as more optimistic. Indeed, Cho *et al.* (2010) find some evidence that an overtly optimistic tone in disclosure indicates 'poorer' environmental performance and decreased levels of transparency. In contrast, Arena *et al.* (2015) find optimism to be indicative for future positive CSR performance.

When assurance is effective and free from managerial capture, we assume assurance providers will ensure balance within CSR reports. They will try to exert a correcting influence on such unduly positive presentation and enforce the use of a more neutral, less persuasive style of language. We thus formulate our final hypothesis as follows:

H3: *External assurance is negatively associated with optimism in CSR reporting.*

4 Data and methodology

4.1 Sample selection and sample characteristics

The sample selection process consists of three steps (see Table 1). First, we select listed European firms from the S&P Euro, an index designed to be reflective of the Eurozone market (S&P Indices, 2019). We base our analysis on the index constituents list as of June 2018 that encompasses 187 companies. Second, we perform a hand collection of the latter firms' CSR reports, for the years 2014 through 2016. We exclude nine firms, for which no CSR report is available (or was not published), e.g. firms whose common stock and preferred stock/retirement savings plan/holding corporation are included in the S&P Euro. In these cases, we find two ISINs for one firm and exclude the ISIN of the non-ordinary share. Third, additional exclusions are caused by missing data for single firms or firm-year observations in Datastream. Therefore, the final sample consists of 144 firms or 380 firm-years, respectively.

Table 1: Sample selection and report availability

Step	Selection criteria	$\sum$	Unit
1.	187 listed European firms encompassed within the S&P Euro index that feature Refinitiv ESG / ASSET4 data coverage, as of June 13, 2018	187	Firms
2.	No CSR reports available, e.g., firms with two ISINs (regular share and preferred share or pension plans or holding corporation), where the latter is excluded for the absence of an CSR report	9	Firms
3.	**Sample after exclusion**	**178**	**Firms**
4.	Datastream and Refinitiv ESG / ASSET4 observations missing	34	Firms
5.	**Final sample for baseline results**	**144**	**Firms**

Table 2 and Table 3 show an overview of the sample distribution by country and industry. Overall, more than 50% of total companies in our sample are based either in Germany or in France, which appears in line with the countries' share of the Eurozone's total GDP (European Commission, 2017).

Table 2: Country distribution in the sample

Country		**Observations**	**Percentage**
1.	France	113	29.74
2.	Germany	82	21.58
3.	Spain	53	13.95
4.	Italy	40	10.53
5.	Netherlands	29	7.63
6.	Finland	27	7.11
7.	Belgium	13	3.42
8.	United Kingdom	8	2.11
9.	Austria	6	1.58
10.	Portugal	6	1.58
11.	Ireland	3	0.79
Total		**380**	**100.00**

Note: Country identifications of firms were made based on the Alpha-2 Code available in Datastream (Item: GEOGC).

Looking at the industry distribution (see Table 3) based on the INDM2 industry classification, the sample mostly encompasses firms classified within the industrial and financial sectors, respectively representing 22.11% and 18.42% of total firms, followed by firms active within the consumer goods and utilities sectors. The rest of the sample appears relatively balanced among the six remaining industries.

Table 3: Industry distribution in the sample

Industry		**Observations**	**Percentage**
1.	Industrials	84	22.11
2.	Financials	70	18.42
3.	Consumer Goods	53	13.95
4.	Utilities	39	10.26
5.	Basic Materials	31	8.16
6.	Consumer Services	30	7.89
7.	Oil & Gas	20	5.26
8.	Technology	20	5.26
9.	Healthcare	17	4.47
10.	Telecommunications	16	4.21
Total		**380**	**100.00**

Note: Industry classifications are based on the INDM2 industry classification (Datastream item INDM2).

4.2 Empirical Model

In order to test our hypotheses, we utilize an OLS panel data model with a set of covariates and fixed effects. We construct three empirical models with reporting scope, readability and optimism as dependent variables. The variable of interest in each model is the external assurance of CSR reporting *(ASSURANCE)*. Furthermore, we include a number of company specific variables and industry membership as control variables (Braam *et al.*, 2016). We control for omitted time-varying variables that are constant between firms through year dummies. The following Ordinary Least Squares (OLS) regression is formulated:

(1)

$$REPORTINGSCOPE_{it} = \beta_0 + \beta_1 ASSURANCE_{it} + \sum_{j=2}^{12} \beta_j FIRM_{\ it,\ CONTROL} + \sum_{k=13}^{22} \beta_k INDUSTRY_{\ it,\ CONTROL} + \sum_{l=23}^{25} \beta_l YEAR_{\ it,\ CONTROL} + \sum_{m=26}^{36} \beta_m COUNTRY_{\ it,\ CONTROL} + \epsilon_{it}$$

(2)

$$READABILITY_{it} = \beta_0 + \beta_1 ASSURANCE_{it} + \sum_{j=2}^{12} \beta_j FIRM_{\ it,\ CONTROL} + \sum_{k=13}^{22} \beta_k INDUSTRY_{\ it,\ CONTROL} + \sum_{l=23}^{25} \beta_l YEAR_{\ it,\ CONTROL} + \sum_{m=26}^{36} \beta_m COUNTRY_{\ it,\ CONTROL} + \epsilon_{it}$$

