

INTERNAL AUDITOR'S ROLE IN ESG DISCLOSURE AND ASSURANCE: AN ANALYSIS OF PRACTICAL INSIGHTS

Marc Eulerich ^{*}, Annika Bonrath ^{**}, Vanessa Isabell Lopez Kasper ^{**}

^{*} Corresponding author, Chair of Internal Auditing, Mercator School of Management, University of Duisburg-Essen, Duisburg, Germany

Contact details: Chair of Internal Auditing, Mercator School of Management, University of Duisburg-Essen, 47057 Duisburg, Germany

^{**} Chair of Internal Auditing, Mercator School of Management, University of Duisburg-Essen, Duisburg, Germany



Abstract

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Using survey data of 107 internal auditors, we provide empirical evidence about internal auditor's role in environmental, social, and governance (ESG) disclosure and assurance. So far, academics and practitioners have not agreed on the responsibilities of internal auditing in ESG matters. Our regression results give evidence for organizations' and internal audit functions' (IAFs) ESG maturity being associated with ESG reporting, while IAFs' involvement in ESG shows a significant association with assurance of ESG reports. Our results support the notion that the environmental pillar is perceived as the core element of sustainability bearing the highest risk, therefore propelling the need for assurance. The imbalance between assurance and consulting activities on part of IAFs stresses the potential to position the IAF as a value-adding entity in a complementary relation towards external auditors. We further elaborate on IAFs' non-involvement in ESG and demonstrate the respective lack of awareness on part of stakeholders. Our research provides valuable initial insights for internal audit practitioners in the field of ESG and implications for future research.

Keywords: Internal Auditing, ESG, Non-financial Reporting, Sustainability, Assurance

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1. INTRODUCTION

The growing demand for information capturing how companies' actions affect society has reinforced the disclosure of environmental, social, and governance (ESG) information. Given the intensifying pace and impact of societal and environmental disruption, organizations are increasingly seeking ESG credentials. Reporting ESG information addresses a point of criticism about traditional financial reporting (Lev & Zarowin, 1999; Holder-Webb et al., 2009). Financial reporting is primarily a historical representation of a company's situation, in which additional information gathering costs would be incurred when making statements that are value-related. Non-financial information allows for

assessing the value of the company through intangibles and other aspects that are omitted in financial reporting. However, the current state of ESG reporting shows signs of incoherence (Bradford et al., 2017) and a lack of completeness referred to as the "portrayal gap" by Adams (2004) depicting the company's accountability towards its stakeholders. As a result, the lack of consistency combined with the variety of ESG data, measures, and reporting structures comes along with an increasing need for assurance, accountability, and holistic oversight of ESG information (Kotsantonis & Serafeim, 2019)¹.

¹ ESG reporting is mostly voluntary and unregulated with no generally accepted reporting principles or standards (Pinnuck et al., 2021).

Despite growing demand for ESG assurance, as evidenced by stakeholders seeking higher quality and standardized reporting measures (Seidenstein, 2021)², and the straightforward conception of ESG, it is unclear who is taking responsibility and consolidated oversight of the entire ESG field. As a result, assurance is still in its infancy (DeSimone et al., 2021).

While prior literature focuses on the valuation and performance effects of ESG activities (Christensen et al., 2021), our study focuses on ESG disclosure and assurance. Using a dataset consisting of responses from 107 internal auditors, our paper adds to the strand of literature considering professional aspects of the reporting environment beyond providing an auditor's opinion on ESG reports. We provide practical insights into why positioning the IAF as a key actor within the ESG sphere is vital to promote related reporting and assurance as suggested by Lai and Stacchezzini (2021) and Huggins et al. (2011). In this context, our study aims to answer the following research question:

RQ: Which characteristics affect the IAF's role in ESG reporting and disclosure?

The rest of the paper is structured as follows. In Section 2, we provide a literature review. In Section 3, we describe our research methodology including the dataset and regression models used. In Section 4 results are presented. We discuss our results in Section 5 and finally conclude in Section 6.

2. LITERATURE REVIEW

2.1. Value of environmental, social, and governance information

Firms can reduce information asymmetry with stakeholders by demonstrating their interest and engagement in these matters through the disclosure of ESG information (Zorio et al., 2013). Owing to the versatility of standards and reporting structures, it has become more complex for stakeholders to evaluate the reliability of such disclosures (Knechel, 2021). Assurance through independent verification is believed to address this credibility gap and reduce potential information asymmetries (Allegrini & Greco, 2013; Cuadrado-Ballesteros et al., 2017; Martínez-Ferrero & García-Sánchez, 2017). Thus, it helps to lower agency costs and confers greater reliability in terms of increased user confidence in the accuracy and validity of the information provided (Simmnett et al., 2009).

2.2. Involvement of internal auditors

Auditors' abilities to review and evaluate processes and controls used to generate, gather, and disclose information can provide them with a competitive advantage in ESG assurance³. Within the complex ESG endeavor, internal auditors might in fact serve as valuable actors given their comprehensive understanding of company-specific processes and

risks along with controls to achieve a goal-oriented alignment of ESG-related activities (Morley et al., 2010; Eulerich et al., 2020; Eulerich, 2021). The starting point for a value-adding IAF is commonly offered by the three lines model (Bantleon et al., 2021; Eulerich, 2021) pointing out that internal auditing supports governance actors along with monitoring and oversight activities through independent and objective assurance and advice. Thus, internal auditing has gained considerable acceptance as a crucial element of good corporate governance (Carcello et al., 2020; Eulerich & Lohmann, 2022).

The Institute of Internal Auditors (IIA, 2021) suggests independent, objective assurance and advice are fundamental to the role and mission of internal auditing, making its involvement evident. The IAF is expected to "bring a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes" (IIA, 2021), thereby tackling the largely unregulated nature of ESG matters. The scope of internal auditing's involvement in ESG should correspond to its overall nature and thus include both the assurance and the advisory component⁴. Therefore, the growing relevance of ESG and the related need for assurance simultaneously offer the potential for internal auditors to provide support and incorporate sustainable development considerations into governance oversight (Ridley et al., 2011; Hodge, 2020; Stiglbauer & Eulerich, 2012; DeSimone et al., 2021; Adams & Abhayawansa, 2022). Prior research has focused primarily on assurance of ESG reporting (Boiral et al., 2019; Dal Maso et al., 2020; DeSimone et al., 2021; Pinnuck et al., 2021)⁵, while leaving the advisory component largely unaddressed⁶. Given the scarcity of internal audit research (Behrend & Eulerich, 2019; Christ et al., 2021) and the ambiguity of its value-adding role (Eulerich & Eulerich, 2020; Eulerich et al., 2021), we aim to take a holistic view of internal auditors generating value through both assurance and consulting in ESG.

3. RESEARCH METHODOLOGY

3.1. Participants and survey design

Our study includes 107 internal auditors, who participated in a survey either in the run-up to an ESG event conducted by a working group of the German IIA (93 participants) in August 2021 or as part of an event for chief audit executives aimed at discussing the best practices and trends within the profession (14 participants) in October 2021. Participants are from Europe with most of them coming from Germany. Companies operating in Europe must comply with increasing obligations related to ESG as outlined by the European Commission (2022). Our survey was elaborated in close cooperation with the IIA working group to ensure the practical relevance of our results⁷.

² The International Financial Reporting Standards (IFRS) Foundation has just announced to form an International Sustainability Standards Board aiming to deliver a comprehensive global baseline of sustainability-related disclosure standards, providing stakeholders with information that helps them make informed decisions.

³ Knechel (2021) describes this competitive advantage over other parties, such as contractors, in that although auditors may lack expertise in environmental or social disclosures, their proficiency in the verification process and their diverse portfolio of subject-matter expertise is what positions them exclusively in this area.

⁴ See IIA (2021) for a description of what internal audit tasks in these two areas should include at minimum.

⁵ In line with Knechel (2021), we consider ESG reporting to cover a variety of information, including the commonly referenced corporate social responsibility (CSR) reporting.

⁶ We recognize the importance of IAFs integrating ESG into the audit universe and planning "to enhance and protect organizational value by providing risk-based and objective assurance, advice, and insight" (IIA, 2021).

⁷ For the study, an Institutional Review Board (IRB) approval has been granted by the university of the authors.

3.2. Empirical models and sample description

We examine the relationship between the IAF's maturity in ESG matters distinguishing between high (values above 5, on a scale from 1 "very low" to 10 "very high") and low (values below 5, respectively) maturity levels and the disclosure of an ESG report (disclosed or not), using a regression model. We control for the impact of the company's ESG maturity (measured analogous to the IAF's maturity in ESG matters), as well as size (natural logarithm of employees), industry (financial or not), listing status (listed or not), and ownership structure (managed by the owner or not), as several studies have shown the mentioned company-level characteristics to explain variation in ESG reporting practices (Drempetic et al., 2020; Yu & Van Luu, 2021)⁸.

In a second regression model, we examine the relationship between the IAF's involvement in ESG reporting (involved or not)⁹, the relevance attributed to each of the ESG pillars on part of the IAF¹⁰ by assuming high relevance if participants rated the relevance (total of all factors belonging to the respective pillar, on a scale from 1 "very low" to 7 "very high") higher than most (75 percent) participants in the overall sample and low relevance otherwise, and the assurance status of the ESG report (assured or not)¹¹. We control for the same company-specific impacts as we do in our first model except for the company's ESG maturity¹².

Eighty-one (81) participants provided the answers to measure our regression variables. Approximately 62 percent of the studied companies disclose an ESG report. Thirty-three (33) and 57 percent, respectively, indicate to possess a high level of ESG maturity within the IAF and the company, respectively. Thirty-one (31) percent have their ESG report assured, while in only 17 percent of the companies the IAF participates in the reporting process. Finally, 23 percent of the respondents assess the environmental and social pillars as highly relevant, while 21 percent assess the governance pillar as highly relevant. On average, the companies employ around 27,000 full-time employees. Sixty-four (64) percent of them are listed, 19 percent are owner-managed, and 41 percent operate in the financial sector¹³.

⁸ The variables used in the models are self-reported or -precepted and might therefore be positively biased, but as we analyze associations and not necessarily causations, we do not feel that this is limiting our results. See the Appendix, for the form of the regression equations (Table A.1) and a definition of the regression variables, including the original survey questions used (Table A.2).

⁹ The indicator considers multiple tasks such as risk assessments, provision of Key Performance Indicators (KPIs), or assurance and consulting activities within the ESG process.

¹⁰ For properly assigning the components to each pillar, brainstorming sessions with practitioners were conducted and, in case of inconsistencies, related literature and supplementary material was consulted.

¹¹ Any type of auditor's opinion is considered here, given that De Beelde and Tuybens (2015) show that the perceived work quality in this matter is converging.

¹² We have not included the mentioned control variable in the second regression to establish a well-specified model in line with most recent findings in accounting literature on including proper control variables (Whited et al., 2022).

¹³ See the Appendix, Table A.2 for summary statistics. Pearson and Spearman correlations (results untabulated) show significant correlations for some variables, but they are constantly below a value of 0.5. Though, variance inflation factors (VIFs) do not indicate multicollinearity problems (mean = 1.29, max = 1.48, and mean = 1.34, max = 1.63, for equation (1) and equation (2), respectively [results untabulated]); Variance Inflation Factors (VIFs) are calculated using ordinary least squares (OLS) estimation.

4. RESEARCH RESULTS

Results from estimating our first regression model are presented in Table 1¹⁴. We find a significant positive association between ESG disclosure and the IAF's ESG maturity level. This result suggests that IAF's ESG maturity is promoting ESG disclosure. Similarly, there is a significant positive association between ESG disclosure and ESG maturity at the company level. Additionally, we find a significant effect for the listing status, emphasizing the relevance of company characteristics in the ESG disclosure context.

Table 1. Determinants of ESG reporting disclosure

Variables	Disclosure
IAF_ESG_MATURITY	1.632** [2.106]
COMPANY_ESG_MATURITY	1.389** [2.046]
FINANCIAL_INDUSTRY	-0.509 [-0.810]
EMPLOYEES	0.269 [1.629]
LISTED	1.302* [1.834]
OWNERMANAGED	0.229 [0.222]
Constant	-3.352** [-2.414]
N	81
Pseudo R ²	0.320

Note: This table presents the regression results from equation (1) using logistic estimation with robust standard errors and a sample of 81 survey respondents. All variables are described in the Appendix. Z-stats are presented below each coefficient. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 2. Determinants of ESG reporting assurance

Variables	Assurance
IAF_PARTICIPATION	1.646* [1.916]
RELEVANCE_ENVIRONMENTAL	1.322* [1.741]
RELEVANCE_SOCIAL	-0.585 [-0.691]
RELEVANCE_GOVERNANCE	0.506 [0.636]
FINANCIAL_INDUSTRY	-0.289 [-0.411]
EMPLOYEES	0.422** [2.198]
LISTED	-0.545 [-0.716]
OWNERMANAGED	-1.589* [-1.880]
Constant	-4.347*** [-2.635]
N	81
Pseudo R ²	0.282

Note: This table presents the regression results from equation (2) using logistic estimation with robust standard errors and a sample of 81 survey respondents. All variables are described in the Appendix. Z-stats are presented below each coefficient. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Results from estimating our second regression model are presented in Table 2. We find a significant positive relationship between ESG assurance and

¹⁴ Our models analyze associations, not necessarily causations, thus results must be interpreted cautiously.

IAFs' participation in the ESG process, stressing that IAFs' contribution promotes assurance. Moreover, this finding gives evidence on the organizational value of internal auditing through supporting ESG assurance. Additionally, we find a significant positive association between ESG assurance and perceiving the environmental pillar to be highly relevant, while an association between ESG assurance and a high evaluation of the social or governance pillar is not supported. This finding suggests that evaluating environmental matters as highly relevant supports companies in having their ESG reports audited. We find a significant effect for company size and ownership structure, which do not diminish the significance of our main results, but rather illustrate the necessity of controlling for these very factors. While the variable size shows a significant positive effect, the effect on ownership structure is significantly negative. This finding indicates that owner-managed companies are less likely to seek assurance in their reports.

While having insufficient observations for statistical analysis, comparing means for IAFs' activities in the ESG sphere shows that the mean for consulting as compared to assurance is higher. This finding supports the notion that assurance in the ESG field is lagging behind related consulting tasks¹⁵. Most respondents indicated having a Big-Four auditor providing an auditor's opinion on ESG disclosures, while only one company indicated having the IAF do so (results untabulated). Reasons for internal auditors' non-involvement in ESG reporting include no requirement by management, lack of knowledge or resources/time, and others. Referring to other reasons participants stated, for instance, "independence", "IAF would execute line tasks", or "not high yet on the audit priority list ...".

5. DISCUSSION

Overall, the results of the two regression models are a valuable means of gaining initial insight into the role of internal auditors and selected IAF characteristics on ESG disclosure and assurance. Thus, our finding about ESG disclosure addresses a question that practitioners frequently encounter in light of the increasing relevance of ESG-related topics, namely whether it is the responsibility of internal auditing to get involved in the ESG spectrum and whether internal auditing is relevant to foster ESG reporting. Our findings clearly show that internal auditors should devote resources to ESG training and professional development in an attempt to enhance IAF's ESG maturity level and thereby contribute to the promotion of ESG disclosure on part of the company. We conclude that the IAF's maturity level and ESG reporting are positively correlated, supporting the case study results of Aureli et al. (2020). Accordingly, ESG-related expertise on part of IAFs is essential to promote ESG maturity and thereby ESG reporting¹⁶.

The results provide nuanced insights into the individual ESG components. Interestingly, COVID-19 has led to a reassessment of the environmental pillar (Adams & Abhayawansa, 2022), which further emphasizes its uniqueness within the ESG sphere, as it is frequently perceived to be the core of the entire sustainability dimension (Hristov & Chirico, 2019). Indeed, the complexity and validity of the environmental pillar have been stressed in both practice and academia, because the heterogeneity of related metrics and the overall lack of comparability result in further fragmentation of ESG even beyond environmental risk factors (Semenova & Hassel, 2015; Boffo et al., 2020). Our results indicate that if the IAF has a degree of sensitivity to this complexity and the related risks, assurance is likely to be promoted as a response to this existing sensitivity. At the same time, we feel that the relevance attributed to one of the other pillars will prospectively increase in impact, given that particularly social aspects about the well-being of people within the entire production process are increasingly becoming the focus of public attention and legislation (see Act on Corporate Due Diligence Obligations in Supply Chains of July 16, 2021).

Due to the described imbalance between ESG-related assurance and consulting activities, we suggest internal auditors to use their expertise generated through consulting engagements to broaden assurance activities while keeping in mind the potential risk for conflicts of interest, which is found to be pronounced in this area (Boiral et al., 2019).

Auditing ESG disclosures offers an attractive opportunity for Big Four auditors through the expansion of their scope of operations, which translates into compelling earnings along with the possibility of rebranding a "scandal-plagued profession" (Financial Times, 2021) as one that seeks to position itself as an ESG expert in the future. In line with this, the Big Four accounting firms have worked together with the World Economic Forum (WEF, 2020) to create a whitepaper that attempts to offer ESG metrics capable of verification and assurance to achieve transparency among companies. Providing assurance on ESG disclosures is precisely what internal auditing is offering an attractive opportunity to make its added value accessible to a broader spectrum of people and to clearly position itself as a value provider.

Thus, the relevance of ESG and related activities needs to be highlighted and the potential of the IAF to be positioned as an indispensable resource in ESG needs to be emphasized. Clarification is required on how internal auditors can get engaged in ESG while keeping their independence. We note an overall lack of specific guidance for internal auditors in dealing with ESG, which is equally pointed out by Ridley et al. (2011). Likewise, the tremendous demand for the IIA event, in the context of which we collected data, points to practitioners' need for more guidance, benchmarking, and exchange on ESG. These are essential to gaining an independent perspective about how the company, or the IAF, performs as compared to others. This comparison, in turn, allows identifying areas of improvement along with the setting of appropriate performance expectations needed for further ESG advancements.

¹⁵ See the Appendix, Table A.3 for the questions that can either be assigned to assurance or consulting services provided by the IAF (results untabulated). We do not exclusively consider the provision of an auditor's opinion as assurance activities, but also include upstream assurance processes, so that internal auditors play a similar role in the assurance of ESG information as they did in the development of Sarbanes-Oxley Act (SOX) (IIA, 2022).

¹⁶ Aureli et al. (2020) point to the IAFs' pivotal function as a key implementing actor in sustainability culture besides its assurance responsibilities.

6. CONCLUSION

Our study aims to provide a holistic view of internal auditor's role in ESG assurance and disclosure. To increase the validity, reliability, and generalizability of our research, we engaged closely with practitioners. We demonstrate that IAF's maturity in ESG is significantly correlated with ESG disclosure, emphasizing the unique role of the IAF in this context. We find that IAF involvement in ESG reporting and attributing high relevance to the environmental pillar correlate with ESG assurance and thereby expand Trotman and Trotman's (2015) study about greenhouse gas emissions and energy usage. While we are not able to support this finding statistically, we give practical evidence implying involvement of the IAF in ESG is currently dominated by consulting activities. This finding suggests that assurance growth is lagging behind the growth in sustainability reporting (Alsaahali & Malagueño, 2021). Both the survey and the exchange with practitioners indicate that internal auditors lack supportive guidance, while their willingness and readiness to engage in this area are given. Overall, these findings have implications for the auditing profession, as they illustrate the need for action regarding further training and increased promotion of existing guidance (Committee of Sponsoring Organizations of the Treadway Commission [COSO] & World Business Council for Sustainable Development [WBSCD], 2018; IIA, 2021). Our results are also relevant beyond the auditing community, given that participants expressed involvement in ESG has not been requested so far by stakeholders. These stakeholders likely have not yet asked for such involvement because they are not aware of the suitability and merits of doing so. Thus, clarifying the suitability and breadth of the potential scope of involving internal auditors likely leads to increased demand on part of stakeholders.

While we provide initial evidence on IAF characteristics regarding disclosure and assurance of ESG information, further studies should explore specific activities in consulting and assurance that contribute to the positioning of the IAF within the ESG landscape. IAFs' assurance should go beyond expressing an auditor's opinion to include effective governance, risk management, and control over entire ESG processes (Association of International Certified Professional Accountants [AICPA] & Chartered Institute of Management Accountants [CIMA], 2021; IIA, 2021). Therefore, activities performed by internal and external auditors

in ESG should be considered complementary within the assurance framework (IIA, 2020).

In light of existing studies discussing the merits of different assurance service providers (Farooq & de Villiers, 2019; Hummel et al., 2019; Knechel, 2021; Ruiz-Barbadillo & Martínez-Ferrero, 2022), we give evidence for IAFs' suitability in promoting disclosure and assurance of ESG reports. Our results may therefore be useful in discussions about maximizing the organizational value the IAF provides. We identify areas of engagement bearing hidden potentials, which have to be considered against limited resources. Given that we are among the first to provide data on IAFs' role in ESG, we are convinced that practitioners will in fact use our results as a benchmark since benchmarking and exchange among practitioners are found to be particularly requested.

This study is subject to limitations. Our sample is restricted to internal auditors in the European context. ESG practices vary among different geographical areas, while European companies are more likely to have embraced ESG-related reporting compared to other regions. Thus, we do not feel that this limitation is diminishing our results, but rather our results bear considerable relevance for other markets in the future as regulations are further increasing towards globally convergent ESG practices. Additionally, our results are based exclusively on questionnaire data, and, as common for this kind of data, our results are therefore subject to a possible response bias given that responses rely at least partially on the participant's assessment. Still, we believe to offer valuable insights into the unexplored subject area, in view of the fact that this field is characterized by rapid developments and is largely unexplored to date.

ESG information will continually grow in importance for diverse stakeholders (Adams & Abhayawansa, 2022). Thus, it should be increasingly relevant for internal auditors all over the globe and in every industry (Ridley, 2019) as well as for academics. Looking forward, ESG disclosures may eventually evolve into a globally recognized legal requirement. We, therefore, encourage a timely response to the identified discrepancies and opportunities. Due to the international orientation of the entire topic and the restriction of our sample to the European area, we seek to encourage research in an international context that may contribute further insights into the advancement of the profession against the background of previous studies (Eulerich & Ratzinger-Sakel, 2018; Krane & Eulerich, 2020).

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APPENDIX. REGRESSION EQUATIONS AND VARIABLE DEFINITIONS

Table A.1. Form of the regression equations

Equation (1)	$DISCLOSURE = \beta_0 + \beta_1 IAF_ESG_MATURITY + CONTROLS + \varepsilon_i$
Equation (2)	$ASSURANCE = \beta_0 + \beta_1 IAF_PARTICIPATION + \beta_2 RELEVANCE_ENVIRONMENTAL + \beta_3 RELEVANCE_SOCIAL + \beta_4 RELEVANCE_GOVERNANCE + CONTROLS + \varepsilon_i$

Note: Table A.1 of this Appendix describes the regression equations used for analysis.

Table A.2. Description of survey variables used for analysis in equation (1) and equation (2) (Part 1)

Variables	Relevant question(s)	Response option(s)	Measurement	Mean (Sd.), [Min; Max] N = 81
<i>DISCLOSURE</i>	Does your company disclose an ESG report?	Yes No Is planned [Multiple choice]	Indicator: Yes (1), Otherwise (0)	0.62 (0.49) [0; 1]
<i>IAF_ESG_MATURITY</i>	How do you rate the following aspects for your organization: • Maturity of the internal audit function in ESG.	1 "Very low" 10 "Very high"	Indicator: Values above five (1), Otherwise (0)	0.33 (0.47) [0; 1]
<i>ASSURANCE</i>	Does the ESG report include an auditor's opinion?	Yes No [Multiple choice]	Indicator: Yes (1), Otherwise (0)	0.31 (0.46) [0; 1]
<i>IAF_PARTICIPATION</i>	Is your internal audit function involved in ESG reporting?	Yes No [Multiple choice]	Indicator: Yes (1), Otherwise (0)	0.17 (0.38) [0; 1]
<i>RELEVANCE_ENVIRONMENTAL</i>	Please rate the following ESG topics in terms of relevance: • Green deal; • Environmentalism; • Waste management; • Water (-scarcity); • CO2 emissions; • Climate protection measures; • Sustainable consumption	1 "Very low" 7 "Very high"	Indicator: Mean of environmental factors is in the upper quantile of the sample (1), Otherwise (0)	0.23 (0.43) [0; 1]
<i>RELEVANCE_SOCIAL</i>	Please rate the following ESG topics in terms of relevance: • Supply Chain Due Diligence Act; • Human rights; • Protection of minorities; • Fair working conditions; • Diversity; • Equality	1 "Very low" 7 "Very high"	Indicator: Mean of social factors is in the upper quantile of the sample (1), Otherwise (0)	0.23 (0.43) [0; 1]
<i>RELEVANCE_GOVERNANCE</i>	Please rate the following ESG topics in terms of relevance: • (Sustainability) management system; • ICS/processes; • Risk management; • Strategy/"Green washing" • Business partner due diligence; • Certifications; • Auditing sustainability in an international context; • EU taxonomy	1 "Very low" 7 "Very high"	Indicator: Mean of governance factors is in the upper quantile of the sample (1), Otherwise (0)	0.21 (0.41) [0; 1]

Table A.2. Description of survey variables used for analysis in equation (1) and equation (2) (Part 2)

<i>Control variables</i>	<i>Relevant question(s)</i>	<i>Response option(s)</i>	<i>Measurement</i>	<i>Mean (Sd.), [Min; Max] N = 81</i>
<i>COMPANY_ESG_MATURITY</i>	How do you rate the following aspects for your organization: Maturity of the company in ESG	1 "Very low" 10 "Very high"	Indicator: Values above five (1), Otherwise (0)	0.57 (0.50) [0; 1]
<i>EMPLOYEES</i>	How many employees (in FTE/full-time equivalent) does the company have, for which your audit function is responsible?	[Total number of overall FTE employees in the company]	Continuous: Natural logarithm of the total number of FTE employees in the company [Means are translated from the log means]	7.98 (2.5) [0; 12.12]
<i>FINANCIAL_INDUSTRY</i>	Which industry does the company belong to?	<ul style="list-style-type: none"> • Industry/production; • Trading; • Service; • Credit institutions/financial services; • Insurances; • Telecommunications/media; • Social insurances; • Utilities; • Public sector; • Hospital and healthcare; • Other [Multiple choice]	Indicator: Company is a credit institution/financial service; insurance; or social insurance (1), Otherwise (0)	0.41 (0.49) [0; 12.12]
<i>LISTED</i>	Your company is <ul style="list-style-type: none"> • Listed 	Yes No [Multiple choice]	Indicator: Company is listed on the stock exchange (1), Otherwise (0)	0.64 (0.48) [0; 1]
<i>OWNERMANAGED</i>	Your company is <ul style="list-style-type: none"> • Owner-managed 	Yes No [Multiple choice]	Indicator: Company is owner-managed (1), Otherwise (0)	0.19 (0.39) [0; 1]

Note: Table A.2 describes the measurement for the variables used in regression analyses.

Table A.3. Description of survey variables used to derive further implications

<i>Subject</i>	<i>Related question(s)</i>	<i>Response option(s)</i>	<i>Measurement</i>
IAFs involvement in ESG assurance vs. consulting	Please assess the involvement of your internal audit function in the following processes with regard to ESG reporting: <ul style="list-style-type: none"> • Consulting services within the scope of the report preparation [consulting]; • Review of the report [assurance]; • Review of the report for compliance with the standards applied [assurance]; • Reviews in the context of the preparation of the auditor's opinion [assurance]. 	1 "Very low" 5 "Very high"	Continuous
Reasons for non-involvement in ESG	If you are not involved in the preparation of the ESG report, what is the reason? <ul style="list-style-type: none"> • Not required by management; • Lack of time or resources; • Lack of knowledge; • Other [Please specify]. 	[Multiple choice/Text box]	[Multiple choice/Text box]

Note: Table A.3 describes the measurement for the variables used in the analysis to derive further implications. Survey questions and relevant responses used to derive the variables are also shown.

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