Journal of Management and Governance
https://doi.org/10.1007/s10997-020-09511-3

Correlates of internal audit function involvement in sustainability audits

Steven DeSimone[1] · Giuseppe D'Onza[2] · Gerrit Sarens[3]

Abstract
While an increasing number of organizations are engaging in sustainability activities, assurance of these activities is relatively new. We investigate the presence of risk assessment by internal auditors, industry, internal audit function (IAF) age, and the release of sustainability reporting as correlates of organizations' involving their IAFs in sustainability audits. Using data from a large sample of chief audit executives (CAEs), we find significant and positive associations between all of our test variables and IAF involvement in sustainability audits. Also, organizations in Anglo-Saxon countries are significantly less likely to involve their IAF in sustainability auditing, while listed organizations are more likely. Other control variables (organization size, IAF size, level of development of a risk management system, CAE experience, CAE environmental skills, and CAE education) have insignificant associations with IAF involvement in sustainability audits. These results have implications for practitioner benchmarking and training as well as policy regarding combined assurance.

Keywords Sustainability audits · Internal auditing · Corporate governance · Risk assessment

✉ Steven DeSimone
sdesimon@holycross.edu

Giuseppe D'Onza
giuseppe.donza@unipi.it

Gerrit Sarens
gerrit.sarens@uclouvain.be

[1] College of the Holy Cross, 1 College Street, Worcester, MA 01610, USA

[2] University of Pisa, Via C. Ridolfi, 10, 56124 Pisa, Italy

[3] Louvain School of Management, Université Catholique de Louvain, Place des Doyens, 1, 1348 Louvain-la-Neuve, Belgium

Published online: 01 May 2020

1 Introduction

The United Nations Global Compact (UNGC) states that *"Corporate sustainability starts with a company's value system and a principled approach to doing business. This means operating in ways that, at a minimum, meet fundamental responsibilities in the areas of human rights, labor, environment and anti-corruption*" (UNGC 2016). Research indicates that organizations engage in sustainability activities and reporting to increase transparency, enhance brand value, improve reputation and legitimacy, signal competitiveness, motivate employees, and support control processes (Herzig and Schaltegger 2006). Such activity is increasingly recognized as a key contributing factor to corporate sustainability (Lozano and Huisingh 2011). The UNGC (2012) also indicates that sustainability reporting is gaining momentum as a key component of organizations' reporting practices globally.[1]

While the growth in sustainability activities is documented in the literature (e.g., Hahn and Kühnen 2013) and by NGOs (GRI 2017), assurance of sustainability is in its infancy (GRI 2013; KPMG 2015), despite an increase in demand for assurance to enhance credibility therein (Ridley et al. 2011; Soh and Martinov-Bennie 2015). Prior studies suggest that many executives expect internal auditors to assure sustainability to reduce the risk of legal liabilities for environmental malfeasance and negative public reactions to unsustainable practices (Nitkin and Brooks 1998; Coyne 2006). There is also growing recognition that sustainability assurance adds value to sustainability management and reporting systems by driving internal organizational change and improvement (Bae and Seol 2006; Mock et al. 2007) and by promoting external transparency (Gray et al. 2014; Simnett et al. 2009; Cohen and Simnett 2014). The Institute of Internal Auditors (The IIA 2010) states that internal audit functions (IAFs) can provide value to their organization via improved risk management and better understanding of emerging issues (Zadek et al. 2004), such as sustainability.

Our primary objective is to investigate whether risk assessment by internal auditors, industry, IAF age, and the release of sustainability reports are associated with IAF involvement in sustainability audits;[2] this is important, because prior research (e.g., Mijatovic and Stokic 2010) acknowledges the importance of auditing sustainability activity and reporting and focuses on external assurance and organization attributes (Cho et al. 2014; Cohen and Simnett 2014; Perego and Kolk 2012). However, the research is limited in its consideration of corporate internal contextual attributes that lead to voluntary assurance of sustainability strategies, programs,

[1] For instance, the membership of the UNGC (which requires annual reporting on progress toward the Compact's 10 universally accepted principles on human rights, labor, the environment and anti-corruption) has grown to more than 9000 public companies since its inception in 2000 (https://www.unglobalcompact.org/). Further, more than 5000 organizations have a profile on the Global Reporting Initiative (GRI) website. The GRI is a non-profit organization that is working toward a sustainable global economy by providing sustainability reporting guidance (https://www.globalreporting.org/Pages/default.aspx).

[2] We use *assurance* and *audit* interchangeably. Also, our dependent variable is whether the IAF is involved in *environmental sustainability audits*, which may include audits of activities and/or reporting therein. We use *sustainability audits* (*assurance*) throughout to describe this.

and reporting (Ridley et al. 2011) and whether IAFs are involved with the audit of their organizations' sustainability activities and reports (O'Dwyer and Owen 2005; Simnett et al. 2009; Trotman and Trotman 2015). Some qualitative research has more thoroughly examined the internal context, but is limited in other ways, such as country (e.g., Cohen et al. 2004; Darnall et al. 2009; Gray et al. 2014; Nieuwlands 2006; O'Dwyer et al. 2011; Soh and Martinov-Bennie 2015). This is despite Adams' (2002) call for additional empirical research into internal organizational factors that are associated with sustainability activities, including organizational attributes (e.g., code of ethics, size, industry), general contextual factors (e.g., risk assessment by the IAF) and chief audit executive (CAE) attributes, such as experience (Adams 2002).

We also respond to calls for research into factors that influence voluntary sustainability assurance by IAFs (Carcello et al. 2011; Cohen et al. 2008; Cohen and Simnett 2014), which is crucial, because the research has found that sustainability assurance activities are mainly driven by stakeholder demands (O'Dwyer et al. 2011).

Studies agree that the main factor that leads an organization's decision to ask for the assurance of external sustainability reports is the need to enhance the credibility of the information published in these reports (Adams and Evans 2004; O'Dwyer and Owen 2005). Multiple parties can perform the assurance of sustainability reporting (Farooq and De Villiers 2017; Gillet-Monjarret and Rivière-Giordano 2017; Simnett et al. 2009; Trotman and Trotman 2015), and more than one party may be involved. In this trust and credibility building process, organizations likely prefer external rather than internal assurance, since external stakeholders may perceive internal assurance as less independent and more likely as a window-dressing practice than external assurance. This does not mean that IAFs cannot play a key role in the assurance of sustainability activities/reporting.

Studies (Adams and Evans 2004; Ball et al. 2000) have argued that, in carrying out the assurance of sustainability reporting, external auditors should focus on the internal controls and risk assessment systems that organizations have implemented so as to ensure true, complete, unbiased, and relevant reports. The IAF is a key player in the attempt to strengthen these systems' adequacy (IIRC 2013), and its activities can complement the external auditors' work. Thus, internal auditor assurance may also be considered to be a valuable activity by particular internal stakeholders (the board and the Audit Committee (AC)) against the risk that managers manipulate sustainability activities/reports so as to create a false positive corporate image (Owen et al. 2000).

Other studies (Perego and Kolk 2012; Jones and Solomon 2010) provide additional motivation for sustainability assurance by indicating that organizations may use assurance providers' work to also develop their internal managerial and organizational capabilities in sustainability activities and reporting practices. This may create conflicts of interest and impair an assurance provider's independence (Swift and Dando 2002). In our view, the use of a qualified IAF acting as consultants for managers is a way to avoid conflicts of interest and may help preserve the independence of external assurer. Additionally, The IIA (2013) stresses that IAFs should perform value-added activities, such as sustainability audits, and that internal assurance may create opportunities for IAFs to add value by reducing the cost of sustainability assurance.

Our focus is on IAFs as a source of sustainability audits in organizations.[3] We acknowledge that IAF involvement in sustainability assurance may be an addition to, rather than a substitute for external assurance. We also add to previous research into factors that enhance internal auditors' roles in improving organization sustainability management systems (Nieuwlands 2006; Darnall et al. 2009). This is crucial, as many stakeholders highlight that the identification of these factors can increase the IAF's organizational relevance via a more intensive role both as a consultant and as an assurer of the organization's sustainability initiatives for its long-term success.

Our source of data is the Common Body of Knowledge in Internal Auditing (CBOK 2015) database developed by the Institute of Internal Auditors Research Foundation (The IIARF) in 2015. We analyze responses from a sample of 2019 CAEs of organizations of varying sizes and in various industries. Our sample includes both organizations that release sustainability reports and those that do not, for two main reasons. First, sustainability assurance may include reporting and/or activity, so it is not present only when a report is released. Thus, sustainability assurance includes sustainability policies and strategies, plan, risk management, operations and reporting (Nieuwlands 2007). Second, in many organizations there is space to improve the sustainability management system, and internal auditors are in a position to help develop a sustainability communication plan to report to the external stakeholders the results and progress made on the organization's economic, environmental, and social responsibilities.

Our results indicate that IAF involvement in risk assessment programs and the release of sustainability reporting are positively and significantly associated with IAF involvement in sustainability audits. We also find that organizations in environmentally sensitive industries and those with older IAFs are more likely to involve their IAFs in sustainability audits. Our research is useful for practitioners, The IIA, and policy-makers. Our findings enable practitioners to benchmark their activities against the reported results. The results suggest that the future importance of the IAF's role in sustainability assurance can assist The IIA as it plans future training offerings and develops guidelines and position papers to assist practitioners in performing sustainability auditing. Finally, our results can add to the policy debate regarding a combined assurance model for integrated reporting.

We will now present the research background leading to our hypotheses, followed by our research method and statistical analysis. The final section contains the discussion and conclusions.

2 Background and hypotheses

Widespread sustainability activities and reporting began in the 1990s (Cormier and Magnan 1999; Holder-Webb et al. 2009), with a dramatic increase in the 2000s (Dhaliwal et al. 2011, 2012; Tschopp 2012). In 2019 more than 19,000 companies

[3] The CBOK (2015) does not include information regarding alternative parties (e.g., external auditors, consultants, etc.) involvement in sustainability audits.

produced sustainability reports—25 times the number in 1998 (Corporateregister.com 2019). Following previous studies, we consider sustainability as an organization's performance related to the inclusion of social, economic, and environmental concerns in business operations and in interactions with stakeholders (Cohen and Simnett 2014; Dahlsrud 2008; Hahn and Kühnen 2013; Montiel 2008; Van Marrewijk 2003).[4] Much of the reporting on sustainability is voluntary, with non-governmental organizations (NGOs) generally defining sustainability reporting and providing sustainability reporting guidelines (Tschopp 2012).[5]

2.1 Sustainability assurance

The increased sustainability activities since the 1990s have been accompanied by increased stakeholder interest in sustainability assurance. Research indicates that companies voluntarily disclose sustainability information so as to mitigate agency conflicts (Allegrini and Greco 2013). The rationale for audits is the notion that individuals must be held accountable for their actions and that this accountability should be verified (Power 1997).

Studies on the assurance of sustainability reporting (O'Dwyer et al. 2011; Owen et al. 2000; Adams and Evans 2004; Manetti and Becatti 2009) have focused on the characteristics of assurance activities by third parties so as to enhance the credibility of sustainability reports. These studies highlight that sustainability activities, reporting practices, assurance, and regulations vary widely worldwide.[6] Currently, there is no uniform regulation that stipulates that sustainability information be reported in a stand-alone document and, thus, no requirement of assurance of sustainability (Simnett et al. 2009). Sustainability reporting is therefore still largely a voluntary exercise. Research (e.g., Simnett et al. 2009) into why organizations voluntarily assure sustainability reporting has focused on country-specific and industry-specific factors (environmentally sensitive industries, country legal environment, stakeholder environment). It found that 60% of companies that issue environmental reports use some form of internal assurance (Darnall et al. 2009). Finally, the research suggests that IAF assurance of sustainability activities is expected to increase over time (Allegrini et al. 2011). This is important, as IAFs often have the industry and

[4] This definition is consistent with that of the Global Reporting Initiative (GRI 2017). The CBOK (2015) defines sustainability as the ability of the organization and its environment (social, economic, and natural) to survive in the long term.

[5] Some of the more prevalent sustainability and sustainability reporting guidelines are the UN's Global Reporting Initiative (United Nations Global Compact 2012), Organization for Economic Co-operation and Development Guidelines for Multinational Enterprises (OECD 2011), International Organization for Standardization (2014), AccountAbility AA1000 (2008), and SA8000 (Social Accountability International 2014).

[6] While there are some specific mandatory sustainability reporting instruments across the world, there are few regulations around sustainability reporting and virtually none regarding sustainability assurance (Cuadrado-Ballesteros et al. 2017; Gürtürk and Hahn 2016; Huggins et al. 2011; Hummel et al. 2017). For a more complete list, see https://www.carrotsandsticks.net/.

assurance expertise to properly assure sustainability reports/activities where regulations and benchmarks may be missing.

We contribute to the literature on sustainability assurance by focusing on factors not considered by prior research. While the research has stressed the importance of external country and industry factors as well as the choice of assurance provider (Cho et al. 2014; Cohen and Simnett 2014; Perego and Kolk 2012; Simnett et al. 2009), few studies of sustainability assurance have considered internal factors (e.g., Al-Shaer and Zaman 2018; Ridley et al. 2011) using qualitative or publicly available data. We focus on internal organizational factors and the specific choice to involve internal auditors in sustainability audits. As sustainability assurance is costly, the purchase thereof indicates that the benefits outweigh the costs (Simnett et al. 2009). Also, as risk management and internal control systems are becoming more prominent for the external assurers who evaluate them to obtain evidence to gauge sustainability reporting processes' reliability (O'Dwyer et al. 2011), the role of IAFs is becoming more important. We extend these ideas to propose that organizations may use internal auditors as sustainability assurance providers if they are serious about sustainability, or may use IAF assurance to increase stakeholder confidence in sustainability reporting (window-dressing).

2.2 Internal audit

Owing to the scandals of the late 1990s and early 2000s, there has been an increased focus on corporate governance. One result is the greater emphasis on the AC's monitoring role (Sarens et al. 2013; Zaman and Sarens 2013). ACs globally discharge their corporate governance monitoring duties through reliance on the IAF, since IAFs perform operational, compliance, and other audits on behalf of the AC (Sarens et al. 2009, 2013; Zaman and Sarens 2013). This is because AC members often rely on the IAF's work to better understand the risk environment and internal control effectiveness (Arena and Azzone 2009; Krishnan 2005). Research suggests this AC-IAF relationship helps to reduce information asymmetry between management and the AC (Raghunandan et al. 2001; Scarbrough et al. 1998). Further, research suggests that the AC's relationship with both executive management and internal auditors influences the quality of both financial reporting and corporate governance practices (Gramling et al. 2004; Spira and Page 2003; Turley and Zaman 2004).

Research also indicates that the nature of the IAF's work has evolved over time. IAFs now play a key role in enterprise risk management (ERM) (Beasley et al. 2006; Gramling and Myers 2006; Lenz and Hahn 2015) and provide consultancy[7] and advising services (The IIA 2013), while also handling the post-SOX increased corporate governance responsibilities, such as assessment of internal controls over

[7] The IIA (2015) defines consulting as *"advisory and related client service activities, the nature and scope of which are agreed with the client, are intended to add value and improve an organization's governance, risk management, and control processes without the internal auditor assuming management responsibility."*.

financial reporting (Soh and Martinov-Bennie 2011).[8] This is important, as the nature of the IAF's work likely influences how IAFs are viewed by their organizations. As The IIA (2013) promotes IAF involvement in value-added activities, consulting work that involves strategy helps IAFs to remain relevant (Chapman 2001). This can include sustainability auditing, but can also blur the lines between the oversight and consultancy roles (Stewart and Subramaniam 2010), and can create conflicts of interest (Selim et al. 2009).

With an emphasis on an objective review, sustainability audits by the IAF are designed to help organizations to achieve managerial commitment and to control their sustainability activities, to comply with environmental regulations, and to conform to organizational sustainability policies (Darnall et al. 2009). Research also suggests that IAF assurance adds credibility to sustainability activities and reporting by identifying areas for improvement (Soh and Martinov-Bennie 2015). In a 2014 qualitative study, AC members, senior accountants, CAEs, and external audit partners from a Big-4 audit firm acknowledge that the IAF plays, or should play a role in the auditing of sustainability. The interviewees stated that IAF involvement aids risk management, as the costs of misreporting can be high (Trotman and Trotman 2015). These costs include penalties to the CEO and to the board as well as damage to the organization's reporting reputation. Also, professional guidance stresses the importance of the assurance of sustainability reporting, specifically the IAF's role (The IIA 2010).

Studies suggest that the current audit culture relies heavily on external auditors to measure performance against preselected corporate social performance indicators (Kemp et al. 2012). Internal auditors are in a position to understand both the audit process (specifically what is necessary to achieve compliance with external benchmarks) and have the operational knowledge to engage all levels of the organization to improve sustainability efforts (Kemp et al. 2012; Pickett 2010). Thus, internal auditors may be used as a sustainability assurance substitute for external auditors (when external signaling is not desired/needed), or as a complement.

Some research is critical of the IAF's contribution, especially when IAF independence from management is in question. Prior research suggests that the dual role of many IAFs (assurer and consultant) and serving two masters (the board and management) along with a lack of regulatory IAF oversight makes it very difficult for the IAF to effectively discharge both duties (Abbott et al. 2010; Lenz and Sarens 2012). When there is no clear primary customer group, IAFs may attempt to act as both an agent of the board and as a partner to management (Hermanson and Rittenberg 2003; Lenz and Sarens 2012). As expectations of each group differ, IAFs will struggle to effectively fill both roles (Erasmus and Coetzee 2018). Despite this, organizations may involve IAFs in sustainability assurance, because they see value therein.

Internal audits of sustainability are much like internal financial audits in that internal auditors evaluate controls over reporting and suggest corrective action by

[8] See the 2014 PriceWaterhouseCoopers state of the internal audit profession study at http://www.pwc.com/en_US/us/risk-assurance-services/publications/assets/pwc-state-of-theinternal-audit-profession-2014.pdf.

communicating with management and the AC (Darnall et al. 2009). But they also have a long-term focus by continually assessing sustainability progress toward achieving desired outcomes (Darnall et al. 2009). By engaging the IAF in sustainability audits, organizations create processes and procedures aimed at improving sustainability activities, and also increase the probability of discovering sustainability issues before they become significant, thus reducing various risks[9] (Stanwick and Stanwick 2001). IAFs may be in a position to add value to the sustainability process (Nieuwlands 2006), and have a significant role in the corporate governance process (Cohen et al. 2004).

It is crucial to understanding the correlates of IAF involvement with sustainability assurance, given the trend toward reliance by stakeholders in the monitoring and measuring of sustainability reporting (Trotman and Trotman 2015) and professional guidance therein (KPMG 2015; The IIA 2010). Trotman and Trotman (2015) found that ACs, senior accountants, and internal auditors are of the view that IAFs should have a key role in sustainability assurance.

2.3 Research hypotheses

Trotman and Trotman (2015) found that the risk management approach promotes the provision of assurance on greenhouse gas emissions by IAFs. Their survey respondents indicated that the IAF's role in sustainability audits will grow in future as the use of ERM grows. Thus, IAFs expect to spend more time on corporate governance, ERM, strategic reviews, social and sustainability audits, and ethics audits, and less time on compliance audits (Allegrini et al. 2011). The increasing importance and engagement of IAFs in ESG areas is also evidenced by the proliferation of ESG-related practice guides issued by The IIA in recent years, including *Evaluating Corporate Social Responsibility/Sustainable Development* (The IIA 2010) and several other specific subject-matter guides.

When stakeholders ask internal auditors to provide assurance on risk management as a whole, the IAF should ensure that all relevant risks, including those related to the sustainability aspects, are included in the risk management system. In their assurance role, internal auditors perform sustainability audits to verify whether management has identified, evaluated, and implemented risk management activities and controls that address risks associated with the sustainable development of the business. Thus, internal auditors can provide additional assurance to the board, AC, and management that line managers have considered and effectively managed the relevant sustainability-related risks. When internal auditors are required to provide advice and consulting on the entire risk management portfolio, they help to develop a triple bottom line awareness of organizational risks by identifying, assessing and managing the risks associated with the social and the environmental dimensions of business and not merely limiting their analysis to the economic dimension. They

[9] Risks included are legal, regulatory, lost business, environmental crises, increased costs, and reputational.

can also assist managers in designing and implementing the best actions to mitigate these sustainability risks.

Studies suggest that IAFs involved in ERM are likely to identify sustainability as a key risk (Bebbington et al. 2014). Ballou et al. (2012) found evidence that internal auditors use their risk management expertise (Knechel et al. 2007) to promote integration of sustainability issues into overall business risks. They do so by identifying social impacts of the organization's competitive context and value chain. In this regard, IAFs are able to measure the impacts of these risks and help design controls to mitigate them. Finally, research found that firms often use internal audit as a substitute for an external audit of sustainability reporting (Peters and Romi 2015). Studies also suggest that IAFs help improve sustainability governance and reporting as organizations recognize and respond to risks associated with non-financial disclosures (Cascone et al. 2010). Thus, IAFs can play a key role in the move toward integrated reporting (Druckman 2013), and management may believe that IAFs can help to improve the sustainability information's reliability (IIRC 2013).

While IAFs are just one of many parties that may be involved in sustainability assurance (see Farooq and De Villiers 2017; Gillet-Monjarret and Rivière-Giordano 2017; Simnett et al. 2009; Trotman and Trotman 2015), in our view, IAFs that are involved in the risk management process are both sufficiently engaged with top management and more likely to have the skills necessary to engage in advanced assurance activities, such as sustainability assurance. Thus, we posit that when IAFs are involved in the risk management process, they are likely to identify sustainability as a major risk area, and that the organization's management is more likely to involve the IAF in sustainability assurance therein. Thus:

H1 *IAFs that are involved in the risk management process are more likely to be involved in sustainability audits.*

Studies have highlighted several factors that influence the decisions of organizations in environmentally sensitive industries (e.g., oil and gas, power utilities, waste management, agriculture) to do sustainability audits. First, in these industries, there is greater external pressure from stakeholders on organizations to adopt sustainable practices (Darnall et al. 2009). These include regulators, environmental authorities, industry associations, consumers, and local communities. Second, in environmental sensitive industries, environmental audits (part of sustainability audits) are vital to reinforce the organizational risk management system, as organizations are exposed to greater environmental risks (e.g., environmental disasters). Finally, stakeholders of organizations in environmentally sensitive industries seek sustainability assurance so as to enhance the value of an organization's significant investments to manage sustainability issues.

To address these expectations, organizations may enlist various parties to perform sustainability assurance; these include external auditors, consultants, internal auditors, or other third parties. These assurance activities' scopes vary based on the diverse expectations of each stakeholder group, ranging from compliance with environmental regulations and ISO standards, to the assurance of

sustainability reporting. Assurance activities increase an organization's ability to prevent environmental disasters and avoid costly litigation and fines as well as to protect the organization's reputation.

Studies have documented an association between environmental and social risks of varying industries and the levels of environmental and social disclosure (Adams et al. 1998; Patten 2002) and assurance (Cho et al. 2014; Kolk and Perego 2010; KPMG 2015; Simnett et al. 2009). Organizations in industries with greater social and/or environmental impacts are more exposed to risks therein, and are thus more likely to utilize resources for sustainability assurance to manage this risk (Simnett et al. 2009). Simnett et al. (2009) also found that organizations with bigger social footprints (mining, utilities, and finance) are more likely to have their sustainability reports assured. Research indicates that there are many choices of assurer, and that using auditors rather than consultants may increase confidence (Hodge and Subramaniam 2009) and credibility in sustainability reporting (Pflugrath et al. 2011); this is because auditors have more assurance experience, experience in cooperating with subject area experts, and expertise in reporting findings to stakeholders (Wallage 2000). We posit that internal auditors are used as either a complement to or substitute for external assurance in environmentally sensitive industries. This is because these organizations likely see the value of having an IAF engaged in sustainability assurance owing to the costs of non-compliance to regulations or stakeholder demands. Thus, we posit that:

H2 *Organizations in environmentally sensitive industries are more likely to involve their IAFs in sustainability audits.*

Sarens et al. (2011) indicated that advanced IAF activities (such as sustainability auditing) are performed more often by older IAFs. Related research supports this and found that older IAFs are more likely to engage in IT audits (Abdolmohammadi and Boss 2010). This is because younger IAFs generally limit their agenda to the more traditional IAF activities, since they do not have the resources or expertise to engage in more advanced activities. The authors suggest that the more an organization benefits from its IAF's services, then key stakeholders are more likely to support expansion of the IAF's services into more advanced activities. It is also likely that older IAFs have developed a deeper knowledge of business activities, helping them to better gauge the environmental and social risks associated with organizational business processes. This idea is supported by The IIA, which in 2009 released a report that proposed the *internal audit capability model* tool for assessing the IAF's maturity level (sophistication and experience) to help promote growth of IAF capabilities in the public sector (The IIARF 2009).

Further, CAEs of older IAFs are more likely aware of the need to remain relevant to their organizations and to take steps to ensure relevance therein. Thus, CAEs of older IAFs are better able to align IAF activities with their parent organizations' strategic risks, which likely include sustainability. Thus:

H3 *The older the IAF is, the more likely it is to be involved in sustainability audits.*

Organizations provide reporting on sustainability activities to demonstrate organizational commitment to sustainability, risk management, and to enhance reputation (Al-Shaer and Zaman 2018; Bae and Seol 2006; Mock et al. 2007; Simnett et al. 2009; Soh and Martinov-Bennie 2015). Studies found that organizations that seek to enhance their sustainability reports' credibility and corporate reputation are more likely to incur the cost to assure their sustainability reports by requiring external verification (Al-Shaer and Zaman 2018; Simnett et al. 2009). Thus, much research has focused on the choice to assure sustainability reporting and the factors that influence this voluntary decision so as to repair, gain, or extend corporate legitimacy (Bae and Seol 2006; Mock et al. 2007; Simnett et al. 2009; Soh and Martinov-Bennie 2015).

The demand for an independent assurance of sustainability reports' reliability can also come from the board and its AC. One reason for this demand is greenwashing (Pope and Waeraas 2016; Testa et al. 2018), which occurs when sustainability reporting is decoupled from sustainability activities (Laufer 2003). However, the research has not considered such assurance of sustainability activities as a corporate governance mechanism to support the board or the AC in fulfilling their responsibilities for true and fair sustainability reporting. Studies indicate that stakeholders believe that IAFs should be involved in sustainability assurance (Cascone et al. 2010; Darnall et al. 2009; Jones and Solomon 2010; Leung et al. 2011; Nieuwlands 2007; Ridley et al. 2011). This, along with the fact that reporting on sustainability is inherently riskier than financial reporting as there are no generally accepted standards for sustainability assurance, leads us our fourth and final hypothesis:

H4 *Organizations that release a sustainability report are more likely to involve their IAFs in sustainability assurance.*

3 Research method

The IIARF regularly surveys its members. In 2015, it conducted a survey of the common body of knowledge in internal auditing (CBOK 2015). This survey contained detailed questions about various issues, from characteristics of participating organizations and their IAFs, to strategy and codes of ethics/conduct. It also included questions regarding practice issues, such as use of The IIA's standards and attributes of practicing internal auditors' standards (e.g., education, experience, and continuing professional education). We gained permission from The IIARF to use the CBOK (2015) database as our data source.

The CBOK (2015) has 14,518 usable responses from The IIA's members in more than 160 countries. We filtered the database by professional rank (CAEs only) because CAEs are the most knowledgeable about their IAF's involvement with its sustainability audits, and only CAEs were asked to respond to some of the questions in our analyses. Further, as multiple employees of the same organization may be included in the dataset, using only CAEs' responses prevents possible duplication. Using only CAE responses, our sample contained 2019 observations.

3.1 Dependent variable

SustainabilityAudit. The CBOK (2015) asked; *What is the extent of activity for your internal audit department related to governance reviews?* One of the listed items is environmental sustainability audits. Respondents are asked to select one of the following:

1. None
2. Minimal
3. Moderate
4. Extensive
5. Not applicable/I don't know.

We created a binary variable (1/0) and coded responses 3 and 4 as yes (1) and 1, 2, and 5 as no (0). In our binary logistic regression, the value 1 indicates the probability that the IAF is involved in sustainability audit, and 0 otherwise.

3.2 Independent variables

IAFInvolveRiskMgt. The CBOK (2015) asked; *What areas of responsibility does internal audit have related to risk at your organization? (Choose all that apply)* and listed *provide assurance on risk management as a whole* and *provide advice and consulting on risk management activities*. We coded responses as 1 that checked these items, and 0 otherwise.

OrgIndustry. The CBOK (2015) asked participants to denote the *primary industry classification(s) of the organization for which you work (or your primary client if you are a service provider)*. Following prior research (e.g., Kolk and Perego 2010; Simnett et al. 2009), we control for industry by separating responses into environmentally sensitive industries (agriculture, forestry, fishing and hunting, waste management, as well as mining, quarrying, and oil and gas extraction), which we coded as 1, and all other industries as 0.

IAFAge. The CBOK (2015) asked participants; A*pproximately how many years has the internal audit department been in place at your organization?* We used responses as a numerical variable in our analyses to control for IAF age.

OrgReleaseSustainRpt. As noted, our sample includes both organizations that do and do not release a sustainability report; but sustainability assurance is more than the assurance of sustainability reporting, since it involves activities concerning the organizational sustainability management system as a whole. The CBOK (2015) asked; *Does your organization plan to release a report on sustainability?* and provides the following choices:

1. Yes, this year
2. Yes, at some point in the next 2 to 3 years
3. Yes, at an unspecified point in the future

4. No
5. I am not familiar with the Integrated Reporting (⟨IR⟩) Framework
6. I don't know.

We created a binary variable (1/0) for yes (number 1) vs. no (numbers 2 to 6) to control for whether an organization released a sustainability report. We included records with responses 4 to 6, as our dependent variable *SustainabilityAudit* may include assurance of either reporting or activity, or both. Thus, there were cases where CAEs' responses to this question were 4 to 6, and their IAF is still involved in sustainability audits.

3.3 Control variables

Organisation size (ORGSize). Studies found that organization size is positively associated with the presence of sustainability reporting (Adams et al. 1998; Cowen et al. 1987; Dhaliwal et al. 2011; Holder-Webb et al. 2009). This is generally seen as a result of the increased attention from the general public and increased pressure to act in socially responsible ways (Cowen et al. 1987). Larger organizations interact with a larger number of more varied stakeholders, which likely makes sustainability efforts more complex (Hart and Sharma 2004). This leads to an increased need or demand for assurance therein. Also, larger organizations likely have the resources (financial and human) required for sustainability initiatives (Gallo and Christensen 2011). Thus, larger organizations can devote time and attention to sustainability-related items and assurance (Gallo and Christensen 2011). In contrast, Peters and Romi (2015) found a negative relationship between organization size and sustainability assurance owing to lagging development and institutional expectations surrounding sustainability. In our view it is likely that only large companies have the necessary resources to involve their IAFs in sustainability audits. We investigated organization size as a control variable, classifying organizations with 1000 or fewer full-time-equivalent employees as small (coded as 0) and those with 1001 or more full-time-equivalent employees as large (coded as 1).

Organization listed (ORGListed). The CBOK (2015) included data from various organization types (listed, private, not-for-profit). Prior research indicates that IAFs in these different organization types may have different levels of maturity, funding, and responsibilities (DeSimone 2018).

The CBOK (2015) asked CAEs to indicate *the type(s) of organization for which you currently work* and listed the following options:

1. Privately held (non-listed) company
2. Publicly-traded (listed) company
3. Public sector/government
4. Not-for-profit organization/non-government organization
5. Other.

We coded publicly-traded (listed) companies as 1, and the remainder as 0.

OrgRiskMgtDeveloped. Organizations have varying levels of development of risk management processes and procedures (from none to fully developed strategic plans and departments). The CBOK (2015) asked; *What is your organization's level of development for its risk management processes*. We consider responses of *formal risk management processes and procedures are in place* and *the organization has a formal enterprise risk management (ERM) process with a chief risk officer or equivalent* as a developed risk management process, coded as 1. We coded all other responses as 0.

IAF size (IAFSize). Following prior research (e.g., Sarens and Abdolmohammadi 2011; Sarens et al. 2011), we controlled for IAF size, as participation in advanced auditing activities such as sustainability reporting may be a resource allocation decision. Specifically, larger IAFs are more likely involved in sustainability audits they have the necessary resources therein. We used the number of full-time-equivalent employees in the IAF as a control variable. *CAE experience (CAEExperience*). We expect that more experienced CAEs are able to lead the IAF to perform sustainability audts as they will be more competent. We include in our model the CAE's experience in years.

CAEs with environmental auditing experience (*CAEEnvExperience).* CAEs with environmental auditing experience gained such experience in their current or a past role; thus, these CAEs are more likely to involve their IAFs in sustainability audits, since they have either gained this experience in their current role, or are able to do so in their current role due to prior experience. The CBOK (2015) asked; *In addition to performing general internal audit activities, do you have an area of technical specialization for which you have had formal training AND in which you spend a majority of your time working?* Here, environmental auditing was an option. We coded CAEs with environmental auditing experience as 1, and all others as 0.

CAE education (CAEEducation). More educated CAEs are more likely to be able to involve their IAFs in more advanced activities, such as sustainability audits, as their experience leads to a more skilled IAF and they are likely more aware of the need to engage in such activities so as to remain relevant. The CBOK (2015) asked participants about their *highest level of formal education (not certification) completed*, listing the following to select from:

1. Secondary/high school education
2. Undergraduate diploma or associate degree (less than 4 years)
3. Bachelors/diploma
4. Masters/graduate degree/diploma
5. Doctoral degree (Ph.D. or higher)
6. None of the above.

We created a binary variable (1/0) for graduates (numbers 4 and 5) vs. other (numbers 1 to 3 and 6) degrees.

Anglo-Saxon. As research has indicated that IAF development is more advanced in Anglo-Saxon countries and that The IIA's influence over IAFs in

Table 1 Variables definitions

Variable	Definition
SustainabilityAudit (DV)	1 if internal auditors audit sustainability, 0 otherwise
IAFInvolveRiskMgt (H1)	1 if IAF performs continuous risk assessment, 0 otherwise
OrgIndustry (H2)	1 if sustainability sensitive (agriculture, forestry, fishing, hunting, waste management, mining, quarrying, oil and gas extraction), 0 otherwise
IAFAge (H3)	Age of IAF (number of years)
OrgReleaseSustainRpt (H4)	1 if company releases report on sustainability (defined as an organization's ability and its environment (social, economic and natural) to survive in the long term, 0 otherwise
ORGSize	1 if the number of full-time-equivalent employees in the organization is > 1000, 0 otherwise
ORGListed	1 if the company is listed (publicly-traded), 0 otherwise
IAFSize	Size of the IAF (number of full-time-equivalent employees)
OrgRiskMgtDeveloped	1 if the company's risk management is developed (formal processes/procedures are in place or a formalized ERM process with a chief risk officer or equivalent), and 0 otherwise
CAEExperience	CAE experience (in years)
CAEEnvExperience	1 if CAE has environmental auditing training and spends time on environmental auditing, 0 otherwise
CAEEducation	1 if graduate, 0 otherwise
Anglo-Saxon	1 if Anglo-Saxon, 0 otherwise

such countries is likely greater due owing to its longer history therein (Sarens and Abdolmohammadi 2011), we controlled for organizations in Anglo-Saxon countries. Thus, it is likely that these IAFs are able to engage in more advanced activities, such as sustainability auditing, and that the IAF is able to promote participation therein, in part to promote the IAF's relevance. We coded organizations in Anglo-Saxon countries as 1 and all others as 0, and expect a positive relationship with our dependent variable.

3.4 Model specification

Table 1 provides the variables we used and their definitions. The associations between the dependent and independent variables (as identified above) are used to specify our binary logistic regression as follows:

$$\begin{aligned}\Pr.(SustainabilityAudit = 1) = {} & \alpha + b_1 CGGuidance + b_2 IAFInvolveRiskMgt + b_3 OrgIndustry \\ & + b_4 IAFAge + b_5 OrgReleaseSustainRpt + b_6 ORGSize \\ & + b_7 IAFSize + b_8 CAEExperience + b_9 CAEEnvExperience \\ & + b_{10} CAEEducation + b_{11} Anglo{-}Saxon + e\end{aligned}$$

4 Results

4.1 Descriptive statistics

Table 2 provides descriptive statistics on independent variables crossed by the dependent variable, sustainability (*Does the IAF perform sustainability audits?*). Independent variables are listed in column 1, followed by their summary statistics by sustainability audits (yes/no) in columns 2 and 3. The last two columns provide statistical tests, with significant differences highlighted. Given the direction of the variables, as discussed earlier, we used one-tailed significance to report the results.

Overall, 45% of CAEs indicate that their IAFs currently perform sustainability audits. For IAFs involved in the risk management process, 27% performed sustainability audits; this is significantly greater ($p < 0.01$) than IAFs that are not involved in the risk management process (18%). Also, organizations in environmentally sensitive industries (7%) are significantly more likely ($p < 0.01$) to be involved in sustainability audits than organizations outside these industries (3%). Older IAFs are significantly more likely to be involved in sustainability audits ($p < 0.01$). Finally, IAFs that release a sustainability report (29%) are significantly more likely to involve their IAFs in sustainability audits ($p < 0.01$) than those in organizations that do not (13%).

Regarding control variables, we find that larger IAFs and those within listed organizations, and organizations with a more developed risk management program are more likely to be involved in sustainability assurance. Conversely, we find that organizations in Anglo-Saxon countries (14%) are significantly less likely ($p < 0.01$) to involve their IAFs in sustainability assurance than those outside Anglo-Saxon countries (32%).

4.2 Correlation matrix

Table 3 presents correlations between the independent variables in Model 1, with all significant (at $p = 0.05$ or less) correlation coefficients highlighted. Coefficients of 0.50 or higher pose a serious threat of multi-collinearity, but as Table 3 shows, none of the coefficients is near the critical level of 0.50.

4.3 Regression analysis

Table 4 presents the results of an estimated Logit regression, with the coefficient (β) provided for each variable, along with its related Wald statistic and statistical significance. Also provided is the overall χ^2 statistic for the model, its related classification accuracy, and the pseudo R^2. As the table shows, the overall χ^2 is highly significant ($p < 0.01$) for the model, with a classification accuracy of 62.9% and a pseudo R^2 of 12.7%. Also, the Homer and Lemeshow goodness of fit was insignificant ($p = 0.16$), suggesting that the model is a good fit for the data.

The results indicate that *IAFInvolveRiskMgt* ($B = 0.431$, $p < 0.01$) is positively and significantly associated with sustainability audits by IAFs, providing support

Table 2 Descriptive statistics of variables in the logit model

SustainabilityAudit by IAF? (DV)	Overall: 2374	No: 1309 (55%)	Yes: 1065 (45%)	Statistic	Sig.[a]	*Cohen D*/ odds ratio
IAFInvolveRiskMgt (H1)						
Yes	506 (22%)	226 (18%)	280 (27%)	$\chi^2 = 28.08$	**< 0.01**	1.706
No	1797 (78%)	1041 (82%)	756 (73%)			
OrgIndustry (H2)						
Sensitive	128 (5%)	49 (3%)	79 (7%)	$\chi^2 = 15.54$	**< 0.01**	2.060
Other	2245 (95%)	1260 (97%)	986 (93%)			
IAFAge (H3)						
Mean (std dev)		14.50 (13.90)	16.77 (17.10)	T = 3.40	**< 0.01**	0.155
OrgReleaseSustainRpt (H4)						
Yes	483 (20%)	169 (13%)	314 (29%)	$\chi^2 = 99.53$	**< 0.01**	2.820
No	1891 (80%)	1140 (87%)	751 (71%)			
ORGSize						
Small (< 1000 FTE)	1214 (51%)	678 (52%)	536 (50%)	$\chi^2 = 0.506$	0.24	1.060
Large (1001+ FTE)	1160 (49%)	631 (48%)	529 (50%)			
ORGListed						
Yes	767 (32%)	389 (30%)	378 (35%)	$\chi^2 = 8.96$	**< 0.01**	1.301
No	1607 (668%)	920 (70%)	687 (65%)			
IAFSize						
Mean (std dev)		40.27 (350.79)	255.30 (255.29)	T = 1.41	**0.08**	0.056
OrgRiskMgtDeveloped						
Yes	1254 (54%)	666 (52%)	588 (56%)	$\chi^2 = 4.18$	**0.02**	1.187
No	1069 (46%)	613 (48%)	456 (44%)			

Table 2 (continued)

SustainabilityAudit by IAF? (DV)	Overall: 2374	No: 1309 (55%)	Yes: 1065 (45%)	Statistic	Sig.[a]	*Cohen D*/ odds ratio
CAEExperience						
Mean (std dev)		13.63 (9.18)	13.72 (9.80)	T = 0.23	0.41	0.001
CAEEnvExperience						
Yes	9 (0%)	3 (0%)	6 (1%)	$\chi^2 = 1.74$	0.09	1.737
No	2365 (100%)	1306 (100%)	1059 (99%)			
CAEEducation						
Graduate	1315 (55%)	713 (54%)	602 (57%)	$\chi^2 = 1.01$	0.16	1.005
Other	1059 (45%)	596 (46%)	463 (43%)			
Anglo-Saxon						
Anglo-Saxon	559 (24%)	415 (32%)	144 (14%)	$\chi^2 = 107.84$	**< 0.01**	0.337
Other	1815 (76%)	894 (68%)	921 (86%)			

Bold values denote statistical significance

DV: Is the internal audit function involved in sustainability assurance?

See Table 1 for the definitions of the variables

[a]One-tailed

Table 3 Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12
IAFInvolveRiskMgt (H1)	1.000											
OrgIndustry (H2)	0.005	1.000										
IAFAge (H3)	0.010	**−0.048**	1.000									
OrgReleaseSustainRpt (H4)	0.025	**0.006**	**0.117**	1.000								
ORGSize	**−0.047**	**0.045**	**0.164**	**0.164**	1.000							
ORGListed	−0.330	**0.073**	**0.074**	**0.189**	**0.159**	1.000						
IAFSize	0.031	−0.004	0.010	−0.002	0.033	−0.011	1.000					
OrgRiskMgtDeveloped	**0.062**	−0.025	**0.172**	**0.154**	**0.052**	**0.113**	−0.020	1.000				
CAEExperience	**0.037**	0.007	**0.238**	0.015	**0.079**	**−0.044**	−0.014	**0.066**	1.000			
CAEEnvExperience	−0.007	−0.013	0.012	0.033	−0.022	0.009	−0.002	−0.004	0.001	1.000		
CAEEducation	0.005	0.011	0.001	**0.063**	0.021	**−0.081**	−0.014	**0.050**	0.025	0.010	1.000	
Anglo-Saxon	**−0.091**	−0.012	**0.086**	**−0.088**	**0.137**	0.005	−0.017	0.015	**0.229**	−0.004	**−0.120**	1.000

See Table 1 for the definitions of the variables

Bold values denote statistical significance

Table 4 Binary logistic regression model

Variable	Expected sign	β	Wald	Sig.[a]	Exp (B)[b]
IAFInvolveRiskMgt (H1)	+	0.431	14.429	**< 0.01**	1.539
OrgIndustry (H2)	+	0.731	11.427	**< 0.01**	2.077
IAFAge (H3)	+	0.009	7.595	**< 0.01**	1.009
OrgReleaseSustainRpt (H4)	+	0.799	42.215	**< 0.01**	2.224
ORGSize	+	0.000	0.000	0.50	1.000
ORGListed	+	0.165	2.438	**0.06**	1.179
IAFSize	+	0.000	0.495	0.24	1.000
OrgRiskMgtDeveloped	+	0.083	0.727	0.20	1.087
CAEExperience	+	0.006	1.187	0.14	1.006
CAEEnvExperience	+	0.738	0.993	0.16	2.091
CAEEducation	+	−0.074	0.588	0.22	0.929
Anglo-Saxon	+	−1.068	70.119	**< 0.01**	0.344
Constant		−0.563	21.410	**< 0.01**	0.570
Chi square (significance)	**201.731 (< 0.01)**				
Goodness of fit (Homer and Lemeshow)	11.864 (0.16)				
Classification accuracy	62.9%				
Nagelkerke pseudo R^2	12.7%				

DV: Is the internal audit function involved in sustainability assurance?

n = 2019

See Table 1 for the definitions of the variables

Bold values denote statistical significance

[a]One-tailed

[b]The odds ratio for the model 0 (only intercept) < 1 (0.824). The odds ratios for all our four test variables > than 1, indicating that the occurrence of the IAF involvement in sustainability assurance increases when the organization firm plans to realize a sustainability report (2.224), works in an environmental sensitivity industry (2.077), the IAF is involved in RM (1.539), and the IAF has a longer tenure (1.099)

for H1. The results also indicate a positive and significant relationship between *OrgIndustry* (sensitive industries vs. others at B = 0.731, p < 0.01) and involvement in sustainability audits by IAFs, supporting H2. *IAFAge* has a positive and significant (B = 0.009, p < 0.01) relationship with IAF involvement in sustainability auditing, providing support for H3. Finally, the results indicated a positive and significant relationship between *ORGReleaseSustainRpt* (B = 0.799, p < 0.01) and sustainability audit involvement by IAFs, supporting H4. Also, the odds ratios for all test variables are greater than 1, indication further support for our hypotheses. For control variables, *OrgListed* has a positive and significant relationship (B = 0.165, p = 0.06) with IAF involvement in sustainability audits. *Anglo-Saxon* had a significant negative relationship (B = − 1.068, p < 0.01) with sustainability auditing by IAFs, indicating that organizations in Anglo-Saxon countries are less likely to involve IAFs in such audits. The remaining control variables have insignificant relationships with sustainability auditing by IAFs.

4.4 Additional analyses

We ran a number of additional analyses as robustness checks and detail each below. The CBOK (2015) contains data from organizations in 160 countries. As prior research indicates (Arena and Azzone 2007; Goodwin-Stewart and Kent 2006; Mat Zain et al. 2015) IAFs' work may be influenced by country-specific or region-specific characteristics. Specifically, differing laws and regulations, professional bodies' influences, and other organizations' choices may lead to differing IAF characteristics and/or activities across geographic regions (Arena and Azzone 2007). Capital market development may also influence IAF work, specifically through varying levels of corporate governance mechanisms (Mat Zain et al. 2006). Thus, we re-ran our main analysis by each of the following geographic regions available in the CBOK (2015): Africa, Asia and Oceania, Europe, Latin America, and North America. Table 5 summarizes the results.

The results differ across regions, with at least two of our four hypothesized relationships supported in every region. *IAFInvolveRiskMgt* is significant in Africa and Asia and Oceania, *OrgIndustry* is significant in Asia and Oceania and in North America, *IAFAge* is significant in Africa, Europe, and Latin America. *ORGReleaseSustainRpt* is significant in all five regions. All the overall models are significant, with classification accuracies ranging from 51.6 to 72.4% and pseudo R^2s ranging from 6.8 to 31.6%. Also, the Homer and Lemeshow goodness of fit tests are insignificant in every model, suggesting that they are all good fits for the data.

While we include a control variable for listed firms vs. other organizations, there may still be confounding issues with the interpretation of the results. Thus, we ran a separate analysis for listed firms, unlisted firms, and governmental/not-for-profit/other organizations. We report the results in Table 6.

Results by organization type vary, but overall provide support for our hypotheses. *IAFInvolveRiskMgt i*s significant for all organization types. *OrgIndustry* is significant for listed firms and government/non-profit/other organizations. *IAFAge* is significant for listed firms and governmental/not-for-profit/other organizations. *ORGReleaseSustainRpt* is significant for all organization types. The models are significant for all organization types, with classification accuracies from 55.6 to 65.0% and pseudo R^2s from 8.5 to 16.8%. Also, the Homer and Lemeshow goodness of fit tests are insignificant in all models, suggesting that the model is a good fit for every organisation type.

Further, for our main analysis, we took the responses from the CBOK (2015) and created a binary variable for our dependent variable *SustainabilityAudit*. In a separate analysis, we ran an ordinal regression to capture each of the following four levels of IAF involvement in sustainability audits, as denoted by the survey respondents:[10]

1. None
2. Minimal

[10] We deleted responses of *Not applicable/I don't know* for this analysis.

Table 5 Binary logistic regression model by region

Region	Africa		Asia and Oceania		Europe		Latin America		North America	
n	155		527		649		246		442	
	β	Sig.[a]	β	Sig.[a]	β	Sig.[a]	β	Sig.[a]	β	Sig.[a]
IAFInvolveRiskMgt (H1)	1.236	**< 0.01**	0.647	**< 0.01**	0.120	0.279	0.137	0.328	0.454	**0.063**
OrgIndustry (H2)	0.609	0.204	1.290	**< 0.01**	0.465	0.145	0.192	0.380	1.038	**< 0.01**
IAFAge (H3)	0.037	**0.084**	0.006	0.206	0.006	**0.096**	0.021	**0.025**	0.008	0.138
OrgReleaseSustainRpt (H4)	0.788	**0.071**	0.989	**< 0.01**	0.566	**< 0.01**	0.748	**0.015**	1.853	**< 0.01**
ORGSize	0.275	0.272	−0.510	**< 0.01**	0.275	**0.059**	0.199	0.244	0.142	0.276
ORGListed	0.372	0.258	0.173	0.183	0.284	**0.063**	0.466	0.116	−0.821	**< 0.01**
IAFSize	−0.001	0.178	0.001	0.111	0.000	0.406	0.000	0.152	0.000	0.197
OrgRiskMgtDeveloped	0.992	**< 0.01**	0.133	0.243	0.064	0.358	0.121	0.335	−0.033	0.444
CAEExperience	−0.027	0.193	−0.004	0.364	−0.012	0.118	0.009	0.287	0.024	**0.016**
CAEEnvExperience			0.718	0.277	0.739	0.282	−0.549	0.385		
CAEEducation	0.311	0.219	0.235	0.109	−0.325	**0.034**	0.470	**0.050**	−0.076	0.369
Constant	−1.215	0.011	−0.227	0.148	−0.441	0.029	−1.224	0.001	−1.700	0.000
Chi-square (significance)	41.50 (**< 0.01**)		46.90 (**< 0.01**)		34.00 (**< 0.01**)		22.18 (**< 0.01**)		46.44 (**< 0.01**)	
Goodness of fit (Homer and Lemeshow)	6.135 (0.63)		3.578 (0.89)		8.66 (0.37)		10.80 (0.21)		2.60 (0.96)	
Classification accuracy	71.0%		55.0%		55.3%		51.6%		72.4%	
Nagelkerke pseudo R^2	31.6%		11.4%		6.8%		11.5%		14.4%	

DV: Is the internal audit function involved in sustainability assurance?

n = 2019

See Table 1 for the definitions of the variables

Bold values denote statistical significance

[a]One-tailed

Table 6 Binary logistic regression model by organization type

Organization type	Listed		Unlisted		Govt./not-for-profit/ other	
n	644		648		727	
	β	Sig.[a]	β	Sig.[a]	β	Sig.[a]
IAFInvolveRiskMgt (H1)	0.378	**0.040**	0.610	**< 0.01**	0.319	**0.041**
OrgIndustry (H2)	0.989	**< 0.01**	0.331	0.224	0.721	**0.034**
IAFAge (H3)	0.008	**0.099**	0.007	0.114	0.014	**0.016**
OrgReleaseSustainRpt (H4)	0.786	**< 0.01**	1.086	**< 0.01**	0.631	**< 0.01**
ORGSize	− 0.007	0.968	0.106	0.281	0.013	0.468
IAFSize	0.001	0.116	0.000	**0.076**	0.000	0.266
OrgRiskMgtDeveloped	− 0.030	0.435	0.198	0.126	0.079	0.314
CAEExperience	− 0.003	0.767	0.007	0.229	0.013	**0.073**
CAEEnvExperience	− 0.219	0.831	22.192	0.500	1.177	0.164
CAEEducation	0.024	0.445	− 0.108	0.274	− 0.158	0.159
Anglo-Saxon	− 1.315	**< 0.01**	− 1.085	**< 0.01**	− 0.829	**< 0.01**
Constant	− 0.216	0.152	− 0.689	**< 0.01**	− 0.631	**< 0.01**
Chi-square (significance)	88.869 (**< 0.01**)		74.563 (**< 0.01**)		47.410 (**< 0.01**)	
Goodness of fit (Homer and Lemeshow)	12.27 (0.14)		4.284 (0.83)		11.385 (0.181)	
Classification accuracy	62.3%		65.0%		55.6%	
Nagelkerke pseudo R^2	16.8%		14.7%		8.5%	

DV: Is the internal audit function involved in sustainability assurance?

n = 2019

See Table 1 for the definitions of the variables

Bold values denote statistical significance

[a]One-tailed

3. Moderate
4. Extensive.

Table 7 details the results.

As shown, the overall χ^2 is highly significant ($p < 0.01$) for the model, with a pseudo R^2 of 12.9%. Also, the Pearson goodness of fit is insignificant ($p = 0.99$), suggesting that the model is a good fit for the data. The results indicate that all our independent variables remain significant in the ordinal model, further supporting our hypotheses.

As many proxies are used for organization size in the internal audit research, we re-ran our main analysis using revenues (e.g., Christ et al. 2015) and total assets (e.g., Prawitt et al. 2009; Abdolmohammadi and Sarens 2011) instead of full-time-equivalent employees. Our results (not tabulated) remain similar.

Table 7 Ordinal regression model

Variable	Expected sign	β	Wald	Sig.[a]
None	+	0.554	23.554	**< 0.01**
Minimal	+	1.905	241.359	**< 0.01**
Moderate	+	3.761	545.236	**< 0.01**
IAFInvolveRiskMgt (H1)	+	0.439	17.906	**< 0.01**
OrgIndustry (H2)	+	0.745	15.996	**< 0.01**
IAFAge (H3)	+	0.009	10.081	**< 0.01**
OrgReleaseSustainRpt (H4)	+	0.870	62.640	**< 0.01**
ORGSize	+	− 0.015	0.026	0.44
ORGListed	+	0.195	4.011	**0.02**
IAFSize	+	0.000	0.350	0.27
OrgRiskMgtDeveloped	+	0.106	1.339	0.12
CAEExperience	+	0.004	0.785	0.19
CAEEnvExperience	+	0.693	1.260	0.13
CAEEducation	+	− 0.083	0.847	0.18
Anglo-Saxon	+	− 1.097	77.289	**< 0.01**
Chi-square (significance)	201.731 (< 0.01)			
Pearson goodness of fit (significance)	5734 (0.99)			
Nagelkerke pseudo R^2	12.90%			

DV: Is the internal audit function involved in sustainability assurance?

n = 2019

See Table 1 for the definitions of the variables

Bold values denote statistical significance

[a]One-tailed

We took one of our independent variables, *OrgReleaseSustainRpt* from the CBOK (2015), which asked *Does your organization plan to release a report on sustainability?* and gave these choices:

1. Yes, this year
2. Yes, at some point in the next 2 to 3 years
3. Yes, at an unspecified point in the future
4. No
5. I am not familiar with the Integrated Reporting (⟨IR⟩) Framework
6. I don't know.

We ran an additional analysis and discarded responses (4) no; (5) am not familiar with the Integrated Reporting (⟨IR⟩) Framework; and (6) I don't know. Our results did not hold (n = 931), This is because there were 328 instances where CAEs answered no (4), but where the IAF is still involved in sustainability assurance. Thus, involvement in sustainability assurance by the IAF or another party may not require any reporting, as they may be involved in sustainability activity assurance.

5 Discussion and conclusions

Our CBOK-based (2015) sample of 2019 CAEs of various organizations worldwide reveals that IAF involvement in risk assessment is significantly and positively associated with the IAF conducting audits of sustainability. Results also indicate that IAFs whose organizations operate in environmentally sensitive and larger IAFs are significantly more likely to be involved in sustainability audits. Finally, we find that organizations that release a sustainability report are significantly more likely to involve their IAFs in sustainability audits. Of the control variables, organizations in Anglo-Saxon countries are significantly less likely to involve their IAFs in sustainability audits, while listed organizations are more likely to involve their IAFs in sustainability audits.

Our findings are useful for practitioners, The IIA, and policy-makers. They enable practitioners to benchmark their activities against the reported results. Also, we contribute to the policy debate regarding a combined assurance model for integrated reporting by demonstrating that many companies already possess the internal resources to provide assurance therein. Finally, all stakeholders may benefit from this research as it indicates internal attributes that may improve sustainability activities/reporting by promoting assurance and consulting therein.

Like other survey-based research, our study has limitations, which open avenues for additional research. First, we do not assess the contributions of IAF involvement in sustainability assurance. We recognize that the effectiveness of IAF involvement therein may vary widely, as some research is critical of the IAF's contributions. Also, while practitioner survey responses are very valuable in the sense that these professionals are very knowledgeable and insightful about internal audit issues in their organizations, the data they provide may represent their perceptions and not necessarily reality. Future qualitative studies of a small sample of organizations may help us to find the exact nature of IAF involvement in sustainability auditing. As our data is from the CBOK (2015) survey, it is cross-sectional and does not allow for time-series or lagged analyses. Further, as the survey was administered by The IIA, our dependent variable does not allow us to determine the exact nature and scope of sustainability auditing. Also, our results denote correlations, and not necessarily causality. Moreover, although our sample of CAEs is large, it is still too limited to conduct a country-specific analysis. Further, similar to all survey data, our results must be interpreted with caution, as there is a risk of spurious correlations. This, along with the fact that, although significant, our results are small in effect size, means that omitted variables may influence the relationship between our dependent and test variables. Future studies may benefit from analyzing specific countries. Such studies will require an analysis of cultural dimensions, legal/regulatory characteristics and economic variables in various countries.

Finally, while our findings indicate an association between sustainability reporting and risk assessment and sustainability audits by IAFs, we acknowledge that such relationships are not necessarily causal. However, in our view, our results are informative in highlighting some previously unexamined internal

conditions under which organizations involve their IAFs in sustainability audits. Future qualitative interviews with CAEs, ACs and management may help to disentangle the determinants of IAF engagement in sustainability auditing. Studies can also examine additional organization-specific variables and can utilize a multilevel approach to further examine country-specific differences.

Acknowledgements The authors gratefully acknowledge the Institute of Internal Auditors Research Foundation (IIARF) for permission to use its 2015 Common Body of Knowledge in Internal Auditing (CBOK 2015) database for this study. The paper has benefitted from comments on an earlier version of this paper by Mohammad Abdolmohammadi, Jean Bedard, Tony Buono, Jeff Cohen, Kathryn Jervis, Jay Thibodeau, and Ari Yezegel. Finally, the authors greatly appreciate the comments from two anonymous reviewers whose comments greatly helped improve the paper.

Data availability Please contact The Institute of Internal Auditors Research Foundation which owns the CBOK (2015) database used in this study.

References

Abbott, L. J., Parker, S., & Peters, G. F. (2010). Serving two masters: The association between audit committee internal audit oversight and internal audit activities. *Accounting Horizons, 24*(1), 1–24.

Abdolmohammadi, M. J., & Boss, S. R. (2010). Factors associated with IT audits by the internal audit function. *International Journal of Accounting Information Systems, 11*(3), 140–151.

Abdolmohammadi, M. J., & Sarens, G. (2011). Monitoring effects of the internal audit function: Agency theory versus other explanatory variables. *International Journal of Auditing, 15,* 1–20.

AccountAbility. (2008). *AA 1000 Standards.* Retrieved from http://www.accountability.org/standards/.

Adams, C. A. (2002). Internal organizational factors influencing corporate social and ethical reporting: Beyond current theorising. *Accounting, Auditing and Accountability Journal, 15*(2), 223–250.

Adams, C. A., & Evans, R. (2004). Accountability, completeness, credibility and the audit expectations gap. *Journal of Corporate Citizenship, 14,* 97–115.

Adams, C. A., Hill, W. Y., & Roberts, C. B. (1998). Corporate social reporting practices in Western Europe: legitimating corporate behaviour? *The British Accounting Review, 30*(1), 1–21.

Allegrini, M., D'Onza, G., Sarens, G., & Selim, G. (2011). *The institute of internal Auditor's Global Internal Audit Survey: A component of the CBOK study. Report IV: What's next for internal auditing?*. The Institute of Internal Auditors. Florida: Altamonte Springs. Retrieved from https://na.theiia.org/iiarf/Public%20Documents/Whats-Next-for-Internal-Auditing.pdf.

Allegrini, M., & Greco, G. (2013). Corporate boards, audit committees and voluntary disclosure: Evidence from Italian Listed Companies. *Journal of Management and Governance, 17*(1), 187–216.

Al-Shaer, H., & Zaman, M. (2018). Credibility of sustainability reports: The contribution of audit committees. *Business Strategy and the Environment, 27*(7), 973–986.

Arena, M., & Azzone, G. (2007). Internal audit departments: Adoption and characteristics in Italian companies. *International Journal of Auditing, 11*(2), 91–114.

Arena, M., & Azzone, G. (2009). Identifying organizational drivers of internal audit effectiveness. *International Journal of Auditing, 13*(1), 43–60.

Bae, S., & Seol, I. (2006). An exploratory empirical investigation of environmental audit programs in S&P 500 companies. *Management Research News, 29*(9), 573–579.

Ball, A., Owen, D. L., & Gray, R. H. (2000). External transparency or internal capture? The role of third party statements in adding value to corporate environmental reports. *Business Strategy and the Environment, 9*(1), 1–23.

Ballou, B., Casey, R. J., Grenier, J. H., & Heitger, D. L. (2012). Exploring the strategic integration of sustainability initiatives: Opportunities for accounting research. *Accounting Horizons, 26*(2), 265–288.

Beasley, M. S., Clune, R., & Hermanson, D. (2006). *The impact of enterprise risk management on the internal audit function*. DigitalCommons@ Kennesaw State University.

Bebbington, J., Unerman, J., & O'Dwyer, B. (2014). *Sustainability accounting and accountability*. London: Routledge.

Carcello, J. V., Hermanson, D. R., & Ye, Z. (2011). Corporate governance research in accounting and auditing: Insights, practice implications, and future research directions. *Auditing: A Journal of Practice and Theory, 30*(3), 1–31.

Cascone, J., Derose, J., & Nefedova, A. (2010). Equipped to sustain: Is your audit plan comprehensive enough to help the organization meet today's sustainability needs? *Internal Auditor, 67*(6), 49–53.

CBOK. (2015). *Common body of knowledge in internal auditing*. Altamonte Springs: The Institute of Internal Auditors Research Foundation.

Chapman, C. (2001). Raising the bar. *Internal Auditor, 58*(2), 55.

Cho, H. C., Michelon, G., Patten, D. M., & Roberts, R. W. (2014). CSR report assurance in the USA: An empirical investigation of determinants and effects. *Sustainability Accounting, Management and Policy Journal, 5*(2), 130–148.

Christ, M. H., Masli, A., Sharp, N. Y., & Wood, D. A. (2015). Rotational internal audit programs and financial reporting quality: Do compensating controls help? *Accounting, Organizations and Society, 44,* 37–59.

Cohen, J., Krishnamoorthy, G., & Wright, A. (2004). The corporate governance mosaic and financial reporting quality. *Journal of Accounting Literature*, 87–152.

Cohen, J., Krishnamoorthy, G., & Wright, A. (2008). Form versus substance: The implications for auditing practice and research of alternative perspectives on corporate governance. *Auditing: A Journal of Practice and Theory, 27*(2), 181–198.

Cohen, J. R., & Simnett, R. (2014). CSR and assurance services: A research agenda. *Auditing: A Journal of Practice and Theory, 34*(1), 59–74.

Cormier, D., & Magnan, M. (1999). Corporate environmental disclosure strategies: Determinants, costs and benefits. *Journal of Accounting, Auditing and Finance, 14*(4), 429–451.

CorporateRegister.com Ltd. (2019). *Corporateregister.Com Total CSR Reports Published*. Retrieved from http://www.corporateregister.com.

Cowen, S. S., Ferreri, L. B., & Parker, L. D. (1987). The impact of corporate characteristics on social responsibility disclosure: A typology and frequency-based analysis. *Accounting, Organizations and Society, 12*(2), 111–122.

Coyne, K. L. (2006). Sustainability auditing. *Environmental Quality Management, 16*(2), 25–41.

Cuadrado-Ballesteros, B., Martínez-Ferrero, J., & García-Sánchez, M. I. (2017). Mitigating information asymmetry through sustainability assurance: The role of accountants and levels of assurance. *International Business Review, 26,* 1141–1156.

Dahlsrud, A. (2008). How corporate social responsibility is defined: An analysis of 37 definitions. *Corporate Social Responsibility and Environmental Management, 15*(1), 1–13.

Darnall, N., Seol, I., & Sarkis, J. (2009). Perceived stakeholder influences and organizations' use of environmental audits. *Accounting, Organizations and Society, 34*(2), 170–187.

DeSimone, S. M. (2018). *Internal audit and financial reporting quality in the public sector.* Working paper.

Dhaliwal, D. S., Li, O. Z., Tsang, A., & Yang, Y. G. (2011). Voluntary nonfinancial disclosure and the cost of equity capital: The initiation of corporate social responsibility reporting. *The Accounting Review, 86*(1), 59–100.

Dhaliwal, D. S., Radhakrishnan, S., Tsang, A., & Yang, Y. G. (2012). Nonfinancial disclosure and analyst forecast accuracy: International evidence on corporate social responsibility disclosure. *The Accounting Review, 87*(3), 723–759.

Druckman, P. (2013). *Internal audit is the glue*. Retrieved from http://integratedreporting.org/news/paul-druckman-internal-audit-is-the-glue/.

Erasmus, L., & Coetzee, P. (2018). Drivers of stakeholders' view of internal audit effectiveness. *Managerial Auditing Journal, 33*(1), 90–114.

Farooq, M. B., & De Villiers, C. (2017). The market for sustainability assurance services: A comprehensive review of the literature and future avenues for research. *Pacific Accounting Review, 29*(1), 79–106.

Gallo, P. J., & Christensen, L. J. (2011). Firm size matters: An empirical investigation of organizational size and ownership on sustainability-related behaviors. *Business and Society, 50*(2), 315–349.

Gillet-Monjarret, C., & Rivière-Giordano, G. (2017). Sustainability assurance: A literature review. *Journal of Accounting Control Audit, 23*(2), 11–62.

Global Reporting Initiative. (2013). The external assurance of sustainability reporting. Retrieved from https://www.globalreporting.org/resourcelibrary/GRI-Assurance.pdf.

Global Reporting Initiative. (2017). Global reporting initiative. Retrieved from https://www.globalreporting.org/Pages/default.aspx.

Goodwin-Stewart, J., & Kent, P. (2006). The use of internal audit by Australian companies. *Managerial Auditing Journal, 21*(1), 81–101.

Gramling, A. A., Maletta, M. J., Schneider, A., & Church, B. K. (2004). Role of the internal audit functions in corporate governance. *Journal of Accounting Literature, 23,* 194–244.

Gramling, A. A., & Myers, P. M. (2006). Internal auditing's role in ERM: As organizations lay their enterprise risk groundwork, many auditors are taking on management's oversight responsibilities, new research finds. *Internal Auditor, 63*(2), 52–58.

Gray, G. L., No, W. G., & Miller, D. W. (2014). Internal auditors' experiences and opinions regarding green it: Assessing the gap in normative and positive perspectives. *Journal of Information Systems, 28*(1), 75–109.

Gürtürk, A., & Hahn, R. (2016). An empirical assessment of assurance statements in sustainability reports: Smoke screens or enlightening information? *Journal of Cleaner Production, 136,* 30–41.

Hahn, R., & Kühnen, M. (2013). Determinants of sustainability reporting: A review of results, trends, theory, and opportunities in an expanding field of research. *Journal of Cleaner Production, 59,* 5–21.

Hart, S. L., & Sharma, S. (2004). Engaging fringe stakeholders for competitive imagination. *Academy of Management Executive, 18*(1), 7–18.

Hermanson, D. R., & Rittenberg, L. E. (2003). Internal audit and organizational governance. *Research Opportunities in Internal Auditing*, *1*, 25–71. Retrieved from https://na.theiia.org/iiarf/Public%20Documents/Chapter%202%20Internal%20Audit%20and%20Organizational%20Governance.pdf.

Herzig, C., & Schaltegger, S. (2006). Corporate sustainability reporting: An overview. In S. Schaltegger, M. Bennett, & R. L. Burritt (Eds.), *Sustainability accounting and reporting* (pp. 301–324). Dordrecht: Springer.

Hodge, K. N., & Subramaniam, J. S. (2009). Assurance of sustainability reports: Impact on report users' confidence and perceptions of information credibility. *Australian Accounting Review, 19*(3), 178–194.

Holder-Webb, L., Cohen, J., Nath, L., & Wood, D. (2009). The supply of corporate social responsibility disclosures among U.S. firms. *Journal of Business Ethics, 84*(4), 497–527.

Huggins, A., Green, W. J., & Simnett, R. (2011). The competitive market for assurance engagements on greenhouse gas statements: Is there a role for assurers from the accounting profession? *Current Issues in Auditing, 5*(2), A1–A12.

Hummel, K., Schlick, C., & Fifka, M. (2017). The role of sustainability performance and accounting assurors in sustainability assurance engagements. *Journal of Business Ethics, 154*(3), 733–757.

International Integrated Reporting Council (IIRC). (2013). *The international integrated reporting framework*. Retrieved from https://integratedreporting.org/wp-content/uploads/2013/12/13-12-08-THE-INTERNATIONAL-IR-FRAMEWORK-2-1.pdf.

International Organization for Standardization. (2014). *ISO 26000: Guidance on social responsibility*. Retrieved from http://www.iso.org/iso/home/standards/iso26000.htm.

Jones, M. J., & Solomon, J. F. (2010). Social and environmental report assurance: Some interview evidence. *Accounting Forum, 34*(1), 20–31.

Kemp, D., Owen, J. R., & Van de Graaff, S. (2012). Corporate social responsibility, mining and audit culture. *Journal of Cleaner Production, 24,* 1–10.

Knechel, W. R., Salterio, S., & Ballou, B. (2007). *Auditing: Assurance and risk* (3rd ed.). Mason: Thomson-Southwestern.

Kolk, A., & Perego, P. (2010). Determinants of the adoption of sustainability assurance statements: An international investigation. *Business Strategy and the Environment, 19*(3), 182–198.

KPMG. (2015). The *KPMG survey of corporate responsibility reporting 2015*. Retrieved from https://assets.kpmg.com/content/dam/kpmg/pdf/2015/11/kpmg-international-survey-of-corporate-responsibility-reporting-2015.pdf.

Krishnan, J. (2005). Audit committee quality and internal control: An empirical analysis. *Accounting Review, 80,* 649–675.

Laufer, W. S. (2003). Social accountability and corporate greenwashing. *Journal of Business Ethics, 43*(3), 253–261.

Lenz, R., & Hahn, U. (2015). A synthesis of empirical internal audit effectiveness literature pointing to new research opportunities. *Managerial Auditing Journal, 30*(1), 5–33.

Lenz, R., & Sarens, G. (2012). Reflections on the internal auditing profession: What might have gone wrong? *Managerial Auditing Journal, 27*(6), 532–549.
Leung, P., Cooper, B. J., & Perera, L. (2011). Accountability structures and management relationships of internal audit: An Australian study. *Managerial Auditing Journal, 26*(9), 794–816.
Lozano, R., & Huisingh, D. (2011). Inter-linking issues and dimensions in sustainability reporting. *Journal of Cleaner Production, 19,* 99–107.
Manetti, G., & Becatti, L. (2009). Assurance services for sustainability reports: Standards and empirical evidence. *Journal of Business Ethics, 87*(1), 289–298.
Mat Zain, M. M., Subramaniam, N., & Stewart, J. (2006). Internal auditors' assessment of their contribution to financial statement audits: The relation with audit committee and internal audit function characteristics. *International Journal of Auditing, 10*(1), 1–18.
Mat Zain, M., Zaman, M., & Mohamed, Z. (2015). The effect of internal audit function quality and internal audit contribution to external audit on audit fees. *International Journal of Auditing, 19*(3), 134–147.
Mijatovic, I., & Stokic, D. (2010). The influence of internal and external codes on CSR practice: The case of companies operating in Serbia. *Journal of Business Ethics, 94*(4), 533–552.
Mock, T. J., Strohm, C., & Swartz, K. M. (2007). An examination of worldwide assured sustainability reporting. *Australian Accounting Review, 17*(41), 67–77.
Montiel, I. (2008). Corporate social responsibility and corporate sustainability. *Organization and Environment, 21*(3), 245–269.
Nieuwlands, H. (2006). Sustainability and Internal auditing. In: The Institute of Internal Auditors (Eds.), Almonte Springs, FL: The Institute of Internal Auditors Research Foundation. Retrieved from https://www.theiia.org/bookstore/product/sustainability-and-internal-auditing-1061.cfm.
Nieuwlands, H. (2007). Auditing sustainable development. *Internal Auditor, 64*(2), 91–93.
Nitkin, D., & Brooks, L. J. (1998). Sustainability auditing and reporting: The Canadian experience. *Journal of Business Ethics, 17*(13), 1499–1507.
O'Dwyer, B., & Owen, D. L. (2005). Assurance statement practice in environmental, social and sustainability reporting: A Critical evaluation. *The British Accounting Review, 37*(2), 205–229.
O'Dwyer, B., Owen, D. L., & Unerman, J. (2011). Seeking legitimacy for new assurance forms: The case of assurance on sustainability reporting. *Accounting, Organizations and Society, 36*(1), 31–52.
OECD. (2011). OECD guidelines for multinational enterprises. Retrieved from http://www.oecd.org/daf/inv/mne/48004323.pdf.
Owen, D. L., Swift, T. A., Humphrey, C., & Bowerman, M. (2000). The new social audits: Accountability, managerial capture or the agenda of social champions? *European Accounting Review, 9*(1), 81–98.
Patten, D. M. (2002). The relation between environmental performance and environmental disclosure: A research note. *Accounting, Organizations and Society, 27*(8), 763–773.
Perego, P., & Kolk, A. (2012). Multinationals' accountability on sustainability: The evolution of third-party assurance of sustainability reports. *Journal of Business Ethics, 110*(2), 173–190.
Peters, G. F., & Romi, A. M. (2015). The association between sustainability governance characteristics and the assurance of corporate sustainability reports. *Auditing: A Journal of Practice and Theory, 34*(1), 163–198.
Pflugrath, G., Roebuck, P. J., & Simnett, R. (2011). Impact of assurance and assurer's professional affiliation on financial analysts? Assessment of credibility of corporate social responsibility information. *Auditing: A Journal of Practice and Theory, 30*(3), 239–254.
Pickett, K. S. (2010). *The internal auditing handbook*. Hoboken: Wiley.
Pope, S., & Waeraas, A. (2016). CSR-washing is rare: A conceptual framework, literature review, and critique. *Journal of Business Ethics, 137*(1), 173–193.
Power, M. (1997). *The audit society: Rituals of verification*. Oxford: Oxford University Press.
Prawitt, D. F., Smith, J. L., & Wood, D. A. (2009). Internal audit quality and earnings management. *The Accounting Review, 84*(4), 1255–1280.
Raghunandan, K. R., Read, W. J., & Rama, D. V. (2001). Audit committee composition, gray directors, and interaction with internal auditing. *Accounting Horizons, 15,* 105–118.
Ridley, J., Da'Silva, K., & Szombathelyi, M. (2011). Sustainability assurance and internal auditing in emerging markets. *Corporate Governance: The International Journal of Business in Society, 11*(4), 475–488.
Sarens, G., & Abdolmohammadi, M. J. (2011). Monitoring effects of the internal audit function: Agency theory versus other explanatory variables. *International Journal of Auditing, 15*(1), 1–20.

Sarens, G., Allegrini, M., & D'Onza, G. (2011). Are internal auditing practices related to the age of the internal audit function? Exploratory evidence and directions for future research. *Managerial Auditing Journal, 26*(1), 51–64.

Sarens, G., Christopher, J., & Zaman, M. (2013). A study of the informal interactions between audit committees and internal auditors in Australia. *Australian Accounting Review, 23*(4), 307–329.

Sarens, G., De Beelde, I., & Everaert, P. (2009). Internal audit: The expert in providing comfort to the Audit Committee—The case of risk management and internal control. *British Accounting Review, 41,* 90–106.

Scarbrough, D. P., Rama, D. V., & Raghunandan, K. R. (1998). Audit committee composition and interaction with internal auditing: Canadian evidence. *Accounting Horizons, 12,* 51–62.

Selim, G., Woodward, S., & Allegrini, M. (2009). Internal auditing and consulting practice: A comparison between UK/Ireland and Italy. *International Journal of Auditing, 13*(1), 9–25.

Simnett, R., Vanstraelen, A., & Chua, W. F. (2009). Assurance on sustainability reports: An international comparison. *The Accounting Review, 84*(3), 937–967.

Social Accountability International. (2014). *Social accountability 8000 Standard*. Retrieved from http://www.sa-intl.org/index.cfm?fuseaction=Page.ViewPageandpageId=937.

Soh, D. S. B., & Martinov-Bennie, N. (2011). The Internal audit function. *Managerial Auditing Journal, 26*(7), 605–622.

Soh, D. S., & Martinov-Bennie, N. (2015). Internal auditors' perceptions of their role in environmental, social and governance assurance and consulting. *Managerial Auditing Journal, 30*(1), 80–111.

Spira, L. F., & Page, M. (2003). Risk management: The reinvention of internal control and the changing role of internal audit. *Accounting, Auditing and Accountability Journal, 16,* 640–661.

Stanwick, P. A., & Stanwick, S. D. (2001). Cut your risks with environmental auditing. *Journal of Corporate Accounting and Finance, 12*(4), 11–14.

Stewart, J., & Subramaniam, N. (2010). Internal audit independence and objectivity: Emerging research opportunities. *Managerial Auditing Journal, 25*(4), 328–360.

Swift, T., & Dando, N. (2002). From methods to ideologies: Closing the assurance expectations gap in social and ethical accounting, auditing and reporting. *Journal of Corporate Citizenship, 8,* 81–90.

Testa, F., Boiral, O., & Iraldo, F. (2018). Internalization of environmental practices and institutional complexity: Can stakeholders' pressures encourage greenwashing? *Journal of Business Ethics, 147*(2), 287–307.

The Institute of Internal Auditors. (2010). *Practice guide: Evaluating corporate social responsibility/sustainable development*. Almonte Springs, FL: The Institute of Internal Auditors. Retrieved from https://na.theiia.org/standards-guidance/recommended-guidance/practice-guides/Pages/Evaluating-Corporate-Social-Responsibility-and-Sustainable-Development-Practice-Guide.aspx.

The Institute of Internal Auditors. (2013). Standards for the professional practice of internal auditing (standards); *IPPF 1312—External assessments*. Almonte Springs, FL: The Institute of Internal Auditors. Retrieved from https://na.theiia.org/standards-guidance/Public%20Documents/IPPF%20 2013%20English.pdf.

The Institute of Internal Auditors. (2015). *IIA standards and guidance—International professional practices framework (IPPF)*. Retrieved from http://na.theiia.org/standards-guidance/pages/standards-and-guidance-ippf.aspx.

The Institute of Internal Auditors Research Foundation. (2009). *Internal audit capability model for the public sector*, The Institute of Internal Auditors Research Foundation. Almonte Springs, FL: The Institute of Internal Auditors. Retrieved from https://na.theiia.org/iiarf/Public%20Documents/Internal%20Audit%20Capability%20Model%20IA-CM%20for%20the%20Public%20Sector%20Overview.pdf.

Trotman, A. J., & Trotman, K. T. (2015). Internal audit's role in GHG emissions and energy reporting: Evidence from audit committees, Senior accountants and internal auditors. *Auditing: A Journal of Practice and Theory, 34*(1), 199–230.

Tschopp, D. (2012). How corporate social responsibility reporting standards address stakeholder needs in the Americas. *Environmental Management and Sustainable Development, 1*(2), 38–63.

Turley, S., & Zaman, M. (2004). The corporate governance effects of audit committees. *Journal of Management and Governance, 8,* 305–332.

United Nations Global Compact. (2012). *Global compact implementation survey: Annual review of business policies and actions to advance sustainability*. Retrieved from http://www.unglobalcompact.org/docs/news_events/8.1/2011_Global_Compact_Implementation_Survey.pdf.

United Nations Global Compact. (2016). *The ten principles of the UN global compact*. Retrieved from https://www.unglobalcompact.org/what-is-gc/mission/principles.

Van Marrewijk, M. (2003). Concepts and definitions of CSR and corporate sustainability: Between agency and communion. *Journal of Business Ethics, 44*(2), 95–105.

Wallage, P. (2000). Assurance on sustainability reporting: An auditor's view. *Auditing: A Journal of Practice and Theory, 19,* 53–65.

Zadek, S., Raynard, P., Forstater, M., & Oelschlaegel, J. (2004). *The future of sustainability assurance*. ACCA Research Report.

Zaman, M., & Sarens, G. (2013). Informal interactions between audit committees and internal audit functions: Exploratory evidence and directions for future research. *Managerial Auditing Journal, 28*(6), 495–515.

Steven DeSimone is an Assistant Professor of accounting at the College of the Holy Cross (United States). He holds a Ph.D. in Accounting from Bentley University (United States). His research focuses on internal audit and its role in corporate governance and financial reporting.

Giuseppe D'Onza is a Professor of risk management at the University of Pisa (Italy). He holds a master's in auditing and management control from the the University of Pisa (Italy). His research concentrates on corporate governance, risk management, auditing, and internal audit.

Gerrit Sarens is a Professor of auditing and governance at the Université Catholique de Louvain (Belgium). He holds a Ph.D. in applied economics sciences from the University of Ghent (Belgium). His main research area is internal auditing and corporate governance.