

**Determinants and Consequences of Integrated Reporting
Adoption, Quality and its Assurance:**

**Empirical Evidence and Critical Voices From an
International and German Perspective**

Von der Fakultät Wirtschaftswissenschaften
der Leuphana Universität Lüneburg zur Erlangung des Grades

Doktor der Wirtschaftswissenschaften

– Dr. rer. pol. –

genehmigte Dissertation von

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geboren am 26. Dezember 1991 in Eutin

Eingereicht am: 6. Juli 2020

Mündliche Verteidigung (Disputation) am: 24. November 2020

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This cumulative dissertation is composed of four individual articles, which are published, or in publication status, respectively, as follows:

- **Article 1:** Determinants of materiality disclosure quality in integrated reporting: Empirical evidence from an international setting. *Business Strategy and the Environment*, Vol. 28, 750–770.
- **Article 2:** Managers' Incentives and Disincentives to Engage with Integrated Reporting, or Why Managers Might Not Adopt Integrated Reporting: An Exploratory Study in a Nascent Setting. *Qualitative Research in Accounting and Management* (under review, 3rd RR, minor revision).
- **Article 3:** Does it pay off? Integrated reporting and cost of debt: European Evidence. *Corporate Social Responsibility and Environmental Management* (online first).
- **Article 4:** Do nonprofessional investors value the assurance of integrated reports? Exploratory evidence. *European Management Journal* (under review, 1st RR, major revision).

During the dissertation period two additional articles were published:

- **Article 5:** The impact of corporate governance on integrated reporting – a literature review. In: de Villiers, C., Hsiao, P.-C. K., Maroun, W. (Eds.): *The Routledge Handbook of Integrated Reporting* (online first).
- **Article 6:** Mutualistic symbiosis? Combining theories of agency and stewardship through behavioral characteristics. *Management Research Review*, Vol. 43, 989–1011.

Year of publication: 2020

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List of abbreviations

AktG	Aktiengesetz (German Stock Corporation Act)
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CSO	Chief Sustainability Officer
CSR	Corporate Social Responsibility
CSR-DIL	CSR directive (NFRD) implementation law
CSRA	Corporate social responsibility reporting assurance
EPS	Earnings per share
ESG	Environmental, social and governance
EU	European Union
FSB	Financial Stability Board
GRI	Global Reporting Initiative
HGB	Handelsgesetzbuch (German Commercial Code)
IIRC	International Integrated Reporting Council
IR	Integrated reporting
IRA	Integrated reporting assurance
IRC	Integrated Reporting Committee of South Africa
IRQ	Integrated reporting quality
JSE	Johannesburg Stock Exchange
KING	King Report on Governance for South Africa
MDQ	Materiality disclosure quality
NFRD	Non-financial reporting directive
NPIs	Non-professional investors
PAT	Principal agency theory
PIE	Public interest enterprise
SDGs	Sustainable development goals
SFAB	Sustainable Finance Advisory Board
SME	Small-and medium-sized enterprise
TCFD	Task Force on Climate-related Financial Disclosures
UN	United Nations
VHB	Verband der Hochschullehrer für Betriebswirtschaft

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1. Introduction

1.1 Relevance of the research topic

Corporate reports have traditionally established as a relevant instrument to provide decision-useful information and accountability towards those who were invested in the firm (Graham et al., 2005; Beyer et al., 2010). This applies in particular to capital market-oriented public interest enterprises (PIEs), while so-called small- and medium-sized enterprises (SMEs) are traditionally less likely to provide extensive information to the public.¹ However, over the last two decades, in these times of global warming, poverty and biodiversity loss (King and Atkins, 2016), corporate reporting has experienced a substantial shift from traditional shareholder-oriented financial reporting to more encompassing and stakeholder-oriented formats, such as triple bottom line (Elkington, 1994) and different concepts of sustainability-, environmental, social and governance- (ESG), or corporate social responsibility (CSR) reporting (Kolk, 2003; Burritt and Schaltegger, 2010; de Villiers et al., 2014).² Moreover, firms increasingly disclose their carbon- and climate-related contribution in separate reports to the public (Velte et al., 2020). In contrast to the past, where most firms focused on their shareholders as the primary audience of their annual report, today, a variety of different stakeholders is interested in and relevant to the firm's future success and needs to be addressed by corporate communication efforts (Dawkins, 2005; Sweeney and Coughlan, 2008; King and Atkins, 2016).³

¹ The central focus of this dissertation is on PIEs, who have been shown to be the primary addressees of IR (Frias-Aceituno et al., 2013a). However, while reporting initiatives such as corporate social responsibility reporting or IR have long been regarded as a prerogative of large firms (Perrini et al., 2007), SMEs are increasingly interested in innovative and emerging (non-financial oriented) reporting formats and have begun to adopt IR (e.g. Del Baldo, 2015; Lodhia, 2015; Dumay et al., 2016; Girella et al., 2019). In this light, albeit having a distinct focus on PIEs, this dissertation explores IR also in a SME context.