(3)

$$OPTIMISM_{it} = \beta_0 + \beta_1 ASSURANCE_{it} + \sum_{j=2}^{12} \beta_j FIRM_{\ it,\ CONTROL} + \sum_{k=13}^{22} \beta_k INDUSTRY_{\ it,\ CONTROL} + \sum_{l=23}^{25} \beta_l YEAR_{\ it,\ CONTROL} + \sum_{m=26}^{36} \beta_m COUNTRY_{\ it,\ CONTROL} + \epsilon_{it}$$

where the subscript letters indicate the following: i, company; t, year; j, firm characteristic; k, industry membership; l, year membership; m, country membership. The analyzed firm characteristics consist of standalone reporting *(STANDALONE)*, conformity with GRI guidelines *(GRI)*, mandatory CSR reporting *(MANDATORY)*, volume of CSR reporting *(VOLUME)*, ESG performance *(ESG)*, ESG controversies score *(CONTROVERSIES)*, firm size *(SIZE)*, volatility of operating cash flow *(RISK)*, analyst coverage *(COVERAGE)*, profit warnings *(WARNING)*, and closely held shares *(CLOSELYHELD)*. These covariates are further elaborated in the description of our independent variables in section 4.4.

Regarding the assumptions underlying the linear regression model, all parameters were estimated with robust standard errors to consider the issue of heteroscedasticity and autocorrelation (Gerwanski *et al.*, 2019). Multicollinearity was tested based on the variance inflation factor (VIF), similar to the approach by Michelon *et al.* (2015). The VIF analysis does not provide evidence of threat to our findings caused by multicollinearity since the mean is VIF = 4.48 (Model 1) and 4.51 (Model 2 and Model 3). We find the largest VIF values for *MANDATORY* (in Model 1 to 3 between 18.87 and 18.93), which indicates that the models may suffer from multicollinearity. Therefore, we respecify the three baseline models without the variable *MANDATORY* as robustness checks. These robustness checks confirm our initial results in terms of the coefficient signs and significance levels (not tabulated). Furthermore, as the correlation matrix Table 8 shows, multicollinearity is not an issue in our model, since correlation coefficients are far below the critical threshold of 80% (Gujarati, 2004, p. 359). We test our model for heteroscedasticity with the Breusch-Pagan / Cook-Weisberg test and find the presence of heteroscedasticity for Models 1 and 3. Since we use robust standard errors in all baseline models, this is no threat to our results.

4.3 Dependent variables

To measure the scope of reporting *(REPORTINGSCOPE)* as described in our hypothesis development, we employ the ESG Reporting Scope variable from the Refinitiv ESG Score database (formerly Thomson Reuters ESG / ASSET 4). According to Thomson Reuters

(2018), the indicator presents the percentage of the firm's activities covered in its environmental and social reporting (CGVSDP041). This percentage is calculated based on indicators such as the number of employees, group revenue or number of group operations covered within reporting.

For our readability *(READABILITY)* and optimism *(OPTIMISM)* variables, similar to Cho et al. (2010) and Arena et al. (2015), we employ DICTION (version 7.0) to conduct a computer-aided analysis of the firms' CSR reporting. DICTION is an analysis program developed to determine the verbal tone of any given English-language text. The software employs a corpus of 10,000 words grouped into 33 distinct dictionaries and calculated variables. These are used to calculate the five 'master variables' of 'optimism', 'certainty', 'activity', 'realism' and 'commonality'. Via lexical analysis, DICTION is thus able to provide a comprehensive profile of the verbal tone of any analyzed text. Cho *et al.* (2010) and Arena *et al.* (2015) point out a number of advantages of using DICTION. First, its approach provides a strong theoretical basis rooted in linguistic semantics and applied linguistics research (Sydserff and Weetman, 2002; Cho *et al.*, 2010). Second, it is available to be used by different scholars, and creates 'objective, normalized scores' (Arena *et al.*, 2015). Its continued usage also increases the comparability of research results across studies.

As the basis of our analysis, we employ companies' CSR reporting available in the PDF-Format, both when companies opt for publication within a standalone CSR report or for a distinct chapter within their annual report. The use of computer aided text analysis regularly requires the prior 'cleaning' of the documents to be analyzed, and does so in the context of this study. As DICTION follows a dictionary-based approach, the software in itself is unable to distinguish 'relevant' from 'irrelevant' parts of a given text and simply includes all given information within a text file. However, CSR reports often contain substantial amounts of text not part of the central (narrative) disclosure, such as tables of content, page numbers, information on imprint and contact and the like. The inclusion of such information may subsequently affect the scores that DICTION calculates for a text, which could dilute our results. To mitigate this issue, we prepare companies' CSR reports for analysis as follows: First, we

categorize whether a company provides a stand-alone CSR report or a chapter within the annual report in a given year. In cases of annual report chapters, we first cut out the respective pages that make up the chapter and save them as a separate PDF-file. Next, we clean the reporting documents of several types of 'noisy' contents that we consider irrelevant to our analysis.[3] After conducting this standardized cleaning procedure, we conduct a lexical analysis of each document with DICTION to receive our two dependent variables.

As our measure for readability, we employ the reciprocal of DICTION's 'complexity' subvariable. The variable calculates the average number of characters-per-word of an analyzed text. As such, it follows a suggestion by Flesch (1951) in that a text's message becomes more abstract—and thus, less understandable—the more convoluted its phrasing is.

To measure the optimism in CSR reports' narrative disclosure, we follow Cho *et al.* (2010) and Arena *et al.* (2015) and use DICTION's 'optimism' master variable. According to the DICTION 7.0 manual, the variable calculates a score to what degree a text's language is "endorsing some person, group, concept or event or highlighting their positive entailments." (Digitext Inc. 2013).[4]

[3] We regularly clean the documents of the following reoccurring types of information: (1) tables of content, (2) images, tables and their respective headlines or explanatory footnotes, (3) hyperlink-references within the document or from the document to other documents or HTML-Websites, (4) page numbers, headers and footers, (5) imprint and contact information, (6) assurance statements by external auditors, and (7) GRI content indices. In a prior testing for our analysis, we found that DICTION counts any numerical value within a table or an image as a separate numerical term. This, however, could dilute results, as in many cases individual values may only 'function' (that is, transport reasonable, interpretable information) when considered together with the rest of the values contained in their respective table or image. The individual counting by DICTION may therefore be interpreted as a 'double counting' and unduly increase the total number of words of a document that the software uses as its basis to calculate its scores. For this reason, tables and images are deleted. Assurance statements are deleted as they do not present a part of disclosure that is under the control of the reporting company, but is formulated by the assurance provider. GRI content indices are deleted since, in the main, they present reference documents that provide guidance to readers in search for specific disclosure items, but do not generally provide additional information on their own.

[4] The 'optimism' master variable is calculated via the formula [Praise + Satisfaction + Inspiration] - [Blame + Hardship + Denial] Digitext Inc. (2015) 2013 . Like Ober et al. (1999), Cho et al. (2010) and Arena et al. (2015), we do not adjust the variable for our analysis.

4.4 Independent variables

To test our three hypotheses, we use the variable *ASSURANCE* as our variable of interest. The latter corresponds to a dummy variable equal to one if a given firm has an external auditor for its sustainability report in a given year, and zero otherwise (Bollas-Araya *et al.*, 2018, Moroney *et al.*, 2012). Moreover, we include a set of independent variables at the firm-, industry- and country level. All variables except our instrumental variable and the fixed effects-covariates are defined on a firm-year basis, in line with our panel structure.

Table 4: Overview of the independent variables used within the model

Nr.	**Type**	**Variable**	**Definition**
1.	CSR Disclosure quality, quantity, and timing controls	$\text{ASSURANCE}_{i,t}$	Dummy variable = 1 if the firm i has an external auditor for its CSR report in year t, 0 otherwise (Source: Refinitiv ESG; Code: CGVSDP041)
2.		$\text{STANDALONE}_{i,t}$	Dummy variable = 1 if the firm i publishes CSR report separated from its annual report in year t, 0 otherwise (Source: Hand-collected)
3.		$\text{GRI}_{i,t}$	Dummy variable = 1 if the firm i's CSR report is published in accordance with the GRI guidelines in year t, 0 otherwise. (Source: Refinitiv ESG; Code: CGVSDP028)
4.		$\text{MANDATORY}_{i,t}$	Dummy variable = 1 for fiscal years (FYs) starting from the first time a CSR report had to be disclosed onwards, 0 for FYs before. (Source: Hand-collected)
5.		$\text{VOLUME}_{i,t}$	Total number of words within the CSR report of firm i in year t. (Source: DICTION)

6.		$ESG_{i,t}$	ESG Score of firm i in year t. (Source: Refinitiv ESG; Code: TRESGS)
7.		$CONTROVERSIES_{i,t}$	ESG Controversies Score of firm i in year t. (Source: Refinitiv ESG; Code: TRESGCCS)
8.	Other firm level controls	$SIZE_{i,t}$	Measured as the natural logarithm of firm i's net sales / revenues in million US-Dollars in year t. (Source: Datastream; Code: WC07240)
9.		$RISK_{i,t}$	Ratio of the standard deviation of firm i's net operating cash flow (i.e. net OCF) over the last 3 years. (i.e. t-2; t-1; t) to the 3-year average value of its net OCF. (Source: Datastream; Code: WC04860, calculated)
10.		$COVERAGE_{i,t}$	Total number of analyst earnings per share (i.e. EPS) forecasts for firm i in year t. (Source: Datastream; Code: EPS1NET)
11.		$WARNING_{i,t}$	Dummy variable = 1 if the firm i issued a profit warning in the fiscal year t. (Source: Datastream; Code: ECSLDP059)
12.		$CLOSELYHELD_{i,t}$	Ratio of the total number of closely held shares of firm i in year t to firm i's number of common shares outstanding in year t (in percent). (Source: Datastream; Code: WC08021)
13.	Instrumental variable	$PERCASSURED_m$	The percentage of firms that receive CSR report *ASSURANCE* in country m. (Source: Datastream; Code: CGVSDP041, calculated)

To control for the CSR reporting practices on our dependent variables, i.e. *REPORTINGSCOPE, READABILITY, OPTIMISM*, we use a set of variables focusing on firms' CSR disclosure. To that extent, we first include the variable *STANDALONE*, to distinguish firms releasing an integrated report (i.e. IR) from the ones publishing two separate reports (i.e. an annual report and a CSR report). We use a dummy variable set to one if a given company publishes its CSR report separately from its annual report and zero otherwise. Moreover, similar to Michelon *et al.* (2015) we also distinguish whether firms follow the GRI standards or guidelines in their CSR reporting via the variable *GRI*, a dummy variable equal to one if a given firms releases its CSR report in accordance with the GRI guidelines and zero otherwise (Bollas-Araya *et al.*, 2018; Moroney *et al.*, 2012). To differentiate mandatory from voluntary disclosure practices, we use the variable *MANDATORY*, a dummy variable set to one for firms reporting under mandatory CSR disclosure regime, and zero otherwise. Furthermore, we include the variable *VOLUME*, which corresponds to the total number of words contained within a firm's CSR report in a given year to control for the quantity of CSR disclosure. To measure the firm's CSR performance, we use two distinct variables provided within the Refinitiv ESG / ASSET4 database, namely *ESG* and *CONTROVERSIES*. This database (ASSET4) has become increasingly used in research on CSR reporting (Gomes and Marsat, 2018; Lys *et al.*, 2015). Specifically, *ESG* corresponds to the firms' ESG scores, which assess their CSR performance relatively to a peer group, based on the information they disclose within the environmental, social and governance fields. Complementing *ESG*, the variable *CONTROVERSIES* corresponds to a firm's ESG Controversies score, which reflects the level of controversies regarding environmental, social or governance problematics firms face: the higher the number of controversies, the more the firms are penalized by the scoring model (Thomson Reuters, 2018).

Second, we include additional firm-level variables to control for firm specificities and their (potential) influence on *REPORTINGSCOPE, READABILITY* and *OPTIMISM*. For instance, Braam *et al.* (2016) and Bollas-Araya *et al.* (2018), Guidry and Patten (2012) showed that firm size influences its environmental reporting practices; thus we include *SIZE*

as the natural logarithm of a firm's total revenues. Following Wasley and Wu (2006), we also include a proxy for companies' business model volatility through the variable *RISK*, as a more volatile business model may incentivize a firm to provide more transparent disclosure to manage stakeholders' expectations. We operationalize *RISK* as the volatility of a firm's three-year net operating cash flow over the average of its three-year net operating cash flow. To control for differences in information asymmetry, we use the variable *COVERAGE*, i.e. the number of earnings per share forecasts available for a given firm (Hope, 2003; Dhaliwal *et al.*, 2011). Indeed, analysts operate as information providers or information asymmetry reducers, through the release of recommendations and forecasts (Healy and Palepu, 2001; Chang *et al.*, 2000). To control for capital-market-induced pressure on results and, therefore, disclosure, we add the variable *WARNING*, i.e. a dummy variable set to one if a given firm issued a profit warning during the fiscal year and zero otherwise. Finally, we include the variable *CLOSELYHELD*, corresponding to the ratio of a firm's closely held shares to the firms total number of common shares outstanding; we use the latter variable to control for differences in firms' corporate governance practices (Nagar *et al.*, 2011). Descriptive statistics for dependent and independent variables are summarized in Table 5.

Table 5: Descriptive statistics

Variable		**N**	**M**	**SD**	**Min**	**P25**	**P75**	**Max**
1.	*REPORTINGSCOPE*	375	88.11	22.40	0.00	86.00	100.00	100.00
2.	*READABILITY*	380	0.182	0.014	0.134	0.174	0.189	0.227
3.	*OPTIMISM*	380	51.37	2.73	44.47	49.66	52.83	61.70
4.	*ASSURANCE*	380	0.950	0.218	0.000	1.000	1.000	1.000
5.	*STANDALONE*	380	0.537	0.499	0.000	0.000	1.000	1.000
6.	*GRI*	380	0.968	0.175	0.000	1.000	1.000	1.000
7.	*MANDARTORY*	380	0.297	0.458	0.000	0.000	1.000	1.000
8.	*VOLUME*	380	28,809	19,3	1,377	15,621	38,869	100,623
9.	*ESG*	380	73.20	10.84	39.15	66.62	80.95	93.1
10.	*CONTROVERSIES*	380	39.16	24.41	0.37	10.45	58.45	67.24
11.	*SIZE*	380	9.70	1.23	6.59	8.89	10.67	12.18
12.	*RISK*	380	0.344	1.043	-2.814	0.086	0.286	6.946
13.	*COVERAGE*	380	25.03	21337	0.00	21.00	30.00	37.00
14.	*WARNING*	380	0.134	0.341	0.000	0.000	0.000	1.000
15.	*CLOSELYHELD*	380	22.44	20.53	0.00	3.10	36.86	72.58
16.	PERCASSURED[a)]	380	86.15	25.70	0.00	81.65	100.00	100.00

Note: This table summarizes all variables for firms in the sample. The analyzed sample is a panel covering 380 firm-year observations in 11 countries during the period from 2014 to 2016. The number of observations, mean, standard deviation, minimum, values at the 25th percentile, and values at 75th percentile, and maximum are shown for each variable. Firm-level data are obtained from Thomson Reuters Datastream, I/B/E/S, and Refinitiv ESG / ASSET4 databases. All metric variables are winsorized at their 1st and 99th percentiles.

[a)] PERCASSURED is our instrumental variable, explained in detail in section 4.4.

To control for unobserved differences across industries and countries, we add a set of dummy variables. In fact, Simnett *et al.* (2009), and Kolk and Perego (2010) show that reporting practices are influenced at country-level by the stakeholder-orientation level as well as at the industry-level, since industries such as mining or finance are more highly exposed to CSR issues than other sectors. We therefore use industry fixed effects, following the Thomson Reuters Datastream classification based on the Industry Classification Benchmark (ICB). We assign a one if a firm belongs to a particular industry and a zero otherwise. Similarly, we use country fixed effects, assigning the value one for firms belonging to a given country, and zero otherwise. To avoid perfect multicollinearity in the model, we omit one industry membership dummy, respectively one country belonging dummy. For further details on independent variables, refer to section 4.4, Table 4.

5 Empirical results

5.1 Univariate and correlation analyses

We conduct univariate tests of differences to understand how firms set their CSR reporting strategies along with *REPORTINGSCOPE, READABILITY,* and the *OPTIMISM* of their CSR reports. Given the nonparametric nature of panel data, we use Wilcoxon rank-sum tests. The test results show that firms that issue a standalone CSR report are likely to have lower *READABILITY* ($p = .042$) and *OPTIMISM* ($p = .013$). The univariate test indicate that firms in a mandatory CSR reporting regime are likely to exhibit higher *REPORTINGSCOPE* ($p = .009$). Firms that receive CSR assurance are likely to exhibit higher *REPORTINGSCOPE* ($p < .000$); with approximately double the *REPORTINGSCOPE* of firms without assurance. Similarly, firms with assurance are likely to issue less optimistic CSR reports ($p = .001$).

Table 6: Univariate tests by reporting format and mandatory sustainability reporting

	Variable	Variation[a)] (Between) [Within]	STAND-ALONE = 1b) (1)	*STAND-ALONE* = 0 (2)	Diff.[c)] (1)-(2)	*MANDA-TORY* = 1 (3)	*MANDA-TORY* = 0 (4)	Diff. (3)-(4)
1.	*REPORTINGSCOPE*	22.403 -22.102 [6.755]	86.210	90.280	-4.067 (.351)	89.681	87.429	2.252*** (.009)
2.	*READABILITY*	0.0139 (0.0097) [0.0100]	0.1808	0.1826	-0.0018** (.042)	0.1850	0.1802	0.005*** (.000)
3.	*OPTIMISM*	2.735 -2.326 [1.694]	51.640	51.066	0.573** (.013)	50.769	51.630	-0.861*** (.004)

Note: This table summarizes mean differences and univariate test results for dependent variables for firms in the sample. The analyzed sample is a panel covering 380 firm-year observations in 11 countries during the period from 2014 to 2016. All metric variables are winsorized at their 1st and 99th percentiles.

[a)] Reported variation (total, between, and within) is the respective standard deviation statistic.

[b)] Values reported under (1), (2), (3) and (4) are mean statistics.

[c)] Differences reported are mean differences. The tests for differences are two-sample Wilcoxon rank-sum tests.

*, **, and *** indicates significance at the 10%, 5%, and 1% level, respectively.

Table 7: Univariate tests by GRI reporting compliance and external assurance of CSR report

	Variable	GRI[a)] = 1 (1)	GRI = 0 (2)	Diff.[b)] (1)-(2)	***ASSU-RANCE*** = 1 (3)	***ASSU-RANCE*** = 0 (4)	Diff. (3)-(4)
1.	*REPORTING-SCOPE*	89.569	43.917	45.652*** (.000)	90.367	45.367	44.896*** (.000)
2.	*READABILITY*	0.1817	0.1792	0.0025 (.594)	0.1814	0.1865	-.0052 (.190)
3.	*OPTIMISM*	51.382	51.133	0.248 (.634)	51.283	53.097	-1.814*** (.001)

Note: This table summarizes mean differences and univariate test results for dependent variables for firms in the sample. The analyzed sample is a panel covering 380 firm-year observations in 11 countries during the period from 2014 to 2016. All metric variables are winsorized at their 1st and 99th percentiles.

[a)] Values reported under (1), (2), (3) and (4) are mean statistics.

[b)] Differences reported are mean differences. The tests for differences are two-sample Wilcoxon rank-sum tests.

*, **, and *** indicates significance at the 10%, 5%, and 1% level, respectively.

Table 8: Pearson and Spearman correlations

Variable		9.	10.	11.	12.	13.
1.	*REPORTINGSCOPE*	.035	-.161***	.059	-51	-.022
2.	*READABILITY*	.043	-.091*	-.026	-.035	-.022
3.	*OPTIMISM*	-.006	-.119**	.054	.013	.089*
4.	*ASSURANCE*	.232***	-.082	.043	-.057	-.033
5.	*PERCASSURED*	-.083	-.129**	-.253***	-.085	.114**
6.	*VOLUME*	.291***	.013	.102**	-.041	-.017
7.	*ESG*	.311***	.008	.366***	.033	-.253***
8.	*CONTROVERSIES*	-.407***	.016	-.311***	-.112**	.133***
9.	*SIZE*	1	.002	.512***	.116**	.009
10.	*RISK*	.092*	1	-.047	.026	-.017
11.	*COVERAGE*	.452***	.045	1	.105**	-.042
12.	*WARNING*	.129**	.090*	.084	1	-.022
13.	*CLOSELYHELD*	.026	-.045	-.051	-.022	1

Variable		1.	2.	3.	4.	5.	6.	7.	8.
1.	*REPORTINGSCOPE*	1	-.097*	-.013	.252***	-.050	-.056	.070	-.035
2.	*READABILITY*	-.136***	1	-.183***	-.076	.150***	-.015	-.008	-.009
3.	*OPTIMISM*	-.093*	-.205***	1	-.157***	-.121**	-.025	-.041	.048
4.	*ASSURANCE*	.429***	-.081	-.145***	1	.217***	.215***	.177***	-.058
5.	*PERCASSURED*	-.075	.122**	.020	.016	1	.225***	.001	.136***
6.	*VOLUME*	-.056	.019	.020	.182***	.170***	1	.190***	-.132**
7.	*ESG*	.177***	.036	.040	-.850*	.087*	-.154***	1	-.210***
8.	*CONTROVERSIES*	-.025	-.055	.040	-.085*	.087*	-.154***	-.236***	1
9.	*SIZE*	.014	.078	-.013	.247***	-.121**	.252***	.322***	-.497***
10.	*RISK*	-.026	-.023	-.052	.024	.035	0.021	.116**	-.031
11.	*COVERAGE*	.056	-.019	.026	.080	-.141***	.092*	.390***	-.347***
12.	*WARNING*	.046	-.030	-.012	-.051	-.057	-.032	.047	-.144***
13.	*CLOSELYHELD*	-.003	-.045	.070	-.053	.081	.051	-.246***	.086*

Note: Parametric Pearson's r correlations are reported below the diagonal. Nonparametric Spearman's rs correlations are reported above the diagonal. Pairwise N = 380 for all correlation analyses, except those correlations including REPORTINGSCOPE, which include N = 375. All metric variables are winsorized at their 1st and 99th percentiles.

*, **, and *** indicates significance at the 10%, 5%, and 1% level, respectively.

Non-parametric Spearman (1904) correlations indicate a positive and significant correlation of our variable of interest *ASSURANCE* with *REPORTINGSCOPE* (r_s = .252, $p < .000$), and a negative and significant correlation with *OPTIMISM* (r_s = -.157, p = .0047). In the correlation analysis, the empirical association of *ASSURANCE* and *READABILITY* is negative but statistically insignificant (r_s = -.076, p = .1137).

5.2 Regression analyses

To test our hypotheses H1 to H3, we conduct a multiple regression analysis. Table 9 shows the results from the baseline multiple regression models (Models 1 to 3) with fixed effects, with *REPORTINGSCOPE, READABILITY* and *OPTIMISM* as the dependent variable, respectively. There is a strong relation between reporting scope of ESG related topics (*REPORTINGSCOPE*) and external assurance (*ASSURANCE*), GRI conformity (*GRI*), volume (*VOLUME*) as well as size (*SIZE*). Since reporting scope is significantly positive associated with external assurance of CSR reporting (*ASSURANCE*; β_1 = 33.92, $p < .01$), GRI conformity (*GRI*; β_3 = 29.04, $p < .01$) is significantly negative associated with volume of CSR reporting (*VOLUME*; β_5 = - 0.000, $p< .05$) as well as with size of the company (*SIZE*; β_8 = -2.847, $p < .05$). Furthermore, there is a weak relation between reporting scope and the variable closely held share (*CLOSELYHELD*; β_{12} = 0.1033, $p < .1$). The readability (*READABILITY*) is significantly negative associated with external assurance of CSR reports (*ASSURANCE*; β_1 = -0.009, $p < .05$). A negative relation between the verbal tone optimism (*OPTIMISM*) in CSR reporting and external assurance (*ASSURANCE*) can be found (*ASSURANCE*; β_1 = -1.667, $p < .05$). There is a strong positive significant relation between the variable of mandatory sustainability reporting (*MANDATORY*; β_4 = 4.310, $p < .05$) and the optimistic tone on CSR reporting. Thus, Hypotheses 1, 2 and 3 are strongly supported. The results contribute to the current discussion about external assurance in CSR reporting and show another perspective compared to the results from Velte (2018).

Table 9: Results of multiple regression models

Independent variables	**Model 1** **Dependent variable:** ***REPORTINGSCOPE*** with robust st. errors		**Model 2** **Dependent variable:** ***READABILITY*** with robust st. errors		**Model 3** **Dependent variable:** ***OPTIMISM*** with robust st. errors	
	Coefficients	Sig.	Coefficients	Sig.	Coefficients	Sig.
ASSURANCE	33.92***	.001	-0.009**	.014	-1.667**	.028
STANDALONE	-1.114	.636	-0.001	.635	0.252	.433
GRI	29.04***	.002	0.007	.230	0.279	.795
MANDATORY	3.720	.156	0.009	.115	4.310**	.012
VOLUME	-0.000**	.019	-0.000	.529	-0.000	.989
ESG	0.138	.242	0.000	.965	-0.003	.860
CONTROVERSIES	-0.056	.257	-0.000	.708	0.011	.130
SIZE	-2.847**	.012	0.001	.139	0.181	.249
RISK	-0.130	.888	-0.000	.691	-0.159*	.089
COVERAGE	0.123	.533	-0.000	.107	-0.007	.771
WARNING	3.629	.193	-0.002	.298	0.057	.888
CLOSELYHELD	0.100*	.052	-0.000	.141	0.006	.455
Industry Effects	Yes		Yes		Yes	
Year Effects	Yes		Yes		Yes	
Country Effects	Yes		Yes		Yes	
Constant	55.971***	.000	0.175***	.000	50.588***	.000
R-squared	0.328		0.128		0.193	
Adjusted R-squared	0.263		0.044		0.117	
F	7.941***	.000	2.248***	.000	3.170***	.000
Observations	375		380		380	

*Note: * $p \leq .10$; ** $p \leq .05$; *** $p \leq .01$.*

To assess the possibility of an omitted variable bias to the validity of our baseline findings, we conduct various specification tests and find no violation.

5.3 Consideration of Potential Selection Bias

The used sample is non-randomly selected which might raise concerns about the validity of the empirical findings of our study. Our sample considers the 185 largest firms (by market capitalization) in the EURO STOXX 300. This could lead to a sample bias in the selection procedure. To address this potential sample selection bias, we employ a Heckman two-step selection model (Heckman, 1979; Michelon *et al.*, 2015; Steinmeier and Stich, 2019). First, the following probit regression model was estimated for all firms included in the EURO STOXX 600 from 2014-2016. The model is:

(4)

$$P(Incl_{it} = 1) = \phi(\beta_0 + \beta_1 MarketCap_{it} + u_{it})$$

where the subscript letters indicate the following: i, firm; t, year. $Incl_{it}$ it is a dichotomous variable that indicates whether an observation is included in the major analysis. The criterion for an inclusion in our sample is whether a firm belongs to the 185 largest public firms in the EURO STOXX 300. Further, market capitalization ($MarketCap_{it}$) in USD is included in the model. Based on equation (4), we obtain the inverse Mills ratio (IMR_{it}). The inverse Mills ratio (IMR) is used to construct a selection bias control factor. In a second step we include the inverse Mills ratio as an additional control variable for each baseline regression model (see Table 10 for Models 4 to 6) to account for the impact of potential sample selection bias. The results from these Heckman selection models support our baseline results. Therefore, it is unlikely that our baseline models suffer from a sample selection bias.

Table 10: Results of multiple regression models with Heckman correction

Independent variables	**Model 4** **Dependent variable:** ***REPORTINGSCOPE*** with robust st. errors		**Model 5** **Dependent variable:** ***READABILITY*** with robust st. errors		**Model 6** **Dependent variable:** ***OPTIMISM*** with robust st. errors	
	Coefficients	Sig.	Coefficients	Sig.	Coefficients	Sig.
ASSURANCE	32.361***	.001	-0.010**	.012	-1.554**	.043
STANDALONE	-0.834	.736	-0.001	.566	0.165	.621
GRI	29.963***	.002	0.007	.238	0.212	.846
MANDATORY	1.586	.608	0.009	.121	4.571***	.006
VOLUME	-0.000**	.033	-0.000	.579	0.000	.829
ESG	0.113	.366	0.000	.968	-0.006	.715
CONTROVERSIES	-0.039	.449	-0.000	.750	0.011	.141
SIZE	-3.846***	.001	0.001	.195	0.245	.175
RISK	-0.219	.820	-0.000	.660	-0.194**	.046
COVERAGE	0.058	.793	-0.000	.141	0.013	.619
WARNING	3.766	.182	-0.002	.331	0.109	.788
CLOSELYHELD	0.076	.152	-0.000	.115	0.007	.431
IMR	-18.690**	.025	-0.001	.819	1.554	.159
Industry Effects	Yes		Yes		Yes	
Year Effects	Yes		Yes		Yes	
Country Effects	Yes		Yes		Yes	
Constant	92.801***	.000	0.178***	.000	47.693***	.000
R-squared	0.336		0.129		0.201	
Adjusted R-squared	0.269		0.042		0.121	
F	7.794***	.000	2.186***	.000	5.181***	.000
Observations	368		373		373	

*Note: * $p \leq .10$; ** $p \leq .05$; *** $p \leq .01$.*

5.4 Adressing Endogeneity Concerns

Since firms have considerable discretion, whether to receive *ASSURANCE* of their CSR report or not, *ASSURANCE* is regarded to be an endogenous regressor. This is especially prevalent in a voluntary setting of CSR report assurance (Simnett *et al.*, 2009; Steinmeier and Stich, 2019). This self-selection stems from the fact that firms seek CSR report assurance on a voluntary basis in Europe throughout our sample period from 2014 to 2016—except for French firms, that have been reporting under a mandatory CSR reporting regime since 31st December 2013 (Kaya, 2016; Sethi *et al.*, 2017). Therefore, our baseline results may be prone to firms' self-selection mechanism and resulting bias because of management's decision to receive CSR report assurance (Ruhnke and Gabriel, 2013; Sethi *et al.*, 2017). Consequently, a classical assumption of our OLS estimator, i.e. no endogeneity (Studenmund and Johnson, 2017) would be violated. Therefore, our estimates of the true regression coefficients would be biased and inconsistent (Greene, 2008; Backhaus *et al.*, 2016).

We follow Sethi et al. (2017) and make use of the Heckman two-step approach to consider this endogeneity concern (Heckman, 1979). Specifically, we use a two-stage regression with *ASSURANCE* as dependent variable in the first-stage equation, and each dependent variable *REPORTINGSCOPE, READABILITY*, and *OPTIMISM* in the second-stage equations (excluding *ASSURANCE* in the second-stage equation).

Our instrumental variable (IV) for the first-stage regression is *PERCASSURED*, defined as the percentage of firms that receive CSR report *ASSURANCE* in a particular country, as an exogenous regressor for the first-stage equation, which is a regression of *ASSURANCE* on *PERCASSURED* and the exogenous covariates used in our baseline models. Country- or industry-means like our IV have frequently been used as instruments by prior empirical studies (Lev and Sougiannis, 1996; Nevo, 2000; Hanlon *et al.*, 2003; Cheng *et al.*, 2014; Sethi *et al.*, 2017). For the second-stage equations, the predicted values of *ASSURANCE* (obtained from the first-stage regression), are used as an independent variable instead of the observed values of *ASSURANCE*. The results of our two-step models (Models 7 to 9) are tabulated in Table 11.

Table 11: Results of instrumental variable regression models

Independent variables	**Model 7** **Dependent variable:** ***REPORTINGSCOPE*** with robust st. errors		**Model 8** **Dependent variable:** ***READABILITY*** with robust st. errors		**Model 9** **Dependent variable:** ***OPTIMISM*** with robust st. errors	
	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage
ASSURANCE		56.016***		-0.024***		-3.013***
PERCASSURED	0.101**		0.098**		0.098**	
STANDALONE	-0.778	-0.911	-0.837*	-0.002	-0.837*	0.257
GRI	6.122	25.960***	5.800	0.011**	5.800	1.275
MANDATORY	9.033	0.768	8.727	0.006***	8.727	-0.621*
VOLUME	0.000	-0.000***	0.000	0.000	0.000	0.000
ESG	0.031	0.104	0.038*	0.000	0.038*	0.002
CONTROVERSIES	-0.001	-0.045	-0.001	0.000	-0.001	0.006
SIZE	0.768**	-3.537***	0.776***	0.002***	0.776***	0.059
RISK	0.093	-0.644	0.084	-0.000	0.084	-0.154
COVERAGE	-0.076	0.124	-0.075*	-0.000	-0.075*	0.002
WARNING	-0.503	5.284*	-0.518	-0.002	-0.518	-0.144
CLOSELYHELD	-0.007	0.080	-0.006	-0.000	-0.006	0.006
Constant	-20.109	38.285***	-20.132	0.175***	-20.132	51.786***
Wald x^2	154.00***		53.73***		42.46***	
p-value	(.0000)		(.0003)		(.0080)	
Observations	375		380		380	

*Note: * $p \leq .10$; ** $p \leq .05$; *** $p \leq .01$.*

These Heckman (1979) two-step models allow us to analyze the potential impact of firms' self-selection bias. The results of the respective second-stage regressions feature coefficients for *ASSURANCE* with the same sign directions as our baseline models and the same—or even higher—significance levels (p-values less than 10%, 5%, or 1% respectively). We conclude that our baseline results are not subject to a potential self-selection bias concerning our variable of interest, *ASSURANCE*. However, like Michelon *et al.* (2015), we acknowledge a potential cause of endogeneity due to reverse causality: given the present data granularity of firm-year observations, we presume that firms simultaneously decide on whether to receive external CSR report assurance, the verbal tone, and the incremental information of their CSR report. Therefore, we cannot infer from our findings that an adoption of *ASSURANCE* will inevitably lead to shifts in a firm's *REPORTINGSCOPE, READABILITY*, and/or *OPTIMISM*. Likewise, our empirical research design could not identify such causal effects.

6 Conclusion

Our study addresses the question whether external assurance is associated with increased transparency in CSR reporting. To this end, we investigate the empirical relation of assurance with three dimensions of reporting content and quality: completeness, clarity, and balance.

This study contributes to the literature on the external assurance of CSR reporting in several ways. First, complementing the pioneering work by Velte (2018), we add to the stream of research investigating the relation of assurance with linguistic aspects of reporting. To the best of our knowledge, we are also the first to consider the potential association of assurance with reporting optimism. Our results add to the understanding of how assurance is associated with transparency across several dimensions of reporting quality. On the one hand, our results show that assurance is, at statistically significant levels, positively associated with reporting scope and negatively with reporting optimism. In this, they support other studies which suggest that assurance is positively related with alternative indicators for report

transparency, such as reporting content (Moroney *et al.*, 2012; Braam *et al.*, 2016; Hummel and Schlick, 2016) or materiality disclosure (Gerwanski *et al.*, 2019). On the other hand, we find that external assurance is also associated with decreased readability of CSR reports. Questions of comparability notwithstanding, our results challenge those of Velte (2018), who finds assurance to be associated with increased readability in integrated reports. Our findings remain significant across several robustness checks. Taken together, they suggest that, while assurance may contribute to make CSR reporting more comprehensive in its coverage of corporate activities and balanced in its verbal tone, it does not necessarily make reporting clearer and more accessible. In fact, it may even run counter to these aspirations.

Our study comes with certain limitations. First, our sample comprises the largest blue chip European firms. This implies that our findings have limited generalizability but are mostly valid in the realm of large listed firms. Second, as already stated in the assessment of potential endogeneity, we cannot infer from our findings that the adoption of CSR report assurance leads to shifts in completeness, clarity, and balance.

In this, our study provides a clear starting point for future research. We have already formulated some suggestions for further investigation: For one, it may be that assurance providers from the financial auditor profession are introducing a more technical and 'jargon'-heavy language to reporting (Barnett and Loeffler, 1979) that, as a side effect, also turns out to be less readable. Future studies on the relation of assurance and report readability could thus investigate differences between assurance from auditing and non-auditing firms. Complementary, it may also be that assurance providers 'consult' firms on the report under their review (Smith *et al.*, 2011) and actively suggest more hedged, complex statements in regard to negative information, to avoid reputational or compliance issues. In line with Cohen and Simnett (2015), insights on this suggestion, which concern behavior at the individual or group decision-making level, may be won through the use of experimental or survey designs. Additionally, further research may also consider the influence of assurance on reporting principles associated with transparency in CSR reporting that are not covered in our study or in other studies (such as Gerwanski *et al.* (2019) who consider materiality). For example they may

consider principles of reporting content, such as stakeholder inclusiveness and sustainability context, or of reporting quality, such as accuracy, comparability, reliability and timeliness. Differences in association between distinct levels of assurance scope and security may also provide a point for further inquiry.

We conduct our study for a European sample from the period 2014-2016, shortly before non-financial reporting became mandatory for many firms from the European Union in 2017. Nevertheless, our findings have implications for CSR reporting in the EU under the current system. The respective Directive 2014/95/EU only demands a 'formal' check of assistance of CSR disclosure by the financial statements auditor. Most countries have so far opted to content with this minimum requirement. Consequently, substantial assurance remains a mostly voluntary exercise to many companies in the EU. Our findings, as far as they concern reporting completeness and balance, may thus promote external assurance in two ways: For companies it may indeed present a valuable option to increase the credibility of their CSR reports and set themselves apart from their competitors. For EU regulators, our findings provide encouragement that the enforcement of substantial assurance may increase the overall credibility of CSR reports in their sphere of influence, and thus present a valuable contribution to the socio-economic system.

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