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Informative Value of Non-Financial Reports: Analyzing the Impact of Disclosure Format and Auditing

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ABSTRACT

Since the Non-Financial Reporting Directive (NFRD) came into force in 2017, large, listed companies in the European Union (EU) are obliged to disclose non-financial reports annually. Accordingly, Member States transposed the Directive into national law with country-specific rules. Thus far, quantifying the informational content has proven to be difficult. Therefore, we applied an innovative text-mining approach to assess the informative value of non-financial reports and its influential determinants, the so-called Sustainable Fingerprint. This method measures how precisely environmental, social, and governance (ESG) topics and time references are disclosed in non-financial reports. The aim of our paper is to analyze the informative value of non-financial reports from companies in the main stock indices of France, Germany, Italy, and Sweden after the national NFRD implementation. Our results show that incorporating the non-financial report in the annual report and the audit committee expertise (ACE) are positively related to the informative value, whereas external assurance has no significant impact.

JEL Classification: M41, M14, Q56

1 | Introduction

The European Union (EU) aimed to improve the consistency and reliability of corporate reporting by incorporating sustainability information through the adoption of the Non-Financial Reporting Directive (NFRD) in 2014 (Directive 2014/95/EU 2014). However, concerns about the informational content and reliability of non-financial reports have been widely raised in literature (Cerciello et al. 2023; Hösli and Weber 2021; Luque-Vílchez et al. 2023; Monciardini et al. 2020; Villiers 2022). Non-financial reporting is often seen as a means of social legitimization or an impression management strategy, while its use as a source of reliable information for stakeholders is questioned (Aureli et al. 2020; Caputo et al. 2021; Cho et al. 2018).

Despite the EU's efforts through the implementation of the NFRD, the disclosure of corporate environmental, social, and governance (ESG) information remains opaque. Inconsistencies can be observed that limit the quality and credibility of the information (Aluchna et al. 2022; Carungu et al. 2021). Previous studies have already investigated the quality of non-financial reports, focusing on manual content examination (Michelon et al. 2015), one country (Petruzzelli and Badia 2024; Zarzycka and Krasodomska 2022), or linking the quality to only one aspect, such as audit or board diversity (Al-Shaer and Zaman 2016; Fernandez-Feijoo et al. 2018; Vitolla et al. 2020). Thereby, the lack of specific requirements regarding the disclosure format and the absence of external assurance is identified as a key regulatory gap in the NFRD (Farooq et al. 2024; Fiandrino et al. 2022). However, there is a paucity of research providing evidence on these determinants of the informational content over time in the context of the NFRD.

Our study aims to bridge this research gap by investigating the impact of disclosure format as well as both internal and external audits on the informative value of non-financial reports in the context of the NFRD. For our research, we use the novel method "Sustainable Fingerprint" introduced by Heichl and

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Hirsch (2023). The Sustainable Fingerprint is a composite of two distinct perspectives: the contextual ESG and the temporal. Therefore, the method allows measuring the informative value of non-financial reports based on an automated content analysis. Utilizing panel regression, this study analyzes the impact of different disclosure formats and the presence of audits on the quality and reliability of non-financial information.

This paper contributes to the existing literature on non-financial reporting in three ways. First, the literature concerning sustainability reporting remains primarily based on content analysis of non-financial reports or theoretical analysis of the reporting process. Consequently, it has overlooked stakeholder perceptions (Baier et al. 2020; Beretta et al. 2019; Hummel et al. 2022). This paper provides insights into the determinants of informational content and hence the reliability of non-financial reports. Second, the paper sheds light on the relationship between the disclosure format of a non-financial report and its informative value. Third, this study contributes to the literature on the impact of internal and external assurance practices on the informative value of non-financial reports.

The remainder of the paper is structured as follows. First, we review the literature on Agency and Stakeholder Theory as well as the NFRD, which together form our theoretical framework. In the following section, we describe the legal basis for non-financial reporting in the EU. The Sustainable Fingerprint and the development of our hypotheses are presented in Section 4. The empirical results are discussed in Section 5, including a section dedicated to additional tests. Finally, the conclusion and awareness for further research are presented in Section 6. The main limitations of this study are discussed in the final section.

2 | Theoretical Background

Our study is based on the combination of Agency and Stakeholder Theory, supported by prior literature (Hill and Jones 1992; Jo and Harjoto 2012; Naciti 2019). The Agency Theory asserts that acting on someone's behalf establishes an agency relationship among those parties (Ross 1973). In the case of corporations, the management (agents) acts for their stakeholders (principals) (Jensen and Meckling 1976). If both parties attempt to maximize their outcome, a conflict of interest arises. Therefore, agents do not fully represent the interests of their principal, but rather their own. Hence, principals must enact measures to limit the outreach of their agents. As the NFRD only requires companies to generate a non-financial report without specifying the framework to be employed, the nature, extent, and structure of such reports vary, hindering the extraction of the disclosed information (Directive 2014/95/EU 2014). In this regard, previous studies have found mixed results on the impact of the NFRD on information asymmetry (Christensen et al. 2022; Mittelbach-Hörmanseder et al. 2021). As mentioned above, the given information may not be dependable due to either suspicion or the use of deceptive methods like greenwashing (Kurpierz and Smith 2020). Moreover, to ensure that agents act in accordance with their principal's desires, it is important that both past and future actions are disclosed frequently (Huang and Zhang 2012). The Sustainable Fingerprint could reduce this information asymmetry and thereby improve the informative value regarding ESG topics and the time perspective.

Stakeholder theory proposes that corporations not only serve their shareholders, but also their direct and indirect stakeholders such as their respective community, customers, employees, suppliers, and the general public (Carroll 1991). The company's diverse range of stakeholders encompasses differing interests (Friedman and Miles 2002). Local working conditions might be more vital to employees, whereas environmental issues have precedence over the general public (Carroll 1991). The aim of the NFRD is to give stakeholders easy access to information about corporate impact on society and establish a common ground for reporting topics (Directive 2014/95/EU 2014). The disclosed information might be intended to convince stakeholders through low-cost deception that the management aligns with the stakeholders' interest in ESG performance as a response to their demands or to influence their judgments (Chen and Dagestani 2023; Vilchez et al. 2017; Vurro and Perrini 2011). Nevertheless, the NFRD helps stakeholders to evaluate the operations of the company, considering their diverse and varied expectations and as a sign that the operations are not only suitable but also desirable, thereby legitimizing its existence (Fiechter et al. 2022; Suchman 1995). In addition, stakeholders may be interested in a company's historical, current, and prospective activities (Christensen et al. 2021). Although it is feasible for third parties like public auditors to authenticate the past and the present, applying the same method to future acts remains futile. Given the divergent stakeholder concerns, the informative value could provide a rapid and reliable insight into the non-financial reporting of companies in their respective areas of interest.

3 | Legal Basis of Non-Financial Reporting

The NFRD is an EU regulation that requires certain companies to disclose information on their ESG performance. The NFRD applies to large, public interest entities (PIEs) with at least 500 employees on average over the financial year. The scope should be defined by thresholds for balance sheet total, net turnover, and average number of employees. Subsidiaries of these companies are exempt from reporting if the parent company reports at the group level.

Companies must disclose information on a wide range of non-financial topics, including environmental, employee, and social matters, as well as respecting human rights and measures taken against bribery and corruption. They must also disclose significant risks that have an adverse impact on their ESG performance, and how they manage these risks. Key non-financial performance indicators must also be disclosed. If a company does not have a policy on one or more of these aspects, it must specify the reason ("comply or explain" principle).

Companies may choose to disclose this information in one of four ways: integrated into different sections of the annual report that are thematically appropriate, as an extension of the management report, as a chapter in the annual report, or in a separate non-financial report. In the latter case, a reference must be made in the management report to the location of the non-financial report

TABLE 1 | Country-specific legal requirements.

Criteria	France	Germany	Italy	Sweden
Implementation Act	Amendments to the Law on Accounting PZE No. 51	CSR Directive Implementation Act	Legislative Decree 30 December 2016, n. 254	Corporate Reporting on Sustainability and Diversity Policy CU2
Initial Application	2018	2017	2017	2017
Options for Disclosure	Not allowed	Separate Non-Financial Report		
		Annual Report (Chapter)		
		Management Report (Chapter)		
		Integrated		
Assurance	Size dependent mandatory third-party Audit	Audit by Supervisory Board	Mandatory third-party Audit	Audit of Existence of a Statement

on the company's website. This information must be published no later than four months after the financial year ends.

The NFRD refers to several existing frameworks for guidance, including the United Nations (UN) Global Compact, ISO 26,000, and the Eco-Management and Audit Scheme (EMAS) by the European Commission. The Global Reporting Initiative (GRI) Standards and the Sustainability Accounting Standards Board (SASB) Conceptual Framework are particularly useful for reporting, as they cover all required aspects. Companies must state which existing framework they use, if any, or why they opt to use their own or none at all.

An auditor must verify that the non-financial information is factually presented but is not required to perform a content check of the reports. If a substantive review has been carried out, the audit opinion must be published together with the non-financial statement. Significant fines can be imposed for failing to disclose non-financial information, up to EUR 10 million based on turnover and profit of the respective firm.

In our research, we examine the content of the non-financial reports from companies in France, Germany, Italy, and Sweden. The relevant country-specific legal requirements deviating from or in addition to the NFRD are presented in Table 1.

4 | Research Method

4.1 | Sample Design and Data Collection

Our study examines 621 non-financial reports of 120 companies from the main stock indices of France (CAC 40), Germany (DAX), Italy (FTSE MIB), and Sweden (OMXS30). The observation period for the three latter countries is 2017–2022, due to the implementation of the NFRD for the financial year 2017. For France, where the implementation of the NFRD took place one year later, the observation period is limited to 2018–2022. The selection of countries situated within the EU is reasonable due to the regulation implemented by the underlying NFRD. Moreover, France, Germany, and Italy represent the strongest economies in the EU (European Commission 2022). Notably forward-looking in sustainability matters (Sachs et al. 2022), we include Sweden in our investigation. Given that the NFRD and its national adaptations encompass PIEs, our research confines its sample to companies listed in the main stock indices. Due to the absence of a centralized database, we manually acquired non-financial reports from the respective corporate websites. The sample starts in 2017, aligning with the year when NFRD regulation became obligatory, and concludes in 2022. For our sample, we used the composition of the indices as of May 2, 2023. The extent of the impact of data filters on the initial pool of non-financial reports is documented in Table 2.

Specifically, the initial compilation comprises 200 reports from France, 240 from Germany, 240 from Italy, and 174 from Sweden. The number of reports corresponds to the companies listed in the main stock indices. Preeminent among the data screening interventions is the exclusion of entities featuring foreign International Securities Identification Numbers (ISINs), leading to the elimination of 98 observations. Subsequent manual assessment of the reports further diminishes the sample by 105 instances attributable to the presence of integrated reports, which were not suitable for the text mining approach. Additionally, 30 reports are unavailable within the designated timeframe, stemming from reasons such as recent listing or absence. Consequently, the final sample size under scrutiny comprises 621 non-financial reports published in English for the stipulated inquiry period.

We use LSEG Workspace for the data on age, audit committee expertise (ACE) (score), beta, CSR committee score, financial leverage, free cash flow, market capitalization, market-to-book (MTB) ratio, NACE classification, return on equity (ROE), and total assets. This data is frequently used in academic research, especially in the context of sustainability performance and disclosure (Demers et al. 2021; Galletta et al. 2022; Pozzoli et al. 2022). The additional data regarding the assurance, auditor, disclosure format, and the length of the non-financial reports is collected manually. During this process, we double-checked the information gathered from LSEG Workspace.

Figure 1 provides the distribution of the full sample regarding the disclosure format.

TABLE 2 | Sample creation.

Source/filter	Sample size			Observations removed
Annual report	854			
		France	*200*	
		Germany	*240*	
		Italy	*240*	
		Sweden	*174*	
Foreign ISIN	756			98
		France	*20*	
		Germany	*12*	
		Italy	*42*	
		Sweden	*24*	
Integrated	651			105
		France	*2*	
		Germany	*34*	
		Italy	*33*	
		Sweden	*36*	
n/a	621			30
		France	*6*	
		Germany	*19*	
		Italy	*5*	
		Sweden	*0*	
Sample size			**621**	
		France	*172*	
		Germany	*175*	
		Italy	*160*	
		Sweden	*114*	

As illustrated in Figure 1, the majority of companies (32.6%) disclose their non-financial reports as a separate section in their annual report over the entire period under review. The second largest group consists of separate reports (32.3%), that is, the companies publish their non-financial reports separately (on their website). Integrated reports and mixed forms follow with 12.6% and 10.8%, respectively. Extension of the management report accounts for the smallest share with 7.7%. A review of the development over time indicates that the popularity of the annual report as a disclosure format increased by 212% from 2017 to 2018, resulting from the delayed implementation of the French transposition of the NFRD. Besides, a number of companies from other countries have also transitioned to this form of non-financial reporting. Furthermore, it is evident that the disclosure format management report underwent the greatest advancement in 2022, with an increase of 133% to the prior year. Presumably, this is due to the Corporate Sustainability Reporting Directive (CSRD), which requires mandatory inclusion in the management report from the 2024 financial year onwards (Directive (EU) 2022/2464 2022). Some companies may choose to commence this inclusion earlier, thereby ensuring compliance with the required disclosure format of the CSRD.

4.2 | Hypotheses Development

As a directive, the NFRD must first be transposed into national law, leaving a high degree of flexibility to the Member States (Biondi et al. 2020). This results in country-specific characteristics, especially regarding the disclosure format and a mandatory audit. In our paper, we intend to analyze the extent to which these country-specific peculiarities affect the informative value.

The disclosure format of non-financial information can differ significantly across EU Member States, adding a layer of complexity and uncertainty for stakeholders. As shown in Table 1, this information may be included as part of the annual report or issued as a separate report. This divergence creates a precarious environment for assessing disclosure quality, a challenge underscored by inconclusive prior research (Balluchi et al. 2021;

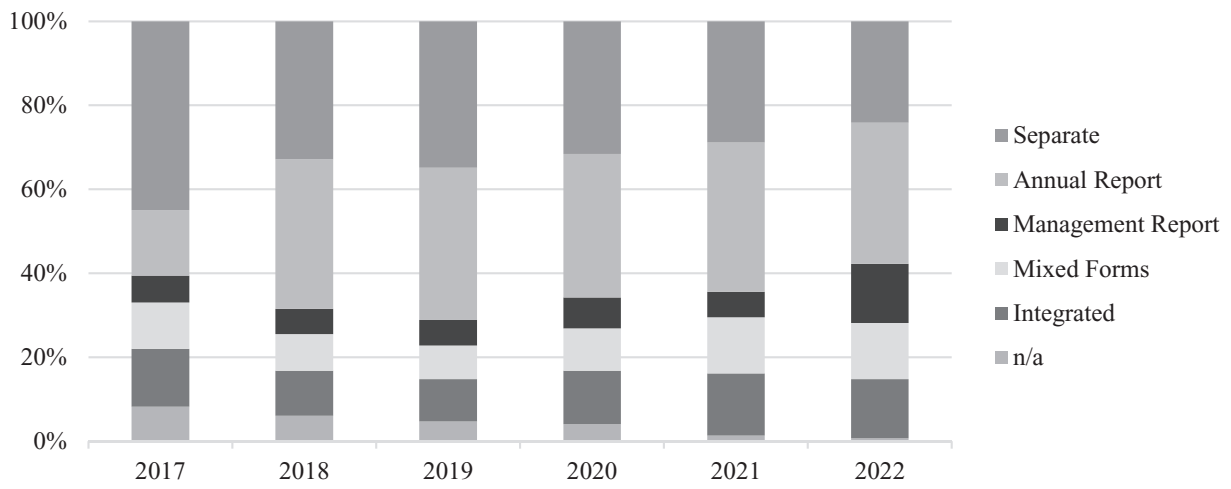

FIGURE 1 | Disclosure format. Distribution of non-financial reports from companies of France, Germany, Italy, and Sweden regarding the disclosure format over the observed period from 2017 to 2022.

Dhaliwal et al. 2011; Hassan et al. 2020; Lock and Seele 2015; Michelon et al. 2015; Oware and Awunyo-Vitor 2021). Hassan and Guo (2017) show that companies disclosing environmental information in a separate report tend to provide a higher level of environmental information than companies combining financial and environmental information in their annual report. Further, some researchers have argued that separate reporting has a positive effect on a company's sustainability performance (Khatri and Kjærland 2023; Mahoney et al. 2013). Conversely, Rossi and Candio (2023) identify a significant impact of both separate and integrated annual reports on forecast accuracy, further complicating the landscape. Therefore, based on this ambiguous evidence, it is hypothesized that:

Hypothesis 1. *The disclosure format has a significant impact on the informative value of the non-financial report.*

The NFRD only mandates that the auditors verify the preparation of the non-financial report, creating a scenario where, in some countries, the content of these reports is subject solely to an internal audit by the supervisory board. This form of supervision could potentially lead to a lack of informative value. In this case, the establishment of an audit committee with specific expertise and knowledge in financial matters is a crucial step in addressing these concerns. In particular, having members with experience in preparing or auditing financial statements ensures that the audit committee can effectively oversee complex corporate reporting. Additionally, an understanding of the audit committee's functions enhances its ability to fulfil its governance role. Previous studies have already shown that the presence of an audit committee has a mostly positive effect on ESG disclosure (Arif et al. 2021; Bravo and Reguera-Alvarado 2019; Pozzoli et al. 2022). Furthermore, Al-Shaer and Zaman (2018) demonstrate that audit committees enhance credibility and improve non-financial reporting through their independence, expertise, and oversight. However, the findings of Kalbuana et al. (2022) for the Jakarta Islamic Index from 2017 to 2021 introduce a disconcerting counterpoint, showing that the audit committee can also have a negative impact on non-financial reporting.

Furthermore, EU Member States have the option of requiring companies to obtain external assurance on their non-financial reporting. Additionally, companies can voluntarily have their non-financial reports audited by an external auditor to enhance the credibility of the disclosed information. The topic of assurance has been of interest to researchers regarding non-financial reporting (Mio et al. 2021; Velte 2022). Earlier studies, focusing on only one country, have already identified a positive relationship between external assurance and the quantity of sustainability information (Hassan et al. 2020). Furthermore, a study by Clarkson et al. (2019) shows that companies with a high CSR score are more likely to have their report assured. In terms of time reference, the following briefly discusses the nature of assurance. According to the International Standard on Auditing 200, the aim of an audit is to achieve reasonable assurance about the accuracy of a report. Moreover, a report is defined as a structured presentation of past-related information. Thus, only previous operations can be thoroughly audited. On the contrary, strategies for future actions can only be considered theoretically.

Therefore, the following two hypotheses are proposed:

Hypothesis 2a. *The implementation of an audit committee with expertise has a significant impact on the informative value of a non-financial report.*

Hypothesis 2b. *An assurance, regardless of the level, has a significant impact on the informative value of a non-financial report.*

4.3 | Measurement of Variables

4.3.1 | Dependent Variables: Informative Value

In a previous study, Heichl and Hirsch (2023) developed a methodology based on a dictionary-based text-mining approach to comprehensively assess corporate non-financial reporting (see Appendices 2 and 3 for the word lists). This unique approach culminates in the creation of the so-called Sustainable Fingerprint, which represents a comprehensive analysis of content from two perspectives: the contextual ESG perspective and the temporal perspective. The strength of this methodology lies in its ability to provide complex insights and quantify the informational content. The methodology also allows to assess the informative value depending on the reports' characteristics.

To illustrate, the non-financial reporting of a Swedish manufacturer of cooling and ventilation equipment between 2017 and 2022 is presented in Figure 2 as six Sustainable Fingerprints.

We use the Sustainable Fingerprint to classify portions of the non-financial reports as assignable and non-assignable. Thereby, the Sustainable Fingerprint allows us to measure the general informative value, encompassing all ESG and time dimensions. Similarly, both individual aspects can be assessed. The approach to determining a content value in one form or another as a dependent variable is widely accepted in research (Chen et al. 2018; Jiang et al. 2019; Michelon and Parbonetti 2012; Tetlock 2007) (See Table 3).

We measure the informative value for each report individually and consider different lengths of reports. The main analysis contains an ESG informative value (ESGIV) model and a time informative value (TIMEIV) model. These aspects seem to hold considerable value for investors and stakeholders in this context. Thus, it is reasonable to include them as an additional dependent variable (Bravo 2016). Given that all values are relative, they can be expressed as a percentage ranging from 0% to 100%.

4.3.2 | Explanatory Variables

The NFRD initially was required to be transposed into national law, thus leading to country-specific rules. Variations can arise from the chosen disclosure format or an assurance obligation. Therefore, we include these characteristics in our study. In order to determine the format of a non-financial report, we manually examine the reports and assess the respective disclosure format. To minimize the risk of error, all data is collected and validated by the authors. The most crucial factor is whether the

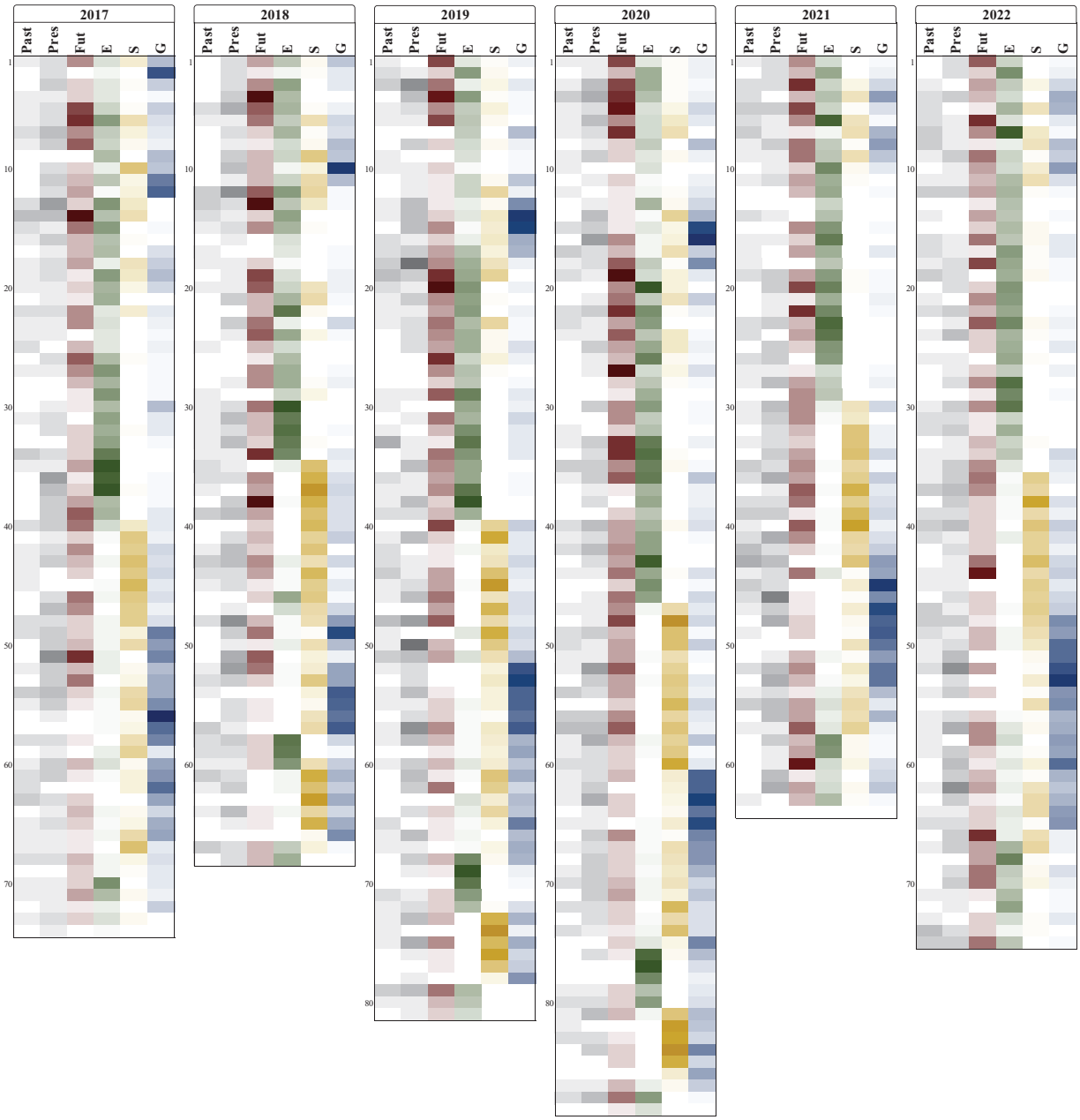

FIGURE 2 | Exemplary representation of the Sustainable Fingerprint of a Swedish manufacturer over time. Exemplary Sustainable Fingerprints of a Swedish manufacturer over the observed period from 2017 to 2022. The rows represent the text portions, consisting of up to 100 words, according to the course. Thematic word lists aligned with ESG topics and time references are utilized to quantify the frequency of specific terms within each text portion. A visual representation is created using a color gradient scheme, where deeper color saturation corresponds to higher word frequency. In the contextual perspective, the analysis focuses on three ESG topics: environmental (green), social (yellow), and governance (blue). Meanwhile, the temporal perspective focuses on the distinction between past, present (both grey), and future (red) time references, providing insights into how companies disclose time-related information in their reports. E, environmental; Fut, future; G, governance; Past, past; Pres, present; S, social.

TABLE 3 | Dependent variables.

Dependent variables	Measurement
Informative value (IV)	General assignability according to the sustainable fingerprint
ESG informative value (ESGIV)	ESG assignability according to the sustainable fingerprint
Time informative value (TIMEIV)	Time assignability according to the sustainable fingerprint

report is incorporated in the annual report or published as a separate report (Helfaya and Moussa 2017; Mahoney et al. 2013; Michelon et al. 2015). Hence, the disclosure format is included as a dummy variable (FORM), distinguishing between separate reports and the incorporation of non-financial information in any form within annual reports. In a further analysis, we examine the disclosure format in more detail. We consider the following possibilities for the non-financial report: disclosing it as part of the management report (MANAGEMENT REPORT), as part of the annual report (ANNUAL REPORT), as a separate report (SEPARATE), or a combination of the aforementioned (MIXED).

In the field of auditing, we examine the assurance (ASSURANCE) (Cho et al. 2014; Du and Wu 2019; Simnett et al. 2009) and the ACE (Pozzoli et al. 2022; Raimo et al. 2021; Velte 2018). In the main model, ACE and ASSURANCE are included as dummy variables. Further analysis of ACE is conducted at a more granular level. Consequently, the variable is not treated as a dummy, but rather as a score.

4.3.3 | Control Variables

In order to enhance the predictive power of the regression model, a set of control variables is incorporated. First, we control for the relationship between the length of the sustainability disclosure and the informative value. The length is measured as the count of portions consisting of 100 words (LENGTH). Regarding the non-financial auditor, we consider two different aspects. First, we assess whether the financial auditor and the non-financial auditor (FANFA) are identical (Dutta and Dutta 2021). Following Liao et al. (2018), we examine whether the auditor is one of the Big4 companies (BIG4). In order to control internal ESG decisions we include the CSR Committee Score, measuring if the company has a CSR committee or team responsible for decision-making on CSR strategy (Helfaya and Moussa 2017; Peters and Romi 2015). Based on previous research on stakeholder theory and corporate disclosure (Beji et al. 2021; Michelon and Parbonetti 2012; Naciti 2019), we use additional control variables. Earlier studies found a significant influence between sustainability disclosure and company size as well as profitability (Ali et al. 2017; Cowen et al. 1987; Gamerschlag et al. 2011; Hackston and Milne 1996). Therefore, we include size and profitability as control variables. We measure size as the natural logarithm of market capitalization (SIZE) and for profitability, we include the ROE. To approximate the distribution between investors, we use leverage (LEV) as another control variable (Mishra and Modi 2013). LEV is calculated as the ratio of total debt to total equity. Further, we include the MTB ratio to control for the firm value effect and beta (BETA) in order to capture the systematic risk (Abdi et al. 2022; Albuquerque et al. 2019). Following Loughran and McDonald (2015), we use the SA index as a measure of financial constraints (Hadlock and Pierce 2010). Lastly, we account for fixed effects of countries, industries (NACE), and years in order to control for their impact on firms' disclosure.

4.4 | Data Analysis

Table 4 summarizes the independent and control variables considered in this study:

Our main research model is as follows:

$$\begin{aligned}\text{Informative Value} &= \alpha_0 + \alpha_1 FORM_{it} + \alpha_2 ACE_{it} \\ &\quad + \alpha_3 ASSURANCE_{it} \\ &\quad + \sum \alpha_j CONTROLS_{it} + \varepsilon\end{aligned}$$

The variables and the measurement are explained in Section 4.3 and Table 4. The research model proposed in this study uses the independent variables FORM, ACE, ASSURANCE, and the aforementioned control variables to examine the developed hypotheses, and whether these determinants affect the informative value of non-financial reports.

5 | Empirical Results

5.1 | Descriptive Statistics

Table 5 provides summary statistics for the dependent, independent, and control variables subjected to our analyses. After applying a multiplication factor to assignability, an observed informative value of 25.22 means that, on average, 25.22% of the portions can be assigned to both an ESG topic and a time reference. Given that IV corresponds to the intersection of these two perspectives, it is expected that increased values could be observed on average for both ESGIV and TIMEIV.

The mean value of IV is 25.247, with a range from 17.925 to 33.333. ESGIV exhibits a mean of 57.825, spanning from 47.059 to 69.512. For TIMEIV, the mean is 44.802, within the range of 35.765 to 56.122. FORM has a mean of 0.639 and a standard deviation of 0.481. The ACE variable shows a mean of 0.765, accompanied by a standard deviation of 0.424. ACE SCORE has a mean of 54.416, with values ranging from 0 to 71.970. Lastly, ASSURANCE displays a mean of 0.944, with a standard deviation of 0.231. These descriptive statistics elucidate the central tendency and variability of the variables under investigation.

5.2 | Correlations Analysis

The bivariate Pearson correlation coefficients between the dependent variables, explanatory variables, and control variables are presented in Table 6. Firstly, several significant correlations are evident among the dependent variables. IV is positively correlated with ESGIV and TIMEIV, which highlights the importance of ESG integration and time-related aspects for the informative value. Additionally, ESGIV is negatively correlated with TIMEIV, suggesting that organizations emphasizing time-related disclosures might prioritize future projections over comprehensive ESG integration, which often requires a backward-looking assessment of ESG aspects.

Among the explanatory variables, FORM shows a positive correlation with IV and ESGIV, while ASSURANCE is negatively correlated with IV, ESGIV, and TIMEIV, suggesting that higher external assurance is associated with lower time-related ESG integration and thus informative value. This negative correlation might be due to organizations with higher external assurance

TABLE 4 | Explanatory and control variables.

Explanatory and control variables	Measurement
Disclosure format (FORM)	Dummy variable equal to 1 if the non-financial report is part of the annual report, 0 otherwise For further analysis this variable is split into "Annual Report," "Management Report," "Mixed," and "Separate"
Audit committee expertise (ACE)	Dummy variable equal to 1 if the company has an audit committee with at least three members and at least one "financial expert," 0 otherwise
Audit committee expertise score (ACE SCORE)	Score measuring if the company has an audit committee with at least three members and at least one "financial expert"
Assurance (ASSURANCE)	Dummy variable equal to 1 if the non-financial report was audited, 0 otherwise
Beta (BETA)	Capital market beta: Beta is the coefficient from a firm-specific regression of daily stock returns on daily market returns over the past financial year
Big4 auditor (BIG4)	Dummy variable equal to 1 if the non-financial auditor is a Big4 company, 0 otherwise
CSR committee score (CSRC SCORE)	Score measuring if the company has a CSR committee or team responsible for decision-making on CSR strategy
Financial auditor equals non-financial auditor (FANFA)	Dummy variable equal to 1 if financial auditor and non-financial auditor are equal, 0 otherwise
Shifted free cash flow (FCF)	Shifted Free Cash Flow defined as log(FCF—min (FCF)+1)
Length (LENGTH)	Length of the report, measured as the count of portions consisting of up to 100 words
Leverage (LEV)	Total debt divided by total equity
Market-to-book-ratio (MTB)	Market value of equity divided by book value of equity
Profitability (ROE)	Return on equity
Financial constraints (SA INDEX)	Following Hadlock and Pierce (2010), the SA index is defined as: [−0.737*log(Total Assets)]+[0.043*log(Total Assets)^2]-(0.040*Age). Higher values of the SA index imply greater levels of financial constraint.
Size (SIZE)	Company size measured in natural logarithm of market capitalization

focusing more on compliance and risk mitigation rather than proactive and comprehensive ESG reporting. The correlation between ACE and ACE SCORE is significant, as ACE SCORE is a numerical variable that specifies the binary dummy variable ACE more precisely.

Furthermore, the control variables exhibit additional significant correlations. LENGTH is negatively correlated with IV, ESGIV, and TIMEIV, indicating that longer reports tend to have lower informative values. Additionally, a positive correlation is observed between BIG4 and ASSURANCE. ROE is positively correlated with MTB and negatively with LEV, suggesting that a higher ROE is associated with a higher MTB ratio but lower leverage.

5.3 | Multivariate Analysis

Several statistical models are run to test the hypotheses developed in Section 4.2. The assumptions underlying regression models have been validated. In order to rule out the possibility of heteroskedasticity and autocorrelation, we also use Eicker–Huber–White standard errors clustered at the company level (Eicker 1967; Huber 1967; Rogers 1994; White 1980). Further tests for the variance inflation factors (VIF) indicate that there are no issues with multicollinearity as the VIF scores range between 1.01 and 2.82 (see Appendix 1 for all VIF values) which are significantly less than the cut-off value of 10 for multicollinearity threat (Hair et al. 2019). It should be noted that the VIF depends only on the explanatory variables, and therefore, the VIF values are tested using an OLS regression. Additionally, the Ramsey test for omitted variables and the Cook's distance are conducted. The results of the tests indicate that the model has no problems with omitted variables or outliers. Lastly, the Hausman test is performed in order to determine the most accurate estimator among fixed effect model or random effect model.

Table 7 reports the results of the multivariate regression analysis for the three main models IV, ESGIV, and TIMEIV. As discussed in Section 4.1, we exclude reports of French companies from the year 2017. In order to ensure that the elimination of these reports does not distort the results, we conduct additional analyses, without France and without the year 2017. Despite the adjusted data sample, the models show qualitatively consistent results.

The NFRD allows different alternatives for FORM. In this respect, Hypothesis 1 examines whether there are substantial differences in its informative value. In our main model IV, FORM shows a significant positive relationship with the informative value (1.415, $p < 0.05$). This indicates that a value of 1 for FORM is associated with higher scores on IV. In examining the relationship for ESGIV and the TIMEIV, it is evident that

TABLE 5 | Descriptive statistics.

Variables	Mean	SD	Min	25%	Median	75%	Max	*n*
IV	25.247	4.201	17.925	22.064	25	28.163	33.333	621
ESGIV	57.825	6.296	47.059	53.012	57.767	62.575	69.512	621
TIMEIV	44.802	5.375	35.765	41.066	44.122	48.293	56.122	621
FORM	0.639	0.481	0	0	1	1	1	621
ACE	0.765	0.424	0	1	1	1	1	621
ACE SCORE	54.416	28.860	0	69.046	69.864	71.391	71.970	621
ASSURANCE	0.944	0.231	0	1	1	1	1	621
BETA	0.972	0.418	−0.187	0.656	0.959	1.257	2.392	621
BIG4	0.884	0.320	0	1	1	1	1	621
CSRC SCORE	59.986	20.537	0	58.696	64.925	69.713	83.582	621
FANFA	0.093	0.291	0	0	0	0	1	621
FCF	17.844	0.767	0	17.853	17.863	17.888	19.089	621
LENGTH	249.597	171.204	9	126	222	329	1440	621
LEV	1.163	1.399	0	0.456	0.783	1.317	13.429	621
MTB	2.761	2.826	0.145	1.048	1.928	3.552	27.088	621
ROE	0.116	0.138	−1.459	0.067	0.116	0.171	1.04	621
SA INDEX	−6.342	3.125	−24.834	−8.43	−5.813	−3.813	−2.859	621
SIZE	16.517	1.694	−4.605	15.903	16.655	17.413	19.721	621

the FORM demonstrates no significant correlation. However, both models exhibit a positive coefficient. Thus, the disclosure format appears to have a discernible effect on the informative value of non-financial reporting. Companies that do not publish a separate report but include the information in their annual report have a higher IV. The empirical results support Hypothesis 1.

Another essential aspect of the NFRD is the assurance, which is not specifically regulated. In the absence of an external audit opinion on the non-financial report, the NFRD suggests that its examination may be the responsibility of the audit committee (Directive 2014/95/EU 2014). Thus, the impact of implementing an audit committee with expertise should be significant according to Hypothesis 2a. Our results show that a higher level of ACE is significantly associated ($p < 0.05$) with a higher informative value of the non-financial report in both IV and TIMEIV, as evidenced by positive coefficients of 1.129 and 1.615, respectively. For ESGIV, a positive regression factor of 0.567 can be observed, although not significant. The empirical results support Hypothesis 2a for models IV and TIMEIV, but not for ESGIV.

Hypothesis 2b seeks to investigate a relationship between the informative value of reporting and assurance. First, none of the models, IV, ESGIV, or TIMEIV, show a significant relationship. The regression coefficient for ASSURANCE is negative with the IV (−0.109) and the TIMEIV (−2.088) suggesting a negative relationship. This result is surprising at first sight, as one would expect higher informational content in audited non-financial reports. However, these results are not statistically significant. The negative impact of assurance on non-financial reporting is also supported by prior studies (Boiral and Heras-Saizarbitoria 2020). Although it is argued that external assurance may have a significant relationship with the informative value (Hypothesis 2b), this proposition is not supported by the evidence we obtain from the analysis.

The control variables LENGTH, LEV, MTB, and SIZE are also significantly associated with at least one of the main models. In Model IV and ESGIV, LENGTH shows a consistent influence on the dependent variables. Model IV reveals a statistically significant and slightly negative relationship with a coefficient of −0.004 ($p < 0.01$), indicating that increasing LENGTH generally leads to a decreased informative value of the non-financial reports. For the ESGIV model, LENGTH also has a statistically significant negative relationship, indicating that longer texts have a negative impact on ESG topics in particular (−0.011, $p < 0.01$). Model IV and TIMEIV reveal a significant negative association between LEV and the dependent variable. This suggests that companies with higher leverage tend to have a lower (time) informative value.

5.4 | Further Analyses

In order to gain a more detailed insight into the relationship between the informative value and the explanatory variables, further analyses are conducted. Therefore, alternative explanatory variables are used in Table 8. In line with our Hypothesis 1, instead of the dummy variable FORM, we use four dummy variables according to the various disclosure formats: ANNUAL REPORT, MANAGEMENT REPORT, SEPARATE, or a combination of the aforementioned (MIXED) whereas ANNUAL REPORT

TABLE 6 | Pearson correlation coefficient matrix.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) IV	1								
(2) ESGIV	0.527***	1							
(3) TIMEIV	0.654***	−0.092**	1						
(4) FORM	0.204***	0.193***	0.064	1					
(5) ACE	0.052	−0.021	0.061	−0.100**	1				
(6) ACE SCORE	0.072*	−0.001	0.079**	−0.072*	0.905***	1			
(7) ASSURANCE	−0.106***	−0.101**	−0.085**	0.093**	0.095**	0.092**	1		
(8) BETA	−0.071*	−0.144***	0.037	−0.106***	0.152***	0.161***	−0.002	1	
(9) BIG4	−0.062	−0.136***	0.053	0.053	0.048	0.056	0.609***	0.089**	1
(10) CSRC SCORE	0.026	−0.009	0.047	−0.107***	0.101**	0.083**	0.160***	−0.063	0.073*
(11) FANFA	0.078*	0.128***	0.010	−0.139***	−0.109***	−0.105***	−0.689***	−0.069*	−0.731***
(12) FCF	0.055	0.058	0.025	0.053	0.008	−0.020	−0.010	−0.077*	−0.011
(13) LENGTH	−0.207***	−0.265***	−0.099**	−0.141***	0.090**	0.058	0.209***	0.040	0.032
(14) LEV	−0.199***	−0.234***	−0.052	−0.099**	0.049	0.049	0.031	0.136***	0.044
(15) MTB	0.105***	0.099**	0.049	0.079**	−0.174***	−0.165***	0.048	−0.375***	0.023
(16) ROE	0.061	0.035	0.084**	0.035	−0.125***	−0.155***	−0.046	−0.241***	−0.066
(17) SA INDEX	−0.031	0.011	−0.013	−0.021	−0.090**	−0.087**	−0.112***	−0.104***	−0.182***
(18) SIZE	0.099**	0.001	0.113***	0.059	0.098**	0.106***	0.062	0.009	0.048

VARIABLES	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) IV								
(2) ESGIV								
(3) TIMEIV								
(4) FORM								

(Continues)

TABLE 6 | (Continued)

VARIABLES	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(5) ACE								
(6) ACE SCORE								
(7) ASSURANCE								
(8) BETA								
(9) BIG4								
(10) CSRC SCORE	1							
(11) FANFA	−0.078*	1						
(12) FCF	−0.004	0.011	1					
(13) LENGTH	0.158***	−0.045	−0.011	1				
(14) LEV	0.135***	−0.048	−0.053	0.113***	1			
(15) MTB	−0.135***	−0.051	0.030	−0.151***	−0.192***	1		
(16) ROE	−0.123***	0.049	0.021	−0.109***	−0.233***	0.406***	1	
(17) SA INDEX	0.009	0.113***	−0.051	−0.024	−0.034	0.025	0.104***	1
(18) SIZE	0.156***	−0.046	0.000	0.199***	−0.099**	0.029	0.088**	−0.088**

Note: The variables have been explained in Table 4.
*Correlation is significant at the 0.1 level (2-tailed).
**Correlation is significant at the 0.05 level (2-tailed).
***Correlation is significant at the 0.01 level (2-tailed).

TABLE 7 | Main models of regression analysis.

Variables	(1) IV	(2) ESGIV	(3) TIMEIV
FORM	1.415** (0.609)	1.069 (0.995)	1.145 (0.923)
ACE	1.129** (0.502)	0.567 (0.901)	1.615** (0.672)
ASSURANCE	−0.109 (1.288)	1.684 (2.006)	−2.088 (1.730)
BETA	0.167 (0.639)	−0.026 (1.070)	0.226 (0.903)
BIG4	−0.473 (0.810)	−1.461 (1.519)	1.642 (1.204)
CSRC SCORE	0.006 (0.011)	0.014 (0.021)	0.002 (0.016)
FANFA	0.277 (0.796)	1.572 (1.403)	−0.136 (1.564)
FCF	0.030 (0.084)	0.074 (0.112)	0.038 (0.078)
LENGTH	−0.004*** (0.001)	−0.011*** (0.002)	0.001 (0.002)
LEV	−0.540*** (0.176)	−0.430 (0.289)	−0.575** (0.236)
MTB	0.134* (0.077)	0.080 (0.147)	0.118 (0.097)
ROE	−1.211 (1.538)	−1.026 (2.237)	0.740 (2.041)
SA INDEX	−0.016 (0.072)	−0.034 (0.098)	0.045 (0.072)
SIZE	0.069 (0.104)	−0.233* (0.139)	0.295* (0.154)
Constant	23.00*** (2.953)	60.83*** (4.138)	37.68*** (4.598)
Country FE	YES	YES	YES
Country × Year FE	YES	YES	YES
Industry FE	YES	YES	YES
Year FE	YES	YES	YES
Observations	621	621	621
R-squared	0.299	0.299	0.331
F (*p* value)	3.12***	2.65***	2.31***

Note: The variables have been explained in Tables 3 and 4. Standard errors are robust to heteroscedasticity and clustered at the company level.
*Regression coefficient is significant at the 0.1 level (2-tailed).
**Regression coefficient is significant at the 0.05 level (2-tailed).
***Regression coefficient is significant at the 0.01 level (2-tailed).

represents the baseline. For Hypothesis 2 we further examine the internal assurance by including the audit committee score (ACE SCORE) instead of a dummy variable.

By looking at the Model IV it can be recognized that the results are robust to these variations. The variable SEPARATE still shows a significant negative coefficient (−1.5524, $p < 0.05$). This indicates that the findings of the main model are supported by an in-depth analysis of the individual characteristics. For the Models ESGIV and TIMEIV, mixed results are found. For the ESGIV Model, we can observe a significant negative coefficient for all included FORM variables, MANAGEMENT REPORT, MIXED, and SEPARATE. These findings suggest that the highest ESGIVs can be found in reports incorporated in the annual report. In contrast, for the TIMEIV Model only MIXED (2.020, $p < 0.1$) shows a significant positive relationship. In conclusion, there is empirical evidence to suggest that the disclosure format has a significant impact, which therefore supports Hypothesis 1. Instead of including a dummy for the ACE, we investigate a more detailed variable ACE SCORE. We find significant positive relationships for the Model IV (0.017, $p < 0.05$) and the TIMEIV (0.027, $p < 0.01$). This confirms that the findings of the main model for internal assurance are robust to a more detailed variable.

For the robustness of our results, we perform the regression models without the control variables (see Model (7) and Model (8)). The outcomes are qualitatively consistent. Therefore, the additional tests mainly confirm our findings and are robust to adjusted explanatory variables and variations in the control variables.

6 | Conclusion

Using the novel Sustainable Fingerprint methodology introduced by Heichl and Hirsch (2023), this paper provides evidence on the informational content and reliability of non-financial reports from listed EU companies under the NFRD. This study applies content and regression analysis to examine the informative value of non-financial reporting and the impact of disclosure format and auditing. Therefore, we analyze 621 non-financial reports of

TABLE 8 | Further models of regression analysis.

Variables	(4) IV	(5) ESGIV	(6) TIMEIV	(7) IV	(8) IV
FORM				1.749***	
				(0.596)	
MANAGEMENT REPORT	−0.666	−2.908*	−0.810		−0.181
	(0.812)	(1.702)	(1.153)		(0.828)
MIXED	0.010	−2.439*	2.020*		−0.497
	(0.729)	(1.395)	(1.212)		(0.750)
SEPARATE	−1.554**	−2.827*	−0.510		−1.934**
	(0.731)	(1.439)	(1.166)		(0.759)
ACE				0.965*	
				(0.540)	
ACE SCORE	0.017**	0.008	0.027***		0.014*
	(0.007)	(0.013)	(0.010)		(0.008)
ASSURANCE	−0.225	1.441	−2.388	−0.999	−0.968
	(1.311)	(1.996)	(1.684)	(1.186)	(1.202)
Controls	YES	YES	YES	NO	NO
Constant	24.26***	60.78***	39.83***	24.33***	26.18***
	(2.963)	(3.895)	(4.090)	(1.305)	(1.392)
Country FE	YES	YES	YES	YES	YES
Country × Year FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Observations	621	621	621	621	621
R-squared	0.301	0.313	0.348	0.248	0.249
F (*p* value)	3.39***	3.00***	2.57***	3.71**	2.62**

Note: The variables have been explained in Tables 3 and 4. Standard errors are robust to heteroscedasticity and clustered at the company-level.
*Regression coefficient is significant at the 0.1 level (2-tailed).
**Regression coefficient is significant at the 0.05 level (2-tailed).
***Regression coefficient is significant at the 0.01 level (2-tailed).

120 companies covering the main stock indices of France (2018–2022), as well as Germany, Italy, and Sweden during the period 2017–2022.

In summary, our results indicate a substantial association between the country-specific NFRD implementation and the informative value. Regarding the disclosure format, we find a significant positive relationship between incorporating the non-financial report in the annual report and the IV as well as the TIMEIV. We also find that the expertise of the internal audit committee is significantly and positively associated with the informative value, whereas external assurance shows no significant relationship. Further analyses confirm these findings for both the disclosure format and the audit.

Our findings are subject to limitations. First, our observations cover solely the years following the implementation of the NFRD. Further insights may be gained by extending the analysis to earlier periods when non-financial reporting was unregulated in the EU and motivated by the companies themselves. Second, our research is limited to four countries. Subsequent research could potentially extend this analysis to a heterogeneous selection of countries or adopt a comprehensive pan-European perspective. Finally, our study focuses on the introduction of the NFRD. We try to capture shocks, such as the Green Deal and the EU taxonomy, but cannot rule out the possibility that these have no impact on non-financial reporting in general and therefore on its informative value.

Limitations aside, our study is the first one to analyze the impacts on the informational content of non-financial reports through the NFRD. This evidence holds the potential to support stakeholders in evaluating non-financial disclosures. However, there exists a discernible scope for enhancing both the informational content and the preciseness of these reports.

Regarding the practical implications, our study demonstrates the necessity for companies to be sensitized about the informational content of their non-financial reports. Regulators have acknowledged the deficiencies in the regulation of non-financial disclosure. To address the inadequacies in existing legislation, the EU has adopted the CSRD. Part of the CSRD is the introduction of the European Sustainability Reporting Standards (ESRS) which regulate the content and the structure of sustainability reports. Moreover, global institutions, including the International Sustainability Standards Board (ISSB), are working towards the establishment of international ESG reporting standards.

The regulatory adjustments through the CSRD predominantly reflect our results: Henceforth, the non-financial report must be disclosed as a mandatory part of the management report. In addition, the assurance of the non-financial report by an external third party will be mandatory based on upcoming auditing standards. However, the extent to which the novel regulatory demands will reshape non-financial reporting into a more reliable source of information remains uncertain.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon request.

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Appendix A: VIF Values

MAIN MODEL			FURTHER MODEL		
VARIABLES	**VIF**	**1/VIF**	**VARIABLES**	**VIF**	**1/VIF**
FANFA	2.80	0.3566112	FANFA	2.82	0.355211
BIG4	2.34	0.426755	BIG4	2.36	0.423404
ASSURANCE	2.20	0.455316	ASSURANCE	2.20	0.453993
MTB	1.41	0.708472	MTB	1.41	0.707180
ROE	1.28	0.779198	SEPARATE	1.34	0.743526
BETA	1.26	0.792864	ROE	1.31	0.763344
LENGTH	1.19	0.837211	BETA	1.26	0.791515
CSRC SCORE	1.15	0.873024	MIXED	1.25	0.797200
SIZE	1.13	0.885479	LENGTH	1.24	0.806992
LEV	1.12	0.896202	CSRC SCORE	1.15	0.868067
FORM	1.11	0.903688	SIZE	1.14	0.875331
ACE	1.09	0.913893	MANAGEMENT REPORT	1.14	0.875458
SA INDEX	1.07	0.933885	LEV	1.12	0.894911
FCF	1.01	0.986019	ACE SCORE	1.09	0.915838
			SA INDEX	1.07	0.933790
			FCF	1.01	0.985947
MEAN VIF	1.44		MEAN VIF	1.43	

Appendix B: ESG word list

Panel A: Environmental Words		
agroforestryprotection	cooling	environmentalstrategy
air	councilsustainabledevelopment	environmentdepartment
airpollution	decarbonization	environmentpolicy
animalwelfare	decarbonize	epa
bio	decarbonizing	exploitation
biobased	deforestation	extremeweatherevents
biodiversity	deforestationprotection	foodsecurity
biodiversitystrategy	diesel	footprint
biogas	disposal	forests
biomass	districtheating	fossil
carbon	drinkingwater	freshwater
carbondioxide	eco	fuel
carbondisclosure	ecodesign	fuelconsumption

(Continues)

carbonfootprint	ecoefficiency	fueloil
carbonimpact	ecofriendly	fuels
carbonintensity	ecosystem	gas
carbonintensive	ecosystems	gases
carbonneutrality	electricity	ghg
carbonpricing	electrification	ghgemission
carbonreduction	emission	globalwarmingpotential
charging	emissions	green
chemical	emissionsbased	greenelectricity
clean	emissionscontrol	greenhousegas
cleaner	energies	groundwater
climate	energy	hazardous
climatechange	energyconsumption	keyrawmaterials
climatecontrol	energyemissions	landfill
climateprotection	environment	mobility
climaterelatedrisks	environmental	mobilitypolicy
coal	environmentalgovernance	natural
coalfired	environmentally	naturaldisasters
coemissions	environmentallyfriendly	naturalrubber
conservation	environmentalprotection	nature
consumption	environmentalreporting	nitrogen
nonrenewable	renewable	volatileorganic
noxemissions	renewables	warming
oil	resource	waste
oilgas	resources	wastecollection
organic	resourcesprotection	wastedisposal
organicsolvents	soilgroundwater	wasterecovered
palmoil	soilprotection	wasterecovery
paperconsumption	solar	wasterecycled
petroleum	steam	wastetreatment
photovoltaic	stewardship	wastewater
planet	substances	water
plantbased	sustainability	waterenergy
planting	sustainabilitycampaigns	waterfootprint
plastic	sustainableagriculture	watermanagement
plastics	sustainablebuilding	waterpollution
plasticwaste	sustainablefuture	waterquality
pollution	sustainableinnovation	waterscarcity
pollutionprotection	sustainablematerials	watersecurity
powerplants	sustainableproducts	watersupply
productionwaste	sustainablesolutions	wateruse
protectedareas	sustainablesourcing	waterwaste
rainwater	sustainablesupplier	waterwithdrawal
rawmaterial	sustainablesupply	waterwithdrawals
rawmaterials	temperature	waterwithdrawn

(Continues)

recyclability	thermal	weatherevents
recycle	thermalcoal	wind
recycled	thermalenergy	wood
recycling	toxic	worldresources
reforestation	urban	zerowaste
regenerativeagriculture		
Panel B: Social Words		
absenteeism	discriminating	ethic
academy	discrimination	ethical
accident	discriminationpolicy	ethicalguidelines
accidents	disease	ethically
aid	diseases	ethics
bargaining	diversity	ethicsline
bisexual	diversitypolicy	ethnic
bonus	domesticviolence	ethnicity
bonuses	donations	fairness
campaigns	educate	families
care	educated	family
charity	educating	female
child	education	femaleemployees
childlabor	educational	females
childlabour	emergencymanagement	forcedlabor
children	employ	forcedlabour
citizen	employability	foundation
citizens	employee	freedom
citizenship	employeebenefits	gay
classroom	employeecommitment	gender
coaching	employeeprofitsharing	genderequity
communities	employeeprofitsharingagreement	genderparity
communityengagement	employees	genders
corporatefoundation	employeesatisfaction	gifts
courses	employer	harassment
cultural	employment	headcount
culture	environmentalculture	health
dignity	epidemic	healthcare
disabilities	equal	healthsafety
disability	equality	healthservices
disabled	equalitypolicy	healthy
disabledemployees	equaltreatment	hire
discriminate	equitable	hired
discriminated	equity	hires
hiring	minorities	retirement
human	minority	returnfrommaternity
humanity	nonprofit	returntowork

(Continues)

humanresource	nonprofitorganisation	roadsafety
humanresources	nonprofitorganisations	safety
humanrights	nonprofitorganization	salaries
humanrightspolicy	nonprofitorganizations	salary
illness	nonprofits	satisfactionindex
illnesses	organicvegetarianoffers	scholarships
immigration	vegetarianoffers	school
incentive	overtime	schools
incentives	pandemic	sex
inclusion	payroll	sexual
inclusiondiversity	peace	sick
indigenous	pension	sickness
initiatives	personnel	skills
injuries	poverty	skillstraining
injury	professionalintegration	slavery
jobrotation	profitorganisation	smartworking
jobs	profitorganisations	social
labor	profitorganization	socialentrepreuner
labour	profitorganizations	socialethical
legalstaff	qualitylifework	socialinitiatives
lesbian	race	socially
lgbt	racial	socialsocietal
male	recruit	societal
managerialcoaching	recruiting	society
managerialeducation	recruitment	socio
managerialskills	redcross	softskills
managerialtraining	refugees	sponsorship
managerswomen	religion	staff
maternity	religious	staffing
men	remoteworking	studyprograms
mentalprotection	resettlement	talent
talented	universities	woman
teach	university	women
terrorism	violation	workenvironment
training	volunteer	workers
trainingeducation	volunteering	workingenvironment
traininggroup	volunteers	workingtime
traininginitiatives	vulnerable	worklifepolicy
trainingpolicy	wage	workplace
transgender	wages	workplacehealth
unemployed	welfare	workplacesafety
unemployment	welfarestandards	workshops
Panel C: Governance Words		
acquisition	coalition	diligence
acquisitions	codebusinessconduct	directive

(Continues)

act	codeofethics	director
agreement	collaboration	directors
alliance	committee	disclose
antibribery	committees	disclosed
anticompetitive	compliance	discloses
anticorruption	compliancecommittee	disclosing
anticorruptioncompliance	complianceenvironmental	disclosure
antimoneylaundering	compliancelawsregulations	disclosures
assessments	conduct	diversityguidelines
assurance	consolidationscope	division
audit	contract	elected
audited	contracts	elections
auditing	contractual	embezzlement
auditor	control	employeeresource
auditors	controls	engagement
audits	corporate	engagements
board	corporateculture	entities
boardofdirectors	corporategovernance	entity
boardstatutory	corrupt	entrepreneur
bodies	corruption	entrepreneurs
bribery	corruptionbribery	entrepreneurship
briberycorruption	corruptioncompliance	environmentalaudit
businessethics	council	environmentalaudits
businesslines	crimes	erm
businessmodels	cybersecurity	evaluate
businessplan	dataprotection	evaluated
businessunits	department	evaluates
bylaws	departments	evaluating
chairman	detect	evaluation
charter	detected	evaluations
charters	detecting	examination
chiefhumanresourcesofficer	detection	examinations
examine	integrity	organisational
examined	internalauditdepartment	organisationally
examines	internalrules	organisations
examining	investorrelations	organization
executive	iso	organizational
executiveboard	jointventure	organizationally
executivedirectors	jointventures	organizations
executivemanagement	law	oversee
executives	legal	overseeing
feedback	legislation	oversees
framework	legislations	oversight
fraud	legislativedecree	ownership
generalcounsel	liaison	partnerships

(Continues)

generalmanagement	lobbying	policies
generalmeeting	managementboard	policy
governance	managementteams	principal
greenaudit	manager	principles
greenaudits	managerial	professionals
greensourcingpolicy	managers	propertyrights
groupchief	mergers	proposal
groupchiefresourcesofficer	mergersandacquisitions	proposals
groupcompany	misconduct	regulation
grouppolicy	nominated	regulatory
guidance	nomination	regulatoryframework
guide	nominations	relationship
guidelines	objectivity	relationships
guiding	officer	remuneration
headquarter	officers	return
headquarters	organicsystem	review
honesty	organisation	reviewed
hotline	organisational	reviewing
independence	organisationally	reviews
independent	organisations	riskassessment
institutional	organization	rotation
sanction	statutory	sustainabilityaudits
sanctions	statutoryauditor	sustainablecredit
sarbanes	strategies	sustainabledevelopment
security	strategy	sustainablefinancing
securitypolicy	subsidiaries	sustainablemanagement
shareholder	subsidiary	taxauthorities
shareholders	succession	vote
socialaudit	supervision	voted
socialaudits	supervisory	votes
stakeholder	supervisoryboard	whistleblowing
stakeholders	suppliercode	whistleblowingpolicy
standards		

Appendix C: Time word list

Panel A: Past words		
aboriginal	exploration	onceuponatime
accomplished	explored	origin
accomplishment	failure	original
advanced	feedback	originally
advancement	financialreport	pastpast
agoago	financialreporting	precedingyear
ancient	financialresults	presented
annualfinancialreport	finished	previously
background	former	previousyear

(Continues)

beforebefore	formerly	prior
caused	generated	prioryear
choices	gone	produced
committed	historic	published
covered	historical	received
created	historically	required
depreciation	history	result
developed	implemented	results
discovery	initially	resultsobtained
earlier	invested	root
established	lastyear	rooted
evolution	late	signed
ex	launched	sofar
executed	managed	sufficient
existed	mostrecent	updated
expired	onceonce	yearreview
Panel B: Present Words		
adjustment	established	ongoing
aimed	evaluated	optimisation
announced	existing	outcomes
approved	finalised	performance
assurance	finalized	performancetarget
atpresent	financialimpact	prepared
atthemoment	findings	presence
atthepresentday	focused	prevention
atthistime	forthemoment	proactive
choices	frequently	published
completed	implementation	recent
concluded	improved	recently
conditions	improvement	released
contemporary	improvements	relevant
continually	increased	renewed
continue	initially	reorganisation
controls	intend	reputation
coordinated	intention	requirements
created	introduced	reviewed
current	invested	sincesince
currently	issues	subsequently
currentyear	keep	successful
decline	lately	successfully
decreased	latest	terminated
demonstrated	launched	thisyear
depreciation	momentaneous	todaytoday
described	monitoring	transformed
developed	nownow	updated

(Continues)

developmentprogrammes	nowadays	uptodateuptodate
discovery	obtained	validate
discussed	occurred	worked
Panel C: Future Words		
affecting	growing	potentialimpact
aim	growth	prevention
aiming	growthdevelopment	preventive
aims	horizon	proactive
ambitions	impact	progressive
anticipate	implementation	progressively
anticipating	improve	prospective
becoming	improvement	quickly
beginning	improvementactions	recovery
coming	improvements	relevance
comingdecade	improving	relevant
comingmonth	incentive	renovation
comingsoon	increase	reorganisation
comingyear	increasing	requires
consequences	innovation	soonsoon
continually	intend	strategic
continue	intention	strategies
create	investing	strategy
decisionmaking	investment	subsequently
decision-making	keep	subsequentperiod
develop	nextmonth	successionplanning
developing	nextstep	synergy
developmentprogrammes	nextsteps	targeting
emerging	nextyear	targets
enhancing	notyetnotyet	timely
expansion	ongoing	timelymanner
expects	optimisation	tomorrow
forward	optimize	transformation
further	performancetarget	trend
future	perspective	upcoming
goals	planning	vision
grow	plans	yearstofollow