² In adherence to McWilliams and Siegel (2001) who define CSR as a company's engagement that goes beyond compliance and encompasses *inter alia* a variety of social and environmental topics, in the following, the terms CSR (reporting), sustainability (reporting) and ESG (reporting) are used interchangeably as common in high-ranked academic literature (e.g. van Marrewijk, 2003; Dhaliwal et al., 2011; Amran et al., 2014; Casey and Grenier, 2015; Cohen and Simnett, 2015).

³ At this juncture, it should be pointed out that – despite the general shift from a shareholder-centered to a more stakeholder-centered perspective – corporate reporting is likely to be determined by different country-specific factors. For instance, prior research has revealed that firms domiciled in countries with a strong focus on public equity markets and case law regime (e.g. US and UK) tend to have a distinct investor focus in their reporting, while those in countries with higher degrees of financial market regulation and code law regimes (e.g.

In the light that a firm's success nowadays is not simply a function of different financial indicators, but is *inter alia* determined by a variety of non-financial factors, such as reputation and social acceptance, firms are increasingly motivated to provide detailed information about their non-financial engagement to the public (Herzig and Schaltegger, 2006; Wulf and Behncke, 2014; Behncke and Wulf, 2015). Along these lines, a plethora of studies has revealed that non-financial data is relevant to capital markets (e.g. Godfrey et al., 2009; El Ghouli et al., 2011; Dhaliwal et al., 2011, 2012; Ioannou and Serafeim, 2015), which imposes outside pressure upon firms to provide encompassing non-financial information to the broader society. In this context, it seems not astonishing that large institutional investors nowadays include large-scale non-financial aspects in their investment screening process (Elliott et al., 2014; Buchanan et al., 2018; Dyck et al., 2019; Gloßner, 2019). One prominent example is Larry Fink, the Chief Executive Officer (CEO) of Blackrock – the largest institutional investor of the world –, who recently made a plea for both the inclusion and management of non-financial aspects (in particular climate-related ones) in corporate strategy (Blackrock, 2020). Along these lines, some of the world's most relevant and powerful institutions, such as the International Monetary Fund as well as the Financial Stability Board (FSB), do not weary of emphasizing the relevance of non-financial information for the stability of financial markets and broader society (Howitt, 2019). At this juncture, it has become commonplace for firms to respond to stakeholders' increasing information requirements by disclosing non-financial information in separate stand-alone reports. For instance, by 2017, 93% of the world's 250 largest companies disclosed information about their corporate responsibility in CSR reports (KPMG, 2017).

However, in tandem with the development towards more sustainability-related accountability, an avalanche of critical scholars increasingly call into question the value of the information provided in these stand-alone non-financial reports (Milne and Gray, 2013; de Villiers et al., 2014). Specifically, the excessive length

Germany) show a stronger emphasis on the provision of non-financial information and are more likely to also address non-financial stakeholders in their reporting (Hahn and Scheermesser, 2006; Chen and Bouvain, 2009; Beck et al., 2010; Gamerschlag et al., 2011).

and an impaired readability (especially if the reports contain many narratives), the disconnected strands of the information as well as high degrees of managerial freedom during the preparation curtail the information value and render corporate reports largely infeasible for most addressees (Miller, 2010; de Villiers et al., 2014; Muslu et al., 2019). Against this backdrop, particularly the lack of connectivity between the disconnected stand-alone financial and CSR reports (as well as their underlying value drivers) leads to information overload and stokes the risk of greenwashing (Delmas and Burbano, 2011). If, on the contrary, each material ESG-related issue (be it positive or negative) was transparently connected with its expected financial impact as well as the resulting risks and opportunities, management would have fewer opportunities to engage in greenwashing, which would translate into higher decision usefulness of the data for the readership.

This notion, over the last years, has kindled a recent upsurge in academic and practical interest in *integrated reporting* (IR), the latest transition in corporate reporting (Behncke and Wulf, 2015; Eccles and Krzus, 2015a; Eccles et al., 2015; Humphrey et al., 2017; Velte and Stawinoga, 2017a). Following Eccles and Krzus' (2015b) description of the historical evolution of the IR concept, the idea of IR can be traced back to first experimentations by the Scandinavian companies Novozymes and Novo Nordisk who were the first firms to report in an integrated way. Subsequent expert commentaries (e.g. 'One Report' by Eccles and Krzus (2010)) and the King Report on Corporate Governance for South Africa, where IR is mandatory on an 'apply or explain' basis (Institute of Directors Southern Africa, 2009), have led to first codifications of the IR journey in discussion papers put forth by the Integrated Reporting Committee (IRC) of South Africa (2011) as well as the International Integrated Reporting Committee (IIRC, 2013a). In 2013, the IIRC, a quasi-regulatory body as a coalition of the Global Reporting Initiative (GRI) and the Prince's Accounting for Sustainability Project, institutionalized the idea of IR in the <IR> Framework (IIRC, 2013a; de Villiers et al., 2014; Atkins and Maroun, 2015; Dumay et al., 2016). The <IR> Framework may be regarded as the leading IR guidelines and meanwhile has been endorsed

by many international bodies, such as the International Federation of Accountants (2017) or the IRC.⁴

Building upon the *integrated thinking* principle underlying the <IR> Framework (Plessis and Rühmkorf, 2015; Oliver et al., 2016; Dumay and Dai, 2017), IR is intended to provide all material information that determines a firm's ability to generate value in the short-, medium- and long-term within one single and succinct document (Haller and van Staden, 2014; Oliver et al., 2016). By interconnecting a firm's financial and non-financial value drivers, also referred to as the six capitals (financial, manufactured, intellectual, human, social and relationship, natural), IR is not only envisaged to improve investors' capital allocations as primary addressees of integrated reports, but also to deliver value to the various stakeholders of a firm (IIRC, 2013a; Cheng et al., 2014; Adams, 2015; Eccles and Krzus, 2015a; Velte and Stawinoga, 2017a).

As put forth by the <IR> Framework (Reuter and Messner, 2015), the information in the integrated report shall be provided in accordance with the seven *guiding principles* underlying the principles-based IR concept (i.e. strategic focus and future orientation, connectivity of information, stakeholder relationships, materiality, conciseness, reliability and completeness, and consistency and comparability) (IIRC, 2013a; Cheng et al., 2014; Haller and van Staden, 2014; Haji and Anifowose, 2016; Fasan and Mio, 2017). Moreover, the integrated report shall be governed by eight *content elements*, which are linked to each other but are not mutually exclusive and provide all information that is relevant for the structured assessment of the firm's ability to create value over time (IIRC, 2013a; de Villiers et al., 2014; Dumay et al., 2016). The content elements 'organizational overview and external environment', 'business model', 'strategy and resource allocation' as well as 'performance' intend to provide a holistic picture of the most relevant information related to a firm's strategic positioning and are reflective of the multilayered facet of the novel reporting medium (Cheng et al., 2014; Burke and Clark, 2016). The elements 'governance'

⁴ At this juncture, it should be noted that, in order to provide an adamant and consistent demarcation of the IR concept, throughout this dissertation the term IR refers to the reporting concept as put forth by the <IR> Framework.

and ‘risks and opportunities’ shall provide transparency about the firm’s integrated risk management processes as well as corresponding strategies to cope with uncertainty (Stubbs and Higgins, 2014; Bertinetti and Gardenal, 2016), which should provide a more integral view of the firm’s future prospects compared to stand-alone reporting initiatives and infrastructures (Eccles and Krzus, 2015a; Lee and Yeo, 2016). Unlike extant stand-alone reporting concepts (e.g. financial-, CSR-, governance- or remuneration reports), IR has a distinct future-orientation (content element ‘outlook’), which allows for a better prospective contemplation of future value drivers (Abeysekera, 2013; Cheng et al., 2014).

Referring to the specific properties of IR, its proponents proclaim that IR has successfully overcome the disconnectedness of earlier reporting initiatives, while providing value to a firm’s various stakeholders and realizing different internal benefits (Eccles and Krzus, 2010). The increasing prominence of IR has resulted in a recent upsurge in academic interest in the new reporting instrument, particularly as regards archival research. Along these lines, prior studies have found IR to be relevant in terms of satisfying the needs of different stakeholder groups (Velte and Stawinoga, 2017a; Adhariani and de Villiers, 2019), such as investors (Serafeim, 2015; Lee and Yeo, 2016; Barth et al., 2017), employees (Lai et al., 2018), customers (Steyn, 2014) and suppliers (Gianfelici et al., 2018). Moreover, extant studies have shown that IR can lead to competitive advantages (Lodhia, 2015; Robertson and Samy, 2015; Adhariani and de Villiers, 2019) and help firms to achieve, increase or even repair legitimacy and corporate image (Steyn, 2014; Haji and Hossain, 2016). Besides, the integration of non-financial value drivers and the will for transparency create valuable internal benefits, such as a better connection of business units and breaking down organizational ‘silos’ (Higgins et al., 2014; Robertson and Samy, 2015; Adhariani and de Villiers, 2019), can lead to higher stakeholder accountability (Del Baldo, 2015; Lodhia, 2015; Vesty et al., 2018) and may provide firms with a mechanism to “take on a more educational role about their place in broader society” (IIRC, 2012, p.19).

These extolled benefits identified in academia (or at least the managerial impression that firms may benefit from these IR properties) may explain why practical voices reveal that firms are increasingly willing to voluntarily adopt IR. Following Howitt (2019), the CEO of the IIRC, by 2019, the number of IR applying firms is estimated to be more than 1,600, while the IIRC Examples Database (2020) lists already more than 500 firms worldwide, predominantly PIEs and a few SMEs, to report in an integrated way in adherence to the <IR> reporting guidelines. Without attempting to go into detail or to be comprehensive, various surveys reveal an ongoing integration of financial and non-financial dimensions in corporate reporting practice, which materializes in a trend towards an increasing application of IR (characteristics) particularly in Europe, for example among firms of the German DAX 30 (Pwc, 2015, 2016), the British UK FTSE 100 (Deloitte, 2019), or the French SBF 120 index (Deloitte, 2018). Similar results are provided in surveys outside the European setting, which show that IR is gaining momentum among international insurers and reinsurers (Mazars, 2018), the world's 250 largest companies (KPMG, 2017), firms listed in the Australian ASX 200 index (KPMG, 2019a) as well as Japanese firms (KPMG, 2019b).

In response to the high academic and practical interest in the new reporting phenomenon as well as the topicality of the idea underlying IR to increase transparency and accountability, IR lately has been encouraged by different international, European and national reform efforts that arguably foster its adoption (Lueg et al., 2016). Among others, the United Nations (UN) Sustainable Development Goals (SDGs), the FSB's Task Force on Climate-related Financial Disclosures (TCFD), the European Non-Financial Reporting Directive (NFRD) as well as its transposition into German law, and the German Sustainable Finance Advisory Board's (SFAB) sustainable finance strategy all can be addressed by means of IR.⁵

⁵ At this juncture, it should be pointed out that a large number of institutions, regulatory bodies and reform efforts encourage IR adoption or contribute to its diffusion. As it is outside the scope of this dissertation to address all these driving forces, the abovementioned four reform efforts have been chosen as they are considered to be particularly prominent and directional. Moreover, different surveys have shown the relevance of these reform efforts in conjunction with IR (Pwc, 2016; Deloitte, 2018; Adams et al., 2020). Section 3 will elaborate on this in greater detail.

Despite the regulatory support and the fact that its proponents expect IR to revolutionize firms' reporting and substitute for other reporting instruments in the long run (e.g. Eccles, 2012; Stubbs and Higgins, 2018), it should be brought to mind that the concept of IR is also greatly disputed and is polarized by different opposing academic scholars. Critical voices emphasize that IR still is captured in an 'embryonic' stage (de Villiers et al., 2014; Burke and Clark, 2016) and in current practice represents a blurred dictum that mystifies practitioners and academic scholars rather than being a reporting initiative that will actually manifest in future corporate reporting practice (e.g. Flower, 2015; Thomson, 2015; Gibassier et al., 2018). Among others, a major skepticism is the strong investor focus of the <IR> Framework (which has not been revised since 2013), which Milne and Gray (2013) consider as "remarkably regressive" (p.20) and an "avoidance of any recognition of the prior 40 years of research and experimentation" (p.25). Other scholars complain about institutional capture of the IR concept (Flower, 2015), low reporting quality and high degrees of heterogeneity in its application (Wulf and Behncke, 2014), which curtail IR's ambitious aim to overcome the disconnectedness of present corporate reporting. According to critical voices, this is not least due to the insufficient guidance provided in the <IR> Framework, which led Dumay et al. (2017) to conclude that, in its current form, the <IR> Framework constitutes a double-edged sword that is not properly substantiated to actually benefit firms. Drilling into this notion, critics of the IR concept particularly discuss the (insufficiently developed but) highly relevant materiality principle, which determines the information to be disclosed in the integrated report (Lai et al., 2017; Cerbone and Maroun, 2019). Critical academic voices condemn that, currently, the materiality principle provides managers with high degrees of discretion and allows them to opportunistically appropriate the IR concept for impression management purposes (Haji and Hossain, 2016; Briem and Wald, 2018).

In spite of all the different opinions prevailing around IR, most academics and practitioners will agree on the matter of fact that IR has a long way to go in order to, if at all, morph into an alternative to extant reporting that deserves serious consideration. While the basic idea of IR may be considered valid in principle,

there are various open questions that need to be answered in order to broadening the understanding of the timely, but still infantine phenomenon of IR. This is where the dissertation project comes in: specifically, this dissertation aims to extend present knowledge on IR, deliver insights that allow to take a more fine-grained and granular perspective on several IR-specific aspects and shed light on previously unanswered questions that are relevant for imbuing the broader understanding of IR and may be incorporated in the announced revision of the <IR> Framework by end of 2020 (IIRC, 2020a, 2020b). Among others, this work explores the question as to why managers, although being positively inclined to IR, refrain from actually adopting the new reporting instrument. Moreover, this dissertation adds to prior knowledge on the under-investigated, but highly important principle of materiality, which determines the matters to be included in the integrated report and, in its current non-distinctive shape, provides high degrees of managerial discretion. Besides, this dissertation explores the implications of voluntary IR adoption for firms listed in the public debt market and investigates the perceptions of investors towards an external assurance of the integrated report (IRA), thereby shedding light also on critical perspectives of IRA practice. In addressing previously uninvestigated, but fundamentally important research questions, this work may provide an additional impetus to the IR journey that the European Union (EU) and the German government have begun to embark on. The following section derives and discusses extant gaps in academic literature that will be addressed in the course of this dissertation.

1.2 Gaps in academic literature

By its very nature, corporate reports are disclosed to provide decision-useful information to addressees. In line with the notion that higher reporting quality leads to increased decision usefulness and credibility (e.g. Amran et al., 2014; Sethi et al., 2017a), an avalanche of earlier studies pointed out the impact of financial and non-financial reporting quality for the decision-making of shareholders (e.g. Biddle et al., 2009), debtholders (Costello and Wittenberg-Moerman, 2011) and other stakeholder groups (e.g. Garrett et al., 2014; Pérez, 2015; Lu and Abeysekera, 2017; Vitolla et al., 2019a). Aside from a higher

decision usefulness, studies from the related discipline of CSR reporting show that high quality CSR reports provide fewer opportunities for a firm's strategic abuse of the information for purposes of earnings management, impression management and greenwashing (e.g. Delmas and Burbano, 2011; Michelon et al., 2015; Lueg et al., 2019).

The inherent abstractedness of the IR concept, the vagueness of its guidelines (e.g. non-distinctive materiality principle), as well as high degrees of reporting heterogeneity in prevailing practice (Wulf and Behncke, 2014; Chaidali and Jones, 2017) bear the risk of IR falling victim to managerial capture and being abused for impression management purposes. In recent work, Briem and Wald (2018), for example, found that firms often opportunistically appropriate the IR concept by simply rebranding a combination of a traditional financial and a sustainability report as an integrated report, which contravenes the basic idea of IR. This suggests the need for a distinct and valid measure for integrated reporting quality (IRQ). Inspired by prior related studies that have developed different measures – i.e. disclosure scores based on content analyses – to define and operationalize the quality of CSR reports (O'Dwyer and Owen, 2005; O'Dwyer et al., 2005; Daub, 2007; Zahller et al., 2015), extant IR studies have developed and applied different IRQ measures, either based on proprietary IR awards scores (e.g. Barth et al., 2017), word count techniques (Fasan and Mio, 2017), disclosure scores (e.g. Haji and Anifowose, 2016; Lee and Yeo, 2016; Pistoni et al., 2018) or systematic textual analysis (Camodeca et al., 2018). However, each of these measures has deficiencies and leaves room for a more integral and IR-tailored quality measure that accounts for the peculiarities of the IR concept.

Against this backdrop, it seems reasonable to proxy IRQ with the principle of materiality, which is prominently discussed in academia and may be regarded as one of the most essential principles for IR (Mio, 2013; Fasan and Mio, 2017), but also in the broader domain of accounting and auditing (Grant et al., 2000; Edgley, 2014). While a reasonable application of the materiality principle should lead to the decision-useful disclosure of all information that is material to

addressees – thereby curtailing the risk of information overload and greenwashing – with its abstractedness and non-distinctively, the concept of materiality simultaneously represents a major source of managerial leeway (Lo, 2010; Hsu et al., 2013; Edgley, