

Integrated Thinking and sustainability reporting assurance: International evidence

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Abstract

Recently, there has been increasing demand by stakeholders for firms to demonstrate how they create value within the context of their operating environment. Consequently, a new reporting approach, Integrated Reporting (IR), was conceptualised with its development linked to the firm's Integrated Thinking (IT). Yet very little is known about the effects of IT on firms' reporting decisions. Hence, we investigate whether IT influences firms' decision to publish an assured sustainability report. Using an international dataset, we find that IT is positively associated with sustainability reporting assurance. We also find that this association is moderated by the type of legal system such that for firms in code law countries, the IT effects are reduced. Nevertheless, the effects of IT remain strong indicating that IT is important for reporting decisions regardless of the firm's contextual setting. These findings have implications for policy makers and organisations interested in promoting high quality sustainability reporting.

Keywords: Integrated thinking; Sustainability reporting assurance; Integrated reporting; Legal systems; Stakeholder engagement.

1. Introduction

The publication of the Integrated Reporting (hereafter IR) Framework by the International Integrated Reporting Council (hereafter IIRC) in 2013 signalled a new era of corporate reporting. Firms would no longer have to communicate their activities through different and largely disconnected financial and non-financial (e.g. sustainability) reports, but would produce a single integrated report.¹ The idea of IR developed due to increasing demand by investors and other stakeholders for firms to publish a single report that integrates financial, social, and environmental information in a meaningful manner (KPMG, 2017). Such reporting approach promotes better

¹ IR is 'a concise communication about how an organization's strategy, governance, performance and prospects, in the context of its external environment, lead to the creation of value over the short, medium and long term' (IIRC, 2013, p. 7).

stakeholder engagement by the firm by enabling both financial and non-financial stakeholders to have a better understanding of the operations and value creation process of the firm and its performance, helping them to make informed decisions (Ballou et al., 2012; Jensen & Berg, 2012; Veltri & Silvestri, 2020).

According to the IIRC (2013), IR is as an ongoing process, unique for each firm, whose development is inseparably linked to the firm's Integrated Thinking (hereinafter IT). IT is defined as "*the active consideration by an organisation of the relationships between its various operating and functional units, and capitals it uses or affects*" in making short, medium and long-term value creation decisions (IIRC, 2013, p. 2).² In line with this, Churet et al. (2014), Knauer and Serafeim (2014) and The South African Institute of Chartered Accountants (SAICA, 2015) consider IT as a systematic approach by which firms strategically embed sustainability initiatives in their operations as they create sustainable value. The perspective embraced in this, is that IT is embedded into a firm's operations when the firm demonstrates understanding of the connectivity and interdependencies of its strategy, governance, performance and prospects within the context of its external operating environment. Such an understanding is believed to promote integrated decision-making and actions by the firm and to satisfy both its financial and nonfinancial stakeholders (Knauer & Serafeim, 2014). To the extent that IT promotes better stakeholder engagement, a firm's level of IT would have substantial effects on the decisions and outcomes relating to its sustainability strategy, including reporting decisions. Indeed, it is acknowledged that IT plays an important role in firms' reporting decision-making (Price Waterhouse Coopers, 2012; Adams & Simnett, 2011; Burke & Clarke, 2016; Feng et al., 2017). However, empirically, with

²IIRC (2013) identifies six capitals: financial, manufactured, intellectual, human, social and relationship, and natural capital.

the exception of Venter et al. (2017) who examine IT and tax disclosures, the impact of IT on firms' reporting decisions remains an open research question (see also Oliver et al., 2016).³

In this study, we employ an international sample of firms and explore whether differences in the level of IT across firms influence their sustainability reporting strategies. Specifically, we examine whether the level of a firm's IT influences the decision to publish independently assured sustainability disclosures. In addition, as prior literature suggests sustainability practices vary with the legal system (see Smith 2005; Simnett et al., 2009; Kolk & Perego, 2010), we further analyse whether the effects of the level of IT on the decision to publish an assured sustainability report differ by the type of legal system (code law vs common law) adopted in the country in which the firm is domiciled. In this case, we argue that the effects of IT on sustainability reporting may be less pronounced for firms domiciled in code law system countries because these settings are more stakeholder-oriented, and thus promoting sustainability report assurance (see Simnett et al., 2009; Kolk & Perego, 2010; Perego & Kolk, 2012). We believe examining the effects of IT on firm decisions, such as sustainability assurance, helps understanding of how integrating sustainability initiatives into corporate strategy and business models can help enhance transparency and potentially increase stakeholder confidence in published information. Additionally, investigating whether the effects of IT on assurance are moderated by the legal system provides useful insights into the sustainability practices across countries with different stakeholder orientation.

The assurance of sustainability information is a voluntary and unique practice that has generally seen relatively little empirical research compared to financial statement audits (Cohen & Simnett, 2015; Reimsbach et al., 2018).⁴ There is, however, a growing stream of studies that has

³To date, most of the literature on IT discusses primarily theoretical and conceptual issues (see Adams & Simnett, 2011; Adams, 2015; Feng et al., 2017).

⁴Cohen and Simnett (2015) outline four unique attributes of sustainability assurance that makes it different from the traditional financial statements audit. These are: '*the existence of a competitive (in contrast to monopolistic) market;*

increasingly focused attention on investigating sustainability assurance decisions (for reviews see Cohen & Simnett, 2015 and Velte & Stawinoga, 2017). In particular, these studies have examined whether the decision to purchase sustainability assurance is associated with micro-factors such as firm characteristics (e.g., De Beelde & Tuybens, 2015; Casey & Grenier, 2015), corporate governance factors (Zorio et al., 2013; Peters & Romi, 2015; Liao et al., 2018) and macro (country)-level factors such as legal systems (Simnett et al., 2009; Kolk & Perego, 2010; Perego & Kolk, 2012). We differ from these studies in that our central focus is on whether the level of IT in a firm plays a role in the decision to have sustainability reporting assured.

To explore our research objectives, we use an international dataset drawn from Thomson Reuters ASSET4 database. This database has been used in several other studies examining sustainability related issues (e.g., Michelon et al., 2015; Serafeim, 2015; Baboukardos, 2018). Similar to Knauer & Serafeim (2014), Serafeim (2015) and Venter et al. (2017), our measure of IT, based on ASSET4 data, captures a firm's capacity to maintain an overarching vision and strategy that integrates financial and extra-financial aspects of its business as well as its capacity to publicly commit to the implementation of its integrated strategy. Using this measure and a sample of 19,076 firm-year observations during the period 2002—2016 which spans across 47 countries, we find that the level of IT is significantly higher in firms that publish assured sustainability reports than their counterparts. Second, after controlling for factors known to be associated with assurance of sustainability reports (see Kolk & Perego, 2010; Cohen & Simnett, 2015; Velte & Stawinoga, 2017), we document that IT is significantly associated with the decision to publish an independently assured sustainability report. Finally, we find that the effect of the level of IT on assurance of sustainability reporting is moderated by the legal system of the country

the diversity of the subject matter examined; the lack of analytic rigor that arises in double-entry systems, and the relative lack of well-developed criteria' (p. 66).

in which the firm domiciles. In particular, the impact of IT on sustainability reporting assurance is reduced in code law countries compared to common law countries. One explanation for such reduction in IT effects is that code law countries, unlike common law countries, are more oriented towards a stakeholder, than shareholder, perspective (Ball et al., 200; Simnett et al., 2009; Kolk & Perego, 2010). Therefore, regardless of the level of IT, firms in these countries may have incentives to assure their sustainability reporting as a strategy to manage stakeholder relationships (Smith et al., 2005). In further analysis, we demonstrate that although the impact of IT in code law countries is not as strong as it is in common law countries, it remains statistically significant. Thus, overall, our findings are consistent with the view that the level of IT influences the firm's sustainability reporting strategy. The findings are robust to a number of alternative specifications.

Our paper contributes to the literature in a number of ways. First, we contribute to the literature relating to the underdeveloped research area of the impact of IT on firms' decision-making processes. In particular, our paper extends and complements a limited strand of studies demonstrating the positive impact of IT on the firm's investor base (Knauer & Serafeim, 2014; Serafeim, 2015) and transparency of tax disclosures (Venter et al., 2017). We do this by presenting the first evidence that firms' level of IT is associated with decisions related to the publication of assured sustainability disclosures. Second, we also contribute to the theoretical literature on the important role of IT in promoting a stakeholder-oriented decision-making process (see Adams & Simnett, 2011; Adams, 2015; Feng et al., 2017) and to recent calls for more empirical research on integration of sustainability into strategic planning process (Lokuwaduge & Heenetigala, 2017) and on the nature of the relationship between IR, IT and assurance (Maroun & Prinsloo, 2020). Third, the paper contributes to studies on the demand for assured sustainability reporting (e.g., Simnett et al., 2009; Kolk & Perego, 2010; Sethi et al., 2015). While these studies show the

importance of micro- and macro-level factors on decisions about sustainability report assurance, we document that a firm's level of IT also matters for the decision to assure sustainability reports. To this extent, our paper extends and informs the assurance literature as it suggests that in examining the factors influencing assurance sustainability information, IT needs to be captured as a critical factor. Finally, we provide new and interesting evidence of the role of countries' legal system in firms' sustainability reporting decision making as we show that the effects of IT on the decision to assure sustainability reporting is a function of the type of legal system.

The remainder of this study is structured as follows. The next section discusses the related literature and develops the three hypotheses of the study. We then describe the empirical model and the sample selection process. Next, we present and discuss the findings. Finally, we provide the conclusions of the study.

2. Literature review and hypothesis development

2.1 The concept of Integrated Thinking

As a concept, IT, as advocated by IIRC (2013), is not necessarily or completely new as it can be associated to the soft systems thinking which has been discussed in the sustainability literature.⁵ Sustainability authors such as Gray (1992), Epstein and Roy (2003) and Parker (2005), among others, have for long advocated for firms to adopt a soft systems thinking approach as a way of embracing the interrelatedness and dependencies of the firm and its environment. According to these authors, the adoption of a soft system thinking approach helps firms to move away from the siloed attention on financial capital towards a more integrated system with a holistic consideration

⁵ See Oliver et al., 2016 for a discussion of this literature

of the multiple capitals of the firm. Such an approach, they argue, would help firms (and policymakers) to effectively address the broader social and environmental impacts of corporate activities and to support sustainable development. Thus, IT as advocated by the IIRC (2013) is not a new concept although it has only recently gained much attention due to the release of the IIRC (2013) Framework and subsequent academic literature (e.g., Churet and Eccles, 2014; Knauer and Serafeim, 2014; Oliver et al., 2016; Dumay and Dai, 2017; Feng et al., 2017; Al-Htaybat and Alderti-Alhtaybat, 2018).

According to the IIRC (2013), IT is manifested through a firm's active and strategic consideration of the relationships between its operations and the multiple capitals it affects in creating sustainable value. Similarly, SAICA (2015) argues that IT helps firms to identify all factors affecting their business model and thus, to develop strategies that they will promote value creation over the short, medium and long term. Viewed in this way, IT can be defined as a firm's understanding of the connectivity of its strategy, governance, performance and prospects within the context of its external operating environment [World Intellectual Capital Initiative (WICI), 2013; see also Feng et al., 2016 and Dumay and Dai, 2017]. This, according to the IIRC (2013), includes the ability and the commitment of the firm's executives to consider the multiple salient capitals it uses and affects as well as the needs, interests and expectations of its stakeholders. Thus, a firm with high levels of IT exhibits better connectivity among its various functional units which, in turn, provides better understanding of its internal processes and relationships thereby helping to facilitate dialogue among the functional units (WICI, 2013; Dumay and Dai, 2017; Fasan & Mio, 2017). Dumay and Dai (2017) suggest that the existence of these IT dimensions helps the firm appreciate and understand the impact of decisions on all stakeholders that affect or are affected by its operations.

In this study, we draw from the above and from previous studies which adopt similar definitions (Serafeim, 2015; Oliver et al., 2016; Venter et al., 2017; Al-Htaybat and Alberti-Alhtaybat, 2018) and we employ, as proxy of IT, a firm's capacity to maintain an overarching vision and strategy that integrates financial and extra-financial aspects of its business.

2.2 Related studies

While there is a growing empirical literature examining IR⁶, very limited empirical attention has focused on IT and thus little is known about its effects on firms' reporting decisions. Yet, the IIRC (2013) and recent literature (Price Waterhouse Coopers, 2012; Adams & Simnett, 2015; Adams, 2015; Burke & Clarke, 2016; Feng et al., 2017) suggests that IT plays an important role in reporting decision-making. Venter et al (2017) provide, to the best of our knowledge, the only empirical evidence of the impact of IT on a firm's reporting decisions. Specifically, they show that there is a significant and positive relationship between IT and firm's tax-related disclosures. While Venter et al. (2017) provide insights into the effects of IT on firm disclosure strategy, whether IT influences a firm's sustainability reporting decisions remains an open question. In this study we empirically address this gap by examining an important aspect of a firm's sustainability reporting strategy: the voluntary decision to seek for assurance of its sustainability reporting.

Our study belongs to a strand of studies that investigates sustainability reporting assurance decisions (see Cohen & Simnett, 2015 and Velte & Stawinoga, 2017 for reviews). In summary, these studies have documented that the decision to seek assurance for sustainability reporting is driven by firm-specific factors, such as size, leverage, performance (De Beelde & Tuybens, 2015; Casey & Grenier, 2015; Sethi et al., 2017), corporate governance factors (Darnall et al., 2009;

⁶ For example, firms' decision to publish the report (e.g., Jensen & Berg, 2012; Garcia-Sanchez et al., 2013; Frias-Aceituno et al., 2014; see also Dumay et al., 2016 for a review)

Zorio et al., 2013; De Beelde & Tuybens, 2015; Peters & Romi, 2015; Liao et al., 2018) and country-level factors (Simnett et al., 2009; Kolk & Perego, 2010; Martinez-Ferrero & Garcia-Sanchez, 2017a). While these studies provide important insights into the drivers of sustainability reporting assurance, they do not examine whether the level of IT in a firm plays a role in the decision to publish assured sustainability reports. Hence our paper complements and extends these prior studies. We consider IT as one of the most critical drivers of sustainability reporting assurance. The rationale for our view derives from the fact that firms across the world are under increasing pressure, not only to strategically embed sustainability initiatives in their operations, but also to provide high quality integrated financial and sustainability information. Therefore, the ability of the firm to credibly demonstrate embedded sustainability and high-quality integrated information must depend upon their level of IT (IIRC, 2013; Serafeim, 2015).

2.3 Hypotheses development

Since the dawn of the 21st century, firms around the globe have increasingly engaged in different forms of sustainability reporting (Vormedal & Ruud, 2009). Drawing from the stakeholder theory perspective, Fasan and Mio (2017) and Gallego-Alvarez and Ortas (2017) argue that such reporting stems from firms' endeavours to satisfy the information needs of their stakeholders. Although there is substantial evidence that sustainability reporting is useful for stakeholders' decision-making purposes (Garcia-Sanchez et al., 2013; Wong & Millington, 2014), its reliability, consistency and transparency have been questioned (Wong & Millington, 2014; Martinez-Ferrero & Garcia-Sanchez, 2017a). For instance, Birkey et al. (2016) and Peters and Romi (2015) argue that the voluntary nature of sustainability reporting enables firms to use such reporting as tool of

impression management.⁷ Ballou et al. (2018) show that the quality of sustainability reporting is primarily questioned in cases where firms are found to emphasize their positive environmental and social impact and neglecting to report their negative impact.

Prior literature discusses how assurance of sustainability reporting is increasingly employed by firms as a means of alleviating stakeholders' concerns about sustainability reporting quality (Al-Shaer & Zaman, 2018). In particular, one stream of this literature focuses on the impact of sustainability reporting assurance on financial stakeholders' decisions. These studies show that the assurance of sustainability reporting has positive impact on investors' perception over the importance (Cheng et al., 2015) and credibility (Pflugrath et al., 2011; Brown-Liburd & Zamora, 2015) of sustainability reporting; and on firms' sustainability performance market valuation (Brown-Liburd & Zamora, 2015). Further, firms with assured sustainability reporting are found to have lower cost of capital (Casey & Grenier, 2015; Martinez-Ferrero & Garcia-Sanchez, 2017b) and lower analyst forecast errors and dispersion (Casey & Grenier, 2015).

Another stream of literature focuses on the role assurance plays in enhancing the credibility of, and stakeholders' confidence in, reported sustainability information (see O'Dwyer & Owen, 2005; Darnall et al., 2009; Simnett et al., 2009; Perego & Kolk, 2012; Casey & Grenier, 2015). This literature indicates that sustainability reporting assurance enhances transparency (Darnall et al., 2009; Simnett et al., 2009; Pflugrath et al., 2011; Perego & Kolk, 2012) and reduces inaccuracies and inconsistencies in the reporting process (Jones & Solomon, 2010; Kolk & Perego, 2010; O'Dwyer et al., 2011). More importantly, stakeholders' confidence towards sustainability reporting has been shown to be stronger for firms with assured sustainability reports (O'Dwyer & Owen, 2005; Hodge et al., 2009) and leading to relatively higher environmental reputation than

⁷ We note here that there is also some evidence, for example Kim et al. (2012), suggesting that firms that are strong in corporate social responsibility report higher quality earnings information.

their counterparts (Birkey et al., 2016). The central role of stakeholders in firms' decision to seek for assurance of their sustainability reporting is also evidenced by studies that show that firms which operate in stakeholder-oriented environments are more likely to engage in sustainability reporting assurance (Cuadrado-Ballesteros et al., 2017; Kolk & Perego, 2010).

Based on the discussion above, we have strong reasons to believe that firm's level of IT is associated with its decision to have its sustainability reporting assured by a third independent party. First, firms with high levels of IT are expected to better respond to the (information) needs of their key stakeholders (IIRC, 2013; Feng et al., 2017) and hence to engage in assurance of their sustainability reporting (Darnall et al., 2009; Simnett et al., 2009; Perego & Kolk, 2012). Second, as sustainability reporting has almost become standard practice (Khan et al., 2016; Cohen & Simnett, 2015; Birkey et al., 2016), firms with high levels of IT have incentives to signal that their sustainability reporting is not a greenwashing exercise, but it represents their commitment to embedding sustainability initiatives in their operations (IIRC, 2013; Churet et al., 2014; SAICA, 2015). Third, firms with high levels of IT may employ assurance not only as a tool to reduce information asymmetry, but also as means to deploy an internal control system that helps to support their decision-making and resource allocation (Knechel and Salterio, 2007), and to more effectively integrate sustainability initiatives with strategy (Ballou et al., 2012). In this context, we predict that firms with high levels of IT should engage more in seeking assurance for their sustainability reports. Hence, the main hypothesis of this paper is:

H1: *Firms with higher levels of Integrated Thinking are more likely to publish independently assured sustainability reports.*

The central argument in this paper, thus far, is that the firm's level of IT is an important determinant of its decision to have its sustainability reporting independently assured. However, at an international level, we suggest that the effects of IT on sustainability reporting assurance may differ by the type of legal system of the country where a firm domiciles in. Our view is underpinned by prior literature showing that country legal system influences firms' reporting strategies (see Meek et al., 1995; Saudagaran and Meek, 1997), including sustainability reporting strategies in general (e.g., Smith et al., 2005; Dhaliwal et al., 2012) and sustainability reporting assurance in particular (e.g., Mock et al., 2007; Simnett et al., 2009; Kolk & Perego, 2010; Martinez-Ferrero & Garcia-Sanchez, 2017a).

According to Smith et al. (2005), the type of legal system is particularly important because it determines the nature of firm's relationship with its stakeholders, and consequently its sustainability strategies. In relation to this, Ball et al. (2000) classifies countries with a common law legal system as having a shareholder-oriented model while the code law system countries are associated with stakeholder-oriented model. The shareholder-oriented model is built on the notion that the primary objective of the firm is to maximise value for shareholders—thus the legitimacy of other stakeholder groups is seen as of secondary importance (Ball et al., 2000; Smith et al., 2005; Kolk & Perego, 2010). In contrast, in the stakeholder-oriented model, the firm is viewed as having responsibilities towards a wide range of stakeholders; that is, a firm has social responsibilities that go beyond shareholder-value maximisation (Ball et al., 2000; Smith et al., 2005). This characterisation implies that sustainability strategies of firms between the two types of legal system may differ. In particular, by virtue of their focus on a broader stakeholder group, firms domiciled in stakeholder-oriented countries would more likely adopt sustainability strategies

that are geared towards a wider group of stakeholders than those domiciled in shareholder-oriented countries that are likely to focus mainly on shareholders.

In support of this view, Smith et al. (2005) and Dhaliwal et al. (2012) document that firms in stakeholder-oriented settings disclose higher quality sustainability disclosures than those in shareholder-oriented settings. They suggest that this is indicative of the responsiveness of these firms to the demands of stakeholders for quality information. Other related studies (e.g., Mock et al., 2007; Simnett et al., 2009; Kolk and Perego, 2010) show that sustainability disclosures in stakeholder-oriented settings are more likely to be assured than those in shareholder-oriented settings. These findings suggest that in stakeholder-oriented settings, firms are more likely to engage in assurance of their sustainability reporting primarily due to external pressures exerted by the institutional context than due to their internal processes. Hence, in such settings, the decision of a firm to engage in sustainability reporting assurance might be more driven by the stakeholder-oriented setting rather than the firm's level of IT. In contrast, in shareholder-oriented countries, where the pressure on firms to adopt a stakeholder orientation is weaker, the decision of a firm to engage in sustainability reporting assurance would be primarily driven by its intrinsic characteristics and consequently the level of IT is expected to play a more prominent role. Considering that in shareholder-oriented settings sustainability reporting assurance is still limited (see KPMG, 2013; Casey and Grenier, 2015; Peters and Romi, 2015) and that IT reflects firms' response to their key stakeholders needs (IIRC, 2013; Feng et al., 2017), incentives to assure sustainability disclosures would be greater for firms with higher levels of IT. Consequently, we formulate the following two hypotheses:

H2: *Firms domiciled in code law (stakeholder-oriented) countries are more likely to publish independently assured sustainability reports than firms in common law (shareholder-oriented) countries.*

H3: *The effects of Integrated Thinking on firms' decision to assure their sustainability reports are reduced in firms domiciled in code law (stakeholder-oriented) countries compared to firms domiciled in common law (shareholder-oriented) countries.*

3 Methodology and Data

3.1 Sample Selection and Data

In order to test our hypotheses, we draw our sample and relevant sustainability data from the Thomson Reuters ASSET4 database which is a comprehensive database of firm-level environmental, social and governance indicators with a worldwide coverage of firms and has been widely exploited in the sustainability reporting literature (e.g., Michelon et al., 2015; Miras-Rodríguez et al., 2015; Serafeim, 2015; Mervelskemper & Streit, 2017; Baboukardos, 2018). In addition, we draw financial data from the Thomson Reuters Datastream database.

Our sample spans over a long window and includes all firms with available data for the period from 2002 through 2016. Over this period 19,408 firm/year observations with available sustainability reporting assurance data are found. Due to lack of required financial data, 332 observations are eliminated. The resultant final sample comprises of 19,076 observations by 2,774 unique firms spanning over 10 industries and 47 countries.

[Insert Table 1 about here]

Table 1, Panel A presents the yearly distribution of the sample split into firm-observations without assured sustainability reporting (Without SRA - 10,367 observations) and those with

assured sustainability reporting (With SRA - 8,709 observations). As expected, we observe an increasing trend in the number of assured sustainability reporting over time. In Panel B, we show the distribution of the observations by industry. The industries with a notable high number of assured sustainability reporting over time are utilities (63%), telecommunications (58%), and basic materials (57%). The rest of the industries are below 50%.⁸

3.2 Model Specification and Variable Measurement

We employ a pooled logit regression model with industry and year fixed effects in our study. We consider this the most appropriate because our dependent variable, Sustainability Reporting Assurance (SRA), is a choice variable, taking the value of 1 if a firm's sustainability information is assured, and 0 if it is not assured (Maroun & Prinsloo, 2020). For testing the first two hypotheses, we regress SRA against our main variables of interest, Integrated Thinking (IT) and Legal system (LEG), controlling for a number of other factors of the decision to assure sustainability reporting. Specifically, we estimate the following model (1):

$$\begin{aligned} \text{SRA}_{it} = & \alpha_0 + \alpha_1 \text{IT}_{it} + \alpha_2 \text{LEG}_{it} + \alpha_3 \text{SIZE}_{it} + \alpha_4 \text{LEV}_{it} + \alpha_5 \text{TOBINQ}_{it} + \alpha_6 \text{ROE}_{it} + \alpha_7 \text{ETS}_{it} + \\ & \alpha_8 \text{GC}_{it} + \alpha_9 \text{IND}_{it} + \alpha_{10} \text{YR}_{it} + \epsilon_{it} \end{aligned} \quad (1)$$

Of particular importance in our study is the concept of IT. Although IT has been closely connected to the concept of Integrated Reporting, the notion (although not the term) of IT is found to appear much earlier both in the literature and in practice. For instance, Gray (1992), Epstein and Roy (2003) and Parker (2005) have called for the adoption of a systems thinking approach which

⁸In Appendix A, we present the distribution by each country.

would enable firms to embrace the interrelatedness of their activities with their environment. In a similar vein, firms such as the Danish pharmaceutical firm Novo Nordisk began embedding sustainability into its business strategy as early as in 2004 (de Villiers et al, 2014).

A common characteristic that emerges from IT definitions in the academic literature (Gray, 1992; Epstein and Roy, 2003; Parker, 2005; Churet et al., 2014; Knauer and Serafeim, 2014; de Villiers et al., 2017; Venter et al., 2017; Al-Htaybat & Alberti-Alhtaybat, 2018) as well as practitioners literature (e.g. Novo Nordisk, 2005; IIRC, 2013; SAICA, 2015) is that IT represents the integration of financial and non-financial aspects of a firm's value creation process into its strategy and decision making. For instance, IIRC (2013) defines IT as "*The active consideration by an organization of the relationships between its various operating and functional units and the capitals (A/N: financial and others) that the organization uses or affects.*" (p.33). Based on this, prior studies (Serafeim, 2015; Maniora, 2017; Venter et al., 2017) have employed a proxy of IT derived from Thomson Reuters ASSET4 database. This proxy, which we also employ in this study, captures a firm's '*capacity to maintain an overarching vision and strategy that integrates financial and extra-financial aspects of its business*'. ASSET4 computes the score based on firms' observable characteristics and publicly available information.⁹ As noted in Serafeim (2015) and Venter et al. (2017), the proxy reflects a demonstration by the firm that it has capacity to integrate the economic, social and environmental dimensions into its operational decision-making processes. This aligns with the IIRC (2013) definition of IT. De Villiers et al. (2017) suggests that the ASSET4 proxy provides a measure of IT, thus "*...to capture whether integration is*

⁹ Although Thomson Reuters refrains from providing detailed description on how each item of the database is measured, the following description is given on its website: "*ASSET4 research analysts collect more than 600 data points per company... All data must be objective and publicly available, though analysts are permitted to contact company investor relations offices to learn the location of public data. Typical sources include stock exchange filings, CSRs, annual reports, non-governmental organization websites, and news sources.*" (source: <https://www.thomsonreuters.com/content/dam/openweb/documents/pdf/tr-com-financial/report/starmine-quant-research-note-on-asset4-data.pdf>)

incorporated into managers' day-to-day decision-making. This seems to measure the level of integrated thinking' in a firm..." (p.959).

Turning our attention to the second independent variable of interest, *LEG* captures whether the firm is domiciled in a stakeholder- or shareholder-oriented country. We measure *LEG* as a binary variable taking the value of 1 if the firm is in a code law country and 0 if it is in common law country. The classification of a country as code or common law is based on CIA factbook. Further, in order to test our third hypothesis, we estimate the following model (2) in which the variables *IT* and *LEG* are interacted:

$$\begin{aligned} \mathbf{SRA}_{it} = & \alpha_0 + \alpha_1 \mathbf{IT}_{it} + \alpha_2 \mathbf{LEG}_{it} + \alpha_3 (\mathbf{IT} \times \mathbf{LEG})_{it} + \alpha_4 \mathbf{SIZE}_{it} + \alpha_5 \mathbf{LEV}_{it} + \alpha_6 \mathbf{TOBINQ}_{it} + \\ & \alpha_7 \mathbf{ROE}_{it} + \alpha_8 \mathbf{ETS}_{it} + \alpha_9 \mathbf{GC}_{it} + \alpha_{10j} \mathbf{IND}_{it} + \alpha_{11y} \mathbf{YR}_{it} + \varepsilon_{it} \end{aligned} \quad (2)$$

The coefficient α_3 examines whether the effects of *IT* on assurance of sustainability data are moderated by the legal system. Based on our third hypothesis, coefficient α_3 is expected to be negative and statistically significant.

Finally, in both models we control for a number of variables that have been identified by previous studies as determinants of a firm's decision to seek for assurance of its sustainability reporting (see for example, Casey & Grenier, 2015; Kolk & Perego, 2010; Simnett et al., 2009).¹⁰ Following these studies, we include firm size (*SIZE*) in order to control for firm's visibility to social and environmental issues (Kolk & Perego, 2010; Simnett et al., 2009), leverage (*LEV*) and profitability (*ROE*) in order to control for the financial condition of the firm (Velte & Stawinoga, 2017) and, Tobin's Q (*TOBINQ*) in order to control for growth (Casey & Grenier, 2015). Further,

¹⁰ Appendix B provides details for variables' definitions and their sources

we control for firm's participation in an emission trading scheme (*ETS*) as Uddin and Hultedahl (2013) indicate that some schemes require or encourage assurance of firms sustainability reporting. Also, we control for firm's being signatory to United Nations Global Compact (*GC*) as Cetindamar (2007) demonstrates that voluntary participation to the United Nations Global Compact signals not only firms' economic but also ethical incentives to address stakeholder needs. Finally, we include industry fixed effects (*IND*) and year fixed effects (*YR*) to control for unobservable firm-invariant factors.

4. Findings

4.1 Descriptive Statistics and Univariate Analysis

In Table 2 Panel A, we present aggregate descriptive statistics for the full sample and for firm-year observations with and without sustainability reporting assurance (*SRA*) subsamples. As it can be observed, firms with *SRA* are significantly different from the firms without. In particular, *SRA* firms exhibit significantly higher levels of *IT* than firms without *SRA* and tend to be larger, more leveraged and with weaker growth prospects than firms without *SRA*. They are also more likely to participate in emission trading schemes and to be domiciled in code law (stakeholder-oriented) than common law (shareholder-oriented) countries.

In Panels B and C, we split our data into code law (stakeholder-oriented) countries and common law (shareholder-oriented) countries to understand whether there are differences among the two groups. In Panel B, the level of *IT* is significantly higher for firms in countries with a stakeholder-orientation (code law countries) than those in countries with a shareholder-orientation (common law countries). This suggests that overall, firms in stakeholder-oriented countries have

greater integration of sustainability initiatives into their corporate strategies and business models than in shareholder-oriented countries. Panel C shows that of the 8,709 *SRA* sample observations, 62.1% are from stakeholder-oriented countries and 37.9% from shareholder-oriented countries. This suggests that the practice of assuring sustainability reporting is more likely to be prevalent in stakeholder- than in shareholder-oriented countries. Surprisingly, however, Panel C shows that in the *SRA* group, firms in common law countries exhibit significantly higher levels of *IT* than those in code law countries. One explanation is that in common law countries, firms voluntarily commit to sustainability initiatives; whilst in code law countries, though not directly, the stakeholder orientation can be viewed as an imposition on firms to engage in sustainability initiatives. The voluntary commitment (as opposed to imposition) may lead to better integration of sustainability initiatives into their corporate strategies.

[Insert Table 2 about here]

Finally, Table 3 reports Pearson correlation coefficients among all variables. This analysis is helpful in two ways. First, it provides an initial test (at univariate level) of our main hypothesis, and second, it helps us determine the potential effects of correlated variables. At the univariate level, the results show that both *IT* and *LEG* variables are positively and significantly correlated to *SRA*. This finding is consistent with our first and second hypotheses. In relation to the correlations among the independent variables, the table shows that they are generally low, suggesting that multicollinearity is not a major problem.

[Insert Table 3 about here]

4.2 Main regression analyses

In this section, we report the results of the multivariate logit regression analyses. The main results are reported in Table 4. In Model 1, we present the results of the model testing H1 and H2. Model 2 extends Model 1 by including an interaction term between legal system and *IT* and, therefore, tests H3.

[Insert Table 4 about here]

As can be observed, in both Models 1 and 2 estimations, the coefficients of *IT* are positive and significant at the 1% level or better. This supports H1, suggesting that the probability of a firm publishing assured sustainability information is greater for firms with high level of *IT*. The odds ratio reveals that 1% increase in the level of a firm's *IT* corresponds to a 3.75% higher probability that a firm will seek assurance for its sustainability reporting. Our findings are consistent with those in Venter et al. (2017) on transparency tax disclosures, and with the notion that the level of *IT* influences firms' sustainability strategies, including decisions to assure their sustainability reporting. In addition, in both Models 1 and 2, the coefficients of *LEG* are positive and significant at the 1% level or better, supporting H2. Thus, consistent with prior studies (see Mock et al., 2007; Simnett et al., 2009; Kolk and Perego, 2010), firms in stakeholder-oriented countries are more likely to publish assured sustainability information compared to those in shareholder-oriented countries.

In relation to H3, the estimation of Model 2 shows that the interaction term, *LEG*IT*, is negative and significant at the 1% level or better. This indicates, in line with our proposition, that the effect of *IT* on *SRA* is reduced in code law countries that in common law. However, whilst

informative, the interaction term, $LEG*IT$ alone does not tell us the extent to which LEG influences the impact of IT on SRA in code law (stakeholder-oriented) countries. To examine this, we need to consider the total effects of IT on SRA when a firm operates in such a legal system. In our model 2, the coefficient α_1 indicates the effect of IT on SRA for any firm regardless of the legal system in which it operates. The coefficient of the interaction term, α_3 , is the incremental effect of IT on SRA for firms operating in code law countries. The sum of the coefficients of IT (α_1) and the interaction term $LEG*IT$ (α_3) measures the total effect of IT on SRA for firms operating in code law countries. In the context of our third hypothesis, H3, if the sum of the two coefficients is positive and significant, we can conclude that IT remains a significant determinant of SRA in code law countries. If the sum of the two coefficients is not found to be positive and significant, we can draw the conclusion that the effect of IT on SRA in code law countries is wiped out by the effect of the stakeholder orientation of these countries. Following Mangena et al. (2020), we perform a Wald test to check the significance of the sum of the coefficients ($\alpha_1 + \alpha_3$). We find that the coefficient of the sum of IT and $LEG*IT$ is positive (1.029) and statistically significant at the 1% level or better. This indicates that IT is an important factor in the decision to assure sustainability reports even in strong stakeholder-orientation settings where sustainability issues may be widely accepted as legitimate (Smith et al., 2005; Dhaliwal et al., 2012).

Finally, in relation to our control variables (in both models), we find that SRA is positively associated to size, leverage, financial performance, participation in an emission trading scheme and being signatory of the UN Global Compact. These results are consistent with prior studies (e.g., Casey & Grenier, 2015; Uddin & Holtedahl, 2013; Kolk & Perego, 2010; Simnett et al., 2009; Cetindamar, 2007).

4.3 Additional Analyses

Besides the main results presented above, several additional analyses are conducted to test the robustness of our findings for all three hypotheses. Tables 5, 6 and 7 present the results of these tests.

[Insert Table 5 about here]

In Table 5, we present a number of robustness checks. First, to mitigate concerns over reverse causality between SRA and the level of IT, the models in Table 4 are re-estimated with all independent variables being one-period lagged. Prior literature suggests that lagging independent variables can help reduce concerns about reverse causality (e.g., Klasa, 2007; Dittmar and Mahrt-Smith, 2007). Second, sustainability reporting practices can be seen as manifestation of managers' opportunistic behaviour in pursuing their own interests (Kim et al., 2012). Such incentives should prevail in firms with poor corporate governance mechanisms. In order to control for managers incentives (Kim et al, 2012) we include the variable CORP_GOV which is a percentage score of the quality of corporate governance as provided by ASSET4 database. Third we include country dummies to capture country-level effects as prior studies suggest country-specific factors have implications for firms' decisions (Smith et al., 2005; Dhaliwal et al., 2012). Finally, in order to mitigate data distribution problems, we re-estimate the models using winsorised data at 1% and 99% percentile. In all cases our results remain unchanged with the exception of variable LEG which is found insignificant in the third specification (country fixed effects). One explanation why LEG becomes insignificant is that it is already captured by the country fixed effects.

[Insert Table 6 about here]

In Table 6, we present results using various subsamples. First, we focus the analysis only on observations with a stand-alone sustainability report¹¹. In this manner, we follow Simnett et al. (2009) who base their analysis on firms with standalone sustainability reports as the vast majority of firms that seek assurance of their sustainability reporting, release a standalone report. Second, we re-estimate the models using as subsample of firms that follow the Global Reporting Initiative (GRI) guidelines¹². Ruhnke & Gabriel (2013) show that GRI adopting firms were more likely to assure their sustainability reports than non-adopters. Third, our sample observations start in 2002 and hence well-before the concept of IR and IT were introduced by IIRC. It is possible that this may influence our results. As can be seen from Table 1, during these earlier years, large number of observations are without assurance. To address this issue, we re-estimate our models based on a subsample of observation from 2010 onwards. The rationale is that in 2010 the IIRC was founded and, also IR became the standard mandated reporting practice for firms listed in the Johannesburg Stock Exchange. Finally, considering that firms' reporting practice is sticky and hence once a firm starts having its sustainability reporting assured, it would keep doing so, we re-estimate the models by using a subsample of firms which had their sustainability reporting assured for the first time. In all specifications results are maintained.

[Insert Table 7 about here]

¹¹ For identifying firms that publish a stand-alone sustainability report we use the Asset4 identifier CGVSDP026

¹² For identifying firms that adopt GRI guidelines for their sustainability reporting we use the Asset4 identifier: CGVSO06V

Finally, in Table 7, we present results using three alternative proxies of IT. First, we replace the IT variable with a second metric found on ASSET4 database which measures a firm's capacity to publicly commit to the implementation of its integrated strategy (IT2) (see also Serafeim, 2015; Venter et al., 2017). Further, we re-estimate the models by using the average of the variables IT and IT2. Finally, we perform factor analysis and use the first factor of the two variables IT and IT2. As in all previous specifications, the results using these three alternative proxies of IT are similar to the basic models.

5. Conclusions

In this study, we investigate whether firms' level of IT is associated to their decision to have sustainability reporting assured. Our study is motivated by the increased interest in Integrated Reporting, and the more recent attention on the concept of Integrated Thinking. It is broadly acknowledged in both professional and academic circles that a high level of IT manifests a firm's ability to embed in its activities the interdependencies among its strategy, governance, performance and prospects with its external environment. We posit that such ability promotes integrated decision-making and actions leading the firm to adopt strategies that are geared towards supporting the needs of its stakeholders. In this context, to the extent that IT promotes a firm's engagement with its stakeholders, a firm's level of IT would affect, amongst others, its sustainability reporting decisions. We focus, in this study, on one of the most straightforward manifestations of a firm's response to its stakeholders' information needs: Its decision to engage in independent assurance of its sustainability reporting and examine whether the decision to seek

for assurance of its sustainability reporting is a function of a firm's level of IT. In addition, we also examine whether and how such effects differ with the legal system in which the firm is domiciled.

Utilising a large international sample of firms over a period of 15 years, we find that firms' level of IT is positively associated with their decision to have their sustainability reporting assured by a third independent party. We also document that the effects of IT on assurance are moderated by the legal system such that in code law (stakeholder-oriented) countries the effects of IT are lower than in common law (shareholder-oriented) countries. We attribute these results to the fact that in code law countries the practice of sustainability reporting assurance can be viewed as an imposition perpetrated by the legal system's emphasis on stakeholders. This drives most firms to engage in sustainability, including assurance of sustainability reporting. On the contrary, sustainability initiatives can be viewed as entirely voluntary in common law countries such that firms that engage are more likely to have greater integration of their financial and non-financial aspects of their business into their strategy. It should be noted, however, that IT is found to be an important factor in the decision to assure sustainability reporting across all countries, but the association is more prominent in common law shareholder-oriented countries. Our results hold after controlling for several other factors known to affect decisions to provide assurance of sustainability reporting. In addition, our results hold for a numerous sensitivity tests.

Our study contributes to the very limited literature on Integrated Thinking by showing that a firm's the level of IT affects its reporting decisions, including engagement with assurance of their sustainability reporting. To the extent that assurance of sustainability reporting is a manifestation of a firm's commitment towards its stakeholders, our findings suggest that IT indeed enhances a more holistic approach of a firm's activities beyond the mainstream financial performance orientation. Such findings support IIRC and its advocates who argue that IR and in turn IT may

change the way we do business by adopting an integrated approach where financial and nonfinancial aspects of a firm's operations will be considered alike.

Finally, our findings and contributions must be considered in the context of limitations relating to measurement of IT. Our proxy (based on ASSET4 database) measures a firm's capacity to maintain an overarching vision and strategy that integrates financial and extra-financial aspects of its business; a firm's capacity to publicly commit to the implementation of its integrated strategy and; the average score and the common factor of these two proxies. Although we believe that our proxies are in line with the definition of IT given by the IIRC (2013), we urge future research to explore the concept and definition of IT in more depth. For instance, survey-based studies that explore different traits of IT within firms could be undertaken to help develop a measure of IT for individual firms.

References

- AccountAbility (2008). AA1000 Assurance Standard, retrieved from: https://www.accountability.org/wp-content/uploads/2016/10/AA1000AS_english.pdf
Accessed on 30.11.2018
- Adams, C. A. (2015). The International Integrated Reporting Council: A call to action. *Critical Perspectives on Accounting*, 27, 23–28.
- Adams, S. & Simnett, R. (2011). Integrated Reporting: An Opportunity for Australia's Not-for-Profit Sector. *Australian Accounting Review*, 58(21), 292-301.
- Al-Htaybat, K., & von Alberti-Alhtaybat, L. (2018). Integrated thinking leading to integrated reporting: case study insights from a global player. *Accounting, Auditing & Accountability Journal*, 31(5), 1435-1460.
- Al-Shaer, H., & Zaman, M. (2018). Credibility of sustainability reports: The contribution of audit committees. *Business Strategy and the Environment*, 27(7), 973-986.
- Baboukardos, D. (2018). The Valuation Relevance of Environmental Performance Revisited: The Moderating Role of Environmental Provisions. *British Accounting Review*, 50(1), 32-47.
- Baboukardos, D. & Rimmel, G. (2016). Value Relevance of Accounting Information Under an Integrated Reporting Approach: A Research Note. *Journal of Accounting and Public Policy*, 35, 437-452.
- Ballou, B., Chen, P. Grenier, J. H. & Heitger, D. L. (2018). Corporate Social Responsibility Assurance and Reporting Quality: Evidence from Restatements. *Journal of Accounting and Public Policy*, 37(2), 167-188.
- Birkey, R. N., Michelon, G., Patten, D. M. & Sankara, J. (2016). Does Assurance on CSR Reporting Enhance Environmental Reputation? An Examination in the US Context. *Accounting Forum*, 40(3), 143-152.
- Burke, J. J. & Clark, C. E. (2016). The Business Case for Integrated Reporting: Insights from Leading Practitioners, Regulators, and Academics. *Business Horizons*, 59, 273-283.
- Caritte, V., Acha, S. & Shah, N. (2015). Enhancing Corporate Environmental Performance Through Reporting and Roadmaps. *Business Strategy and the Environment*, 24, 289-308.
- Casey, R. J., & Grenier, J. H. (2015). Understanding and Contributing to the Enigma of Corporate Social Responsibility (CSR) Assurance in the United States. *Auditing: A Journal of Practice & Theory*, 34(1), 97-130.
- Cetindamar, D. (2007). Corporate social responsibility practices and environmentally responsible behavior: The case of the United Nations Global Compact. *Journal of Business Ethics*, 76(2), 163-176.
- Chartered Global Management Accountant - CGMA (2014). Integrated Thinking- The Next Step in Integrated Reporting. Retrieved from: <https://www.cgma.org/resources/reports/downloadabledocuments/integrated-thinking-the-next-step-in-integrated-reporting.pdf> Accessed on 30.11.2018
- Cheng, M. M., Green, W. J. & Ko, J. C. W. (2015). The Impact of Strategic Relevance and Assurance of Sustainability Indicators on Investors' Decisions. *Auditing: A Journal of Practice & Theory*, 34(1), 131-162.
- Cohen, J.R. and Simnett, R. (2015). CSR and Assurance Services: A Research Agenda. *Auditing: A Journal of Practice & Theory*, 34(1), 59-74

- Cuadrado-Ballesteros, B., Martinez-Ferrero, J. & Garcia-Sanchez, I. M. (2017). Mitigating Information Asymmetry through Sustainability Assurance: The Role of Accountants and Levels of Assurance. *International Business Review*; 26(6), 1141-1156.
- Churet, C., Sam, R. & Eccles, R. G. (2014). Integrated Reporting, Quality of Management, and Financial Performance. *Journal of Applied Corporate Finance*, 26(1), 46-64.
- Darnall, N., Seol, I & Sarkis, J. (2009). Perceived stakeholder influences and organizations' use of environmental audits, *Accounting, Organizations and Society*, 34, 170-187
- De Beelde, I. & Tuybens. (2015). Enhancing the credibility of reporting on corporate social responsibility in Europe. *Business Strategy and the Environment*, 24, 190-216
- De Villiers, C., L. Rinaldi & J. Unerman, J. (2014). Integrated reporting: insights, gaps and an agenda for future research. *Accounting, Auditing and Accountability Journal*, 27, 1042–1067.
- De Villiers, C., Venter, E. R. & Hsiao, P. K. (2017), Integrated Reporting: Background, Measurement Issues, Approaches and an Agenda for Future Research. *Accounting & Finance*, 57, 937-959.
- 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
- Dittmar, A. & Mahrt-Smith, J. (2007). Corporate governance and the value of cash holdings. *Journal of Financial Economics*, 83(3): 599–634.
- Dumay, J., & Dai, T. (2017). Integrated thinking as a cultural control?. *Meditari Accountancy Research*, 25(4), 574-604.
- Epstein, M.J. & Roy, M.J. (2003). Making the business case for sustainability: linking social and environmental actions to financial performance. *Journal of Corporate Citizenship*, 9, 79-96.
- Fasan, M. & Mio, C. (2017). Fostering Stakeholder Engagement: The Role of Materiality Disclosure in Integrated Reporting. *Business Strategy and the Environment*, 26, 288-305.
- Feng, T., Cummings, L., & Tweedie, D. (2017). Exploring integrated thinking in integrated reporting—an exploratory study in Australia. *Journal of Intellectual Capital*, 18(2), 330-353.
- Frias-Aceituno, J.V., Rodriguez-Ariza, L. and Garcia-Sanchez, I.M. (2014), Explanatory Factors of Integrated Sustainability and Financial Reporting. *Business Strategy and the Environment*, 23(1), 56-72.
- Gallego-Alvarez, I. & Ortas, E. (2017). Corporate Environmental Sustainability Reporting in the Context of National Culture: A Quantile Regression Approach. *International Business Review*, 26(2), 337-353.
- Garcia-Sanchez, I. M., Rodriguez-Ariza, L. & Frias-Aceituno, J. (2013). The Cultural System and Integrated Reporting. *International Business Review*, 22(5), 828-838.
- Global Reporting Initiative. (2011). Sustainability Reporting Guidelines, Amsterdam. Retrieved from: <https://www.globalreporting.org/resourcelibrary/G3.1-Guidelines-Incl-Technical-Protocol.pdf> Accessed on 30.11.2018
- Gray, R. (1992). Accounting and environmentalism: an exploration of the challenge of gently accounting for accountability, transparency and sustainability. *Accounting, Organizations and Society*, 17(5), 399-425.
- Hasan, M., Maijoor, S., Mock, T. J., Roebuck, P., Simnett, R. & Vanstraelen, A. (2005). The Different Types of Assurance Services and Levels of Assurance Provided. *International Journal of Auditing*, 9, pp. 91-102.

- Hodge, K., Subramaniam, N. and Stewart, J. (2009). Assurance of Sustainability Reports: Impact on Report Users' Confidence and Perceptions of Information Credibility, *Australian Accounting Review*, 19(3), 178-194
- International Integrated Reporting Council - IIRC (2013). The International Integrated Reporting <IR> Framework. Retrieved from: <http://integratedreporting.org/wp-content/uploads/2015/03/13-12-08-THE-INTERNATIONAL-IR-FRAMEWORK-2-1.pdf>
Accessed on: 30.11.2018
- Jensen, J. C., & Berg, N. (2012). Determinants of traditional sustainability reporting versus integrated reporting. An institutionalist approach. *Business Strategy and the Environment*, 21(5), 299-316.
- Jones, J. M. & Solomon, F. J. (2010). Social and Environmental Report Assurance: Some Interview Evidence. *Accounting Forum*, 34, 20-31.
- Khan, M.N., Serafeim, G. and Yoon, A. (2016). Corporate sustainability: First evidence on materiality, *The Accounting Review*, 91(6), 1697-1724.
- Kim, Y., Park, M. S., & Wier, B. (2012). Is earnings quality associated with corporate social responsibility?. *The Accounting Review*, 87(3), 761-796.
- Klasa, S. (2007). Why do controlling families of public firms sell their remaining ownership stake? *Journal of Financial and Quantitative Analysis*, 42(2): 339-367.
- Knauer, A. & Serafeim, G. (2014). Attracting long-term investors through integrated thinking and reporting: A clinical study of a Biopharmaceutical company, *Journal of Applied Corporate Finance*, 26(2), 57-64
- Knechel, W. R. & Salterio, S. E (2017). Auditing: Assurance and Risk. 4th Edition. New York: Routledge.
- Kolk, A & Perego, P. (2010). Determinants of the Adoption of Sustainability Assurance Statements: An International Investigation. *Business Strategy and the Environment*, 19, 182-198.
- KPMG, (2017). The Road Ahead. The KPMG Survey of Corporate Responsibility Reporting 2017. Retrieved from: <https://www.kpmg.com/crreporting> Accessed on: 30.11.2018
- Lackmann, J., Ernstberger, J & Stich, M. (2012). Market Reactions to Increased Reliability of Sustainability Information. *Journal of Business Ethics*, 107, 111–128.
- Liao, L., Lin, T.P. and Zhang, Y. (2018). Corporate board and corporate social responsibility assurance, *Journal of Business Ethics*, 150(1): 211-225.
- Lokuwaduge, C. S. D. S., & Heenetigala, K. (2017). Integrating environmental, social and governance (ESG) disclosure for a sustainable development: An Australian study. *Business Strategy and the Environment*, 26(4), 438-450.
- Mangena, M., Priego, A. & Mlizano, M. (2020). Bank Power, corporate boards, block ownership and the likelihood of financial distress: An investigation of Spanish listed firms, *Journal of Corporate Finance*, 64, <https://doi.org/10.1016/j.jcorpfin.2020.101636>
- Maniora, J. (2017). Is integrated reporting really the superior mechanism for the integration of ethics into the core business model? An empirical analysis. *Journal of Business Ethics*, 140(4), 755-786.
- Maroun, W., & Prinsloo, A. (2020). Drivers of combined assurance in a sustainable development context: Evidence from integrated reports. *Business Strategy and the Environment*, <https://doi.org/10.1002/bse.2606>

- Martinez-Ferrero, J. & Garcia-Sanchez, I. M. (2017a). Coercive, Normative and Mimetic Isomorphism as Determinants of the Voluntary Assurance of Sustainability Reports. *International Business Review*, 26 (1), 102-118.
- Martinez-Ferrero, J. & Garcia-Sanchez, I. M. (2017b). Sustainability Assurance and Cost of Capital: Does Assurance Impact on Credibility of Corporate Social Responsibility Information? *Business Ethics: A European Review*, 26 (3), 223-239.
- Mervelskemper, L. & Streit, D. (2017). Enhancing Market Valuation of ESG Performance: Is Integrated Reporting Keeping its Promise? *Business Strategy and the Environment*, 26, 536-549.
- Michelon, G., Pilonato, S., & Ricceri, F. (2015). CSR Reporting Practices and the Quality of Disclosure: An Empirical Analysis. *Critical Perspectives on Accounting*, 33, 59-78.
- Miras-Rodríguez, M. D. M., Carrasco-Gallego, A., & Escobar-Pérez, B. (2015). Has the CSR engagement of electrical companies had an effect on their performance? A closer look at the environment. *Business Strategy and the Environment*, 24(8), 819-835.
- Mock, T.J., Strohm, C. & Stewart, K.M. (2007). An examination of worldwide assured sustainability reporting, *Australian Accounting Review*, 17(41), 67-77
- Novo Nordisk (2005) Annual Report 2004: Financial, Social and Environmental Performance Report. Retrieved from: https://www.novonordisk.com/content/dam/Denmark/HQ/investors/irmaterial/annual_report/2005/20050129_Annual%20Report%202004_UK.pdf Accessed 20.05.2020
- O'Dwyer, B. & Owen, D. L. (2005). Assurance Statement Practice in Environmental, Social and Sustainability Reporting: A Critical Evaluation. *British Accounting Review*, 37, 205-229.
- O'Dwyer, B., Owen, D. & Unerman, J. (2011). Seeking Legitimacy for New Assurance Forms: The Case of Assurance on Sustainability Reporting. *Accounting, Organizations and Society*, 36, 31-52.
- Oliver, J., Vesty, G. & Brooks, A. (2016). Conceptualising integrated thinking in practice, *Managerial Auditing Journal*, 31(2), 228-248.
- Parker, L.D. (2005). Social and environmental accountability research: a view from the commentary box. *Accounting, Auditing & Accountability Journal*, 18(6), 842-860.
- Perego, P. & Kolk, A. (2012). Multinationals' Accountability on Sustainability: The Evolution of Third-party Assurance of Sustainability Reports. *Journal of Business Ethics*, 110, 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 & Theory*, 34(1), 163-198.
- Pflugrath, G., Roebuck, P. & 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 & Theory*, 30(3), 239-254.
- Price Waterhouse Coopers - PWC (2012). Integrated Reporting- The Future of Corporate Reporting. Retrieved from: <https://www.pwc.de/de/rechnungslegung/assets/integrated-reporting-die-zukunft-der-berichterstattung.pdf> Accessed on 30.11.2018
- Reimsbach, D., Hahn, R. & Gurturk, A. (2018). Integrated reporting and assurance of sustainability information: An experimental study on professional investors' information processing, *European Accounting Review*, 27(3), 559-581.

- Ruhnke, K., & Gabriel, A. (2013). Determinants of Voluntary Assurance on Sustainability Reports: An Empirical Analysis. *Journal of Business Economics*, 83(9), 1063-1091.
- The South African Institute of Chartered Accountants - SAICA (2015). Integrated Thinking- An Exploratory Survey. Retrieved from:
<https://www.saica.co.za/Portals/0/Technical/Sustainability/SAICAIntegratedThinkingLandscape.pdf> Accessed on 30.11.2018
- Serafeim, G. (2015). Integrated Reporting and Investor Clientele. *Journal of Applied Corporate Finance*, 27(2), 34-51.
- Sethi, S.P., Martell, T.F. and Demir, M. (2017). Enhancing the Role and Effectiveness of Corporate Social Responsibility Reports: The Missing Element of Content Verification and Integrity Assurance, *Journal of Business Ethics*, 144(1): 59-82
- Simnett, R., Vanstraelen, A. & Chua, W. F. (2009). Assurance on Sustainability Reports: An International Comparison. *The Accounting Review*, 84(3), 937-967.
- Smith, J. v., Adhikari, A. & Tondkar, R.H. (2005). Exploring differences in social disclosures internationally: A stakeholder perspective. *Journal of Accounting and Public Policy*, 24, 123-151.
- Uddin, N., & Holtedahl, P. (2013). Emission trading schemes—avenues for unified accounting practices. *Journal of Cleaner Production*, 52, 46-52.
- Velte, P., & Stawinoga, M. (2017). Empirical research on corporate social responsibility assurance (CSRA): A literature review. *Journal of Business Economics*, 87(8), 1017-1066.
- Veltri, S., & Silvestri, A. (2020). The value relevance of corporate financial and nonfinancial information provided by the integrated report: A systematic review. *Business Strategy and the Environment*, <https://doi.org/10.1002/bse.2556>
- Venter, E. R., Stiglingh, M., & Smit, A. R. (2017). Integrated Thinking and the Transparency of Tax Disclosures in the Corporate Reports of Firms. *Journal of International Financial Management & Accounting*, 28(3), 394-427.
- Vormedal, I. & Ruud, A. (2009). Sustainability Reporting in Norway – An Assessment of Performance in the Context of Legal Demands and Socio-Political Drivers. *Business Strategy and the Environment*, 18, 207-222.
- WICI (2016). WICI Intangibles Reporting Framework, Consultation Draft. World Intellectual Capital/Asset Initiative, <http://www.wici-global.com/framework> (accessed 2 November 2020)
- Wong, R. & Millington, A.,(2014). Corporate Social Disclosures: A User Perspective on Assurance. *Accounting, Auditing & Accountability Journal*, 27(5), 863-887.
- Zorio, A., Garcia-Benau, M.A. and Sierra, L. (2013). Sustainability development and the quality of assurance reports: Empirical evidence, *Business Strategy and the Environment*, 22, 484-500.

Tables

Table 1. Distribution of Sustainability Reporting Assurance (SRA) by year and industry

Panel A. By year				
YEAR	Without SRA	With SRA	TOTAL	% SRA
2002	637	47	684	6.87%
2003	630	66	696	9.48%
2004	1,216	109	1,325	8.23%
2005	1,497	172	1,669	10.31%
2006	1,492	214	1,706	12.54%
2007	835	335	1,170	28.63%
2008	829	449	1,278	35.13%
2009	707	541	1,248	43.35%
2010	822	681	1,503	45.31%
2011	506	817	1,323	61.75%
2012	239	954	1,193	79.97%
2013	222	1,042	1,264	82.44%
2014	233	1,090	1,323	82.39%
2015	258	1,155	1,413	81.74%
2016	244	1,037	1,281	80.95%
TOTAL	10,367	8,709	19,076	45.65%

Panel B. By industry				
Industry	Without SRA	With SRA	TOTAL	% SRA
Basic Materials	904	1,208	2,112	57.20%
Consumer Goods	1,279	1,140	2,419	47.13%
Consumer Services	1,451	760	2,211	34.37%
Financials	2,038	1,575	3,613	43.59%
Health Care	578	321	899	35.71%
Industrials	2,176	1,661	3,837	43.29%
Oil & Gas	589	555	1,144	48.51%
Technology	700	460	1,160	39.66%
Telecommunications	261	357	618	57.77%
Utilities	391	672	1,063	63.22%
TOTAL	10,367	8,709	19,076	45.65%

Table 2. Descriptive statistics

Panel A. Descriptive statistics for the full sample and for subsamples of firms with and without SRA									
	Full sample			With SRA			Without SRA		
	Mean	Median	S.D.	Mean	Median	S.D.	Mean	Median	S.D.
	(N=19,076)			(N=8,709)			(N=10,367)		
IT	0.63	0.80	0.30	0.75	0.80	0.21	0.53	0.78	0.32
LEG	0.51	1.00	0.50	0.62	1.00	0.49	0.41	0.00	0.49
SIZE	17.49	17.01	2.67	18.31	17.80	2.68	16.80	16.30	2.46
LEV	0.25	0.24	0.17	0.27	0.25	0.16	0.24	0.23	0.18
TOBINQ	1.64	1.27	1.29	1.48	1.16	1.06	1.78	1.37	1.45
ROE	0.22	0.19	2.08	0.23	0.17	1.93	0.21	0.21	2.19
ETS	0.16	0.00	0.37	0.28	0.00	0.45	0.07	0.00	0.25
GC	0.25	0.00	0.43	0.42	0.00	0.49	0.11	0.00	0.31

Panel B. Descriptive statistics for subsamples of firms based in code and common law countries						
	Code law countries			Common law countries		
	Mean	Median	S.D.	Mean	Median	S.D.
	(N=9,650)			(N=9,426)		
IT	0.67	0.80	0.28	0.59	0.80	0.31
SIZE	18.65	18.62	2.79	16.30	16.12	1.92
LEV	0.26	0.25	0.17	0.24	0.23	0.17
TOBINQ	1.47	1.16	1.25	1.82	1.42	1.32
ROE	0.18	0.17	0.55	0.25	0.22	2.90
ETS	0.20	0.00	0.40	0.12	0.00	0.33
GC	0.36	0.00	0.48	0.13	0.00	0.34

Panel C. Descriptive statistics for subsamples of firms based in code and common law countries with and without SRA								
	With SRA				Without SRA			
	Code Law		Common Law		Code Law		Common Law	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
	(N=5,412)		(N=3,297)		(N=4,238)		(N=6,129)	
IT	0.74	0.80	0.76	0.80	0.58	0.80	0.50	0.26
SIZE	19.08	18.97	17.03	16.85	18.09	18.02	15.91	15.79
LEV	0.27	0.26	0.25	0.24	0.25	0.24	0.24	0.22
TOBINQ	1.36	1.09	1.68	1.31	1.61	1.24	1.90	1.48
ROE	0.17	0.16	0.32	0.19	0.20	0.18	0.22	0.23
ETS	0.30	0.00	0.25	0.00	0.08	0.00	0.06	0.00
GC	0.49	0.00	0.30	0.00	0.19	0.00	0.05	0.00

IT is the score (at a percentage level) of a firm's Integrated Thinking; LEG is a binary variable which equals one if the legal system of the country where the firm resides has its origins in the code law and zero if it has its origins in the common law; SIZE is the natural logarithm of total assets; LEV is a leverage ratio computed as total debt divided by total assets; TOBINQ is the sum of firm's total market capitalization and total liabilities divided by total assets; ROE is return on equity ratio computed as operating income to total book value of equity; ETS is a binary variable which equals one if the firm's emissions are traded in an emissions trading scheme and zero otherwise; GC is a binary variable which equals one if the firm has signed the United Nations Global Compact and zero otherwise.

Figures in bold indicate statistically significant differences in means and medians at least at 5% level: a) between firms with and without SRA in Panel A; b) between firms residing in code-law and firms residing in common-law countries in Panel B and; c) between firms residing in code-law and firms residing in common-law countries for subsamples with and without SRA in Panel C. The tests are performed for the continuous variables only.

Table 3. Pearson's correlation coefficients for the full sample

	SRA	IT	LEG	SIZE	LEV	TOBINQ	ROE	ETS
IT	0.365*							
LEG	0.212*	0.128*						
SIZE	0.280*	0.148*	0.438*					
LEV	0.066*	0.044*	0.049*	0.011				
TOBINQ	-	-	-0.134*	-	-0.143*			
	0.115*	0.102*		0.252*				
ROE	0.005	0.008	-0.017*	-0.013	-0.010	0.040*		
ETS	0.282*	0.199*	0.106*	0.123*	0.070*	-0.089*	-0.004	
GC	0.359*	0.282*	0.258*	0.168*	0.044*	-0.054*	-0.007	0.237*

SRA is a binary variable which equals one if the firm has its sustainability reporting assured by a third party and zero otherwise; IT is the score (at a percentage level) of a firm's Integrated Thinking; LEG is a binary variable which equals one if the legal system of the country where the firm resides has its origins in the code law and zero if it has its origins in the common law; SIZE is the natural logarithm of total assets; LEV is a leverage ratio computed as total debt divided by total assets; TOBINQ is the sum of firm's total market capitalization and total liabilities divided by total assets; ROE is return on equity ratio computed as operating income to total book value of equity; ETS is a binary variable which equals one if the firm's emissions are traded in an emissions trading scheme and zero otherwise; GC is a binary variable which equals one if the firm has signed the United Nations Global Compact and zero otherwise.

* indicates significant correlation at least at 5% level

Table 4. Logit regression results of the two hypotheses

Variables	Model 1 (H1 & H2)	Model 2 (H3)
Constant	-2.127*** (0.213)	-2.345*** (0.217)
IT	1.323*** (0.072)	1.704*** (0.113)
LEG	0.347*** (0.046)	0.822*** (0.107)
ITxLEG	- -	-0.675*** (0.143)
SIZE	0.153*** (0.009)	0.149*** (0.009)
LEV	0.377*** (0.117)	0.388*** (0.117)
TOBINQ	-0.012 (0.019)	-0.012 (0.019)
ROE	0.021** (0.011)	0.021** (0.011)
ETS	0.859*** (0.061)	0.863*** (0.061)
GC	1.179*** (0.051)	1.193*** (0.051)
Industry effects	YES	YES
Year effects	YES	YES
<i>N</i>	19,076	19,076
Pseudo R ²	0.399	0.399
Wald test [IT + (ITxLEG)]		1.029***

SRA (dependent variable in both models) is a binary variable which equals one if the firm has its sustainability reporting assured by a third party and zero otherwise; IT is the score (at a percentage level) of a firm's Integrated Thinking; LEG is a binary variable which equals one if the legal system of the country where the firm resides has its origins in the code law and zero if it has its origins in the common law; ITxLEG is the interaction term of the two previously defined variables; SIZE is the natural logarithm of total assets; LEV is a leverage ratio computed as total debt divided by total assets; TOBINQ is the sum of firm's total market capitalization and total liabilities divided by total assets; ROE is return on equity ratio computed as operating income to total book value of equity; ETS is a binary variable which equals one if the firm's emissions are traded in an emissions trading scheme and zero otherwise; GC is a binary variable which equals one if the firm has signed the United Nations Global Compact and zero otherwise.

***, ** and * denote statistical significance at 1%, 5% and 10% level respectively

Robust standard errors (in parentheses)

Table 5. Additional analysis 1: Robustness checks

	Lagged variables		Governance quality effects		Country fixed effects		Winsorised variables	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Constant	-1.839*** (0.244)	-2.056*** (0.248)	-3.771*** (0.248)	-4.033*** (0.252)	-6.929*** (0.346)	-7.108*** (0.353)	-2.109*** (0.220)	-2.327*** (0.224)
IT	1.384*** (0.080)	1.775*** (0.126)	0.983*** (0.076)	1.398*** (0.116)	1.102*** (0.081)	1.342*** (0.125)	1.324*** (0.072)	1.704*** (0.113)
LEG	0.380*** (0.052)	0.864*** (0.119)	0.844*** (0.058)	1.381*** (0.114)	-0.162 (0.356)	0.135 (0.369)	0.349*** (0.046)	0.822*** (0.107)
ITxLEG	- -	-0.694*** (0.159)	- -	-0.753*** (0.144)	- -	-0.429*** (0.159)	- -	-0.674*** (0.144)
SIZE	0.142*** (0.011)	0.138*** (0.011)	0.202*** (0.010)	0.198*** (0.010)	0.410*** (0.019)	0.410*** (0.019)	0.154*** (0.009)	0.150*** (0.009)
LEV	0.519*** (0.136)	0.527*** (0.136)	0.314*** (0.119)	0.326*** (0.119)	0.335*** (0.126)	0.338*** (0.126)	0.342*** (0.127)	0.356*** (0.127)
TOBINQ	-0.014 (0.020)	-0.014 (0.020)	-0.004 (0.019)	-0.004 (0.019)	0.085*** (0.022)	0.085*** (0.022)	-0.037 (0.028)	-0.036 (0.028)
ROE	0.033** (0.015)	0.034** (0.016)	0.020* (0.011)	0.020* (0.011)	0.023** (0.010)	0.023** (0.010)	0.095 (0.094)	0.090 (0.095)
ETS	0.822*** (0.071)	0.827*** (0.071)	0.769*** (0.061)	0.772*** (0.061)	0.645*** (0.067)	0.647*** (0.067)	0.855*** (0.061)	0.859*** (0.061)
GC	1.180*** (0.059)	1.194*** (0.059)	1.013*** (0.052)	1.025*** (0.052)	0.984*** (0.060)	0.989*** (0.059)	1.178*** (0.051)	1.191*** (0.051)
CORP_GOV			0.014*** (0.001)	0.014*** (0.001)				
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country effects	-	-	-	-	Yes	Yes	-	-
N	15,223	15,223	19,076	19,076	19,052	19,052	19,076	19,076
Pseudo R ²	0.410	0.411	0.406	0.407	0.463	0.464	0.399	0.399
Wald test [IT + (ITxLEG)]		1.081***		0.645***		0.913***		1.030***

SRA (dependent variable in both models) is a binary variable which equals one if the firm has its sustainability reporting assured by a third party and zero otherwise; IT is the score (at a percentage level) of a firm's Integrated Thinking; LEG is a binary variable which equals one if the legal system of the country where the firm resides has its origins in the code law and zero if it has its origins in the common law; ITxLEG is the interaction term of the two previously defined variables; SIZE is the natural logarithm of total assets; LEV is the leverage ratio computed as total debt divided by total assets; TOBINQ is the sum of firm's total market capitalization and total liabilities divided by total assets; ROE is return on equity ratio computed as operating income to total book value of equity; ETS is a binary variable which equals one if the firm's emissions are traded in an emissions trading scheme and zero otherwise; GC is a binary variable which equals one if the firm has signed the United Nations Global Compact and zero otherwise; CORP_GOV is the corporate governance performance as it is measured by ASSET4 database.

***, ** and * denote statistical significance at 1%, 5% and 10% level respectively

Robust standard errors (in parentheses)

Table 6. Additional analysis 2: Subsamples analyses

	Stand-alone sustainability reports		GRI guidelines adopters		Post-2010		First-time assurance adopters	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Constant	-1.625*** (0.228)	-1.800*** (0.236)	-2.021*** (0.275)	-2.197*** (0.285)	-2.088*** (0.275)	-2.269*** (0.280)	-3.595*** (0.350)	-3.731*** (0.358)
IT	0.595*** (0.088)	0.874*** (0.137)	0.545*** (0.116)	0.821*** (0.179)	0.595*** (0.104)	0.885*** (0.146)	0.659*** (0.117)	0.891*** (0.182)
LEG	0.401*** (0.049)	0.769*** (0.139)	0.488*** (0.055)	0.860*** (0.187)	0.542*** (0.059)	0.980*** (0.161)	0.412*** (0.074)	0.680*** (0.161)
ITxLEG	- -	-0.500*** (0.179)	- -	-0.494** (0.237)	- -	-0.611*** (0.212)	- -	-0.404* (0.223)
SIZE	0.135*** (0.010)	0.133*** (0.010)	0.153*** (0.012)	0.151*** (0.012)	0.156*** (0.013)	0.154*** (0.013)	0.132*** (0.015)	0.131*** (0.015)
LEV	0.541*** (0.138)	0.548*** (0.138)	0.361** (0.167)	0.366** (0.167)	0.236 (0.157)	0.247 (0.157)	0.257 (0.179)	0.263 (0.179)
TOBINQ	-0.005 (0.022)	-0.005 (0.022)	-0.005 (0.025)	-0.004 (0.025)	-0.023 (0.024)	-0.022 (0.024)	0.002 (0.027)	0.002 (0.027)
ROE	0.017* (0.009)	0.017* (0.010)	0.018* (0.010)	0.019* (0.010)	0.008 (0.008)	0.008 (0.008)	0.051 (0.039)	0.051 (0.039)
ETS	0.790*** (0.060)	0.793*** (0.060)	0.699*** (0.068)	0.702*** (0.068)	0.800*** (0.077)	0.805*** (0.077)	0.414*** (0.101)	0.418*** (0.101)
GC	0.997*** (0.051)	1.006*** (0.052)	0.848*** (0.057)	0.853*** (0.057)	0.975*** (0.066)	0.983*** (0.066)	0.713*** (0.083)	0.723*** (0.083)
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	12,805	12,805	9,832	9,832	9,300	9,300	11,423	11,423
Pseudo R ²	0.208	0.209	0.144	0.145	0.192	0.192	0.182	0.182
Wald test [IT + (ITxLEG)]		0.374***		0.327**		0.274*		0.487***

SRA (dependent variable in both models) is a binary variable which equals one if the firm has its sustainability reporting assured by a third party and zero otherwise; IT is the score (at a percentage level) of a firm's Integrated Thinking; LEG is a binary variable which equals one if the legal system of the country where the firm resides has its origins in the code law and zero if it has its origins in the common law; ITxLEG is the interaction term of the two previously defined variables; SIZE is the natural logarithm of total assets; LEV is the leverage ratio computed as total debt divided by total assets; TOBINQ is the sum of firm's total market capitalization and total liabilities divided by total assets; ROE is return on equity ratio computed as operating income to total book value of equity; ETS is a binary variable which equals one if the firm's emissions are traded in an emissions trading scheme and zero otherwise; GC is a binary variable which equals one if the firm has signed the United Nations Global Compact and zero otherwise.

***, ** and * denote statistical significance at 1%, 5% and 10% level respectively

Robust standard errors (in parentheses)

Table 7. Additional analysis 3: Alternative proxies for Integrated Thinking

	IT2		ITAV		ITF	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Constant	-2.146*** (0.213)	-2.270*** (0.219)	-2.565*** (0.216)	-2.754*** (0.223)	-1.121*** (0.209)	-1.125*** (0.208)
IT2	1.864*** (0.078)	2.042*** (0.118)	- -	- -	- -	- -
IT2xLEG	- -	-0.308** (0.150)	- -	- -	- -	- -
IT_AVER	- -	- -	2.286*** (0.091)	2.581*** (0.137)	- -	- -
IT_AVERxLEG	- -	- -	- -	-0.528*** (0.174)	- -	- -
IT_FACTOR	- -	- -	- -	- -	0.801*** (0.032)	0.903*** (0.048)
IT_FACTORxLEG	- -	- -	- -	- -	- -	-0.183*** (0.061)
LEG	0.125*** (0.009)	0.124*** (0.009)	0.134*** (0.009)	0.133*** (0.009)	0.134*** (0.009)	0.133*** (0.009)
SIZE	0.339*** (0.119)	0.344*** (0.119)	0.344*** (0.120)	0.352*** (0.119)	0.344*** (0.120)	0.352*** (0.119)
LEV	-0.017 (0.019)	-0.017 (0.019)	-0.010 (0.019)	-0.011 (0.019)	-0.010 (0.019)	-0.011 (0.019)
TOBINQ	0.021* (0.011)	0.021* (0.011)	0.020* (0.011)	0.020* (0.011)	0.020* (0.011)	0.020* (0.011)
ROE	0.811*** (0.061)	0.808*** (0.061)	0.793*** (0.061)	0.793*** (0.061)	0.793*** (0.061)	0.793*** (0.061)
ETS	1.134*** (0.052)	1.133*** (0.051)	1.071*** (0.051)	1.077*** (0.051)	1.070*** (0.051)	1.076*** (0.051)
GC	-2.146*** (0.213)	-2.270*** (0.219)	-2.565*** (0.216)	-2.754*** (0.223)	-1.121*** (0.209)	-1.125*** (0.208)
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
N	19,076	19,076	19,076	19,076	19,076	19,076
Pseudo R ²	0.409	0.409	0.410	0.411	0.411	0.411
Wald test [IT + (ITxLEG)]		1.734***		2.053***		0.720***

SRA (dependent variable in both models) is a binary variable which equals one if the firm has its sustainability reporting assured by a third party and zero otherwise; IT2 is an alternative score (at a percentage level) of a firm's Integrated Thinking; IT_AVER is the average score of the main IT proxy and the alternative IT2; IT_FACTOR is the common factor of the main IT proxy and the alternative IT2; LEG is a binary variable which equals one if the legal system of the country where the firm resides has its origins in the code law and zero if it has its origins in the common law; IT2xLEG, IT_AVERxLEG and, IT_FACTORxLEG are interaction terms of LEG variable with three alternative proxies of IT as previously defined; SIZE is the natural logarithm of total assets; LEV is a leverage ratio computed as total debt divided by total assets; TOBINQ is the sum of firm's total market capitalization and total liabilities divided by total assets; ROE is return on equity ratio computed as operating income to total book value of equity; ETS is a binary variable which equals one if the firm's emissions are traded in an emissions trading scheme and zero otherwise; GC is a binary variable which equals one if the firm has signed the United Nations Global Compact and zero otherwise.

***, ** and * denote statistical significance at 1%, 5% and 10% level respectively

Robust standard errors (in parentheses)

Appendix

Table A. Observations with and without Sustainability Reporting Assurance by country

Country	With SRA	Without SRA	TOTAL
ARGENTINA	1	1	2
AUSTRALIA	346	333	679
AUSTRIA	67	54	121
BELGIUM	68	104	172
BRAZIL	240	102	342
CANADA	217	539	756
CHILE	29	33	62
CHINA	88	48	136
CZECH REPUBLIC	6	2	8
DENMARK	83	120	203
EGYPT	0	1	1
FINLAND	141	114	255
FRANCE	678	338	1,016
GERMANY	297	356	653
GREECE	55	101	156
HONG KONG	196	253	449
HUNGARY	23	0	23
INDIA	195	37	232
INDONESIA	44	57	101
IRELAND	17	53	70
ISRAEL	25	18	43
ITALY	251	124	375
JAPAN	1,433	1,446	2,879
KUWAIT	6	8	14
MALAYSIA	49	48	97
MEXICO	67	38	105
MOROCCO	3	3	6
NETHERLANDS	210	106	316
NEW ZEALAND	17	35	52
NORWAY	73	120	193
PHILIPPINES	30	15	45
POLAND	22	19	41
PORTUGAL	57	38	95
QATAR	2	7	9
RUSSIAN FED.	89	48	137
SINGAPORE	43	143	186
SOUTH AFRICA	333	198	531
SOUTH KOREA	359	21	380
SPAIN	299	133	432
SWEDEN	191	276	467
SWITZERLAND	166	258	424
TAIWAN	256	64	320
THAILAND	47	44	91
TURKEY	30	38	68
UNITED ARAB EMIR.	1	1	2
UNITED KINGDOM	1,060	1,077	2,137
UNITED STATES	799	3,395	4,194
Total	8,709	10,367	19,076

Table B. Variables definitions

Variables	Description
SRA	Binary variable which equals one if the firm has its sustainability reporting assured by a third party and zero otherwise (Asset4 identifier: CGVSDP030)
IT	Score (at a percentage scale) of firm's capacity to maintain an overarching vision and strategy that integrates financial and extra-financial aspects of its business (Asset4 identifier: CGVSD01S)
LEG	Binary variable which equals one if the legal system of the country where the firm resides has its origins in the code law and zero if it has its origins in the common law (CIA fact book)
SIZE	Natural logarithm of total assets (Datastream item identifier: WC02999)
LEV	Leverage ratio computed as total debt (Datastream item identifier: WC03255) divided by total assets (Datastream item identifier: WC02999)
TOBINQ	Tobin's Q computed as firm's total market capitalization (Datastream item identifier: WC08001) plus total liabilities (DataStream item identifier: WC03351) divided by total assets (Datastream item identifier: WC02999)
ROE	Return on equity ratio computed as operating income (Datastream item identifier: WC01250) to total book value of equity (Datastream item identifier: WC03995)
ETS	Binary variable which equals one if the firm's emissions are traded in an emissions trading scheme and zero otherwise (Asset4 identifier: ENERDP068)
GC	Binary variable which equals one if the firm has signed the United Nation's Global Compact and zero otherwise (Asset4 identifier: CGVSDP020)
IND	Multiple dummy variable based on the ten industries of the Industry Classification Benchmark (Datastream item identifier: ICBIN)
YR	Multiple dummy variable based on the years under examination
Extra variables used in the additional analyses	
IT2	Score (at a percentage scale) of firm's capacity to publicly commit to the implementation of its integrated strategy (Asset4 identifier: CGVSD02S)
COUNTRY	Multiple dummy variable based on the sample firms' countries of origin (Datastream item identifier: GEOGN)
CORP_GOV	Score (at a percentage scale) of firm's corporate governance performance (Asset4 identifier: CGVSCORE)
SUSTREP	Binary variable which equals one if the firm publishes a stand-alone sustainability report in the current year and zero otherwise (Asset4 identifier: CGVSDP026)

All variables are based on data extracted from Thomson Reuters Datastream; Thomson Reuters ASSET4 and CIA fact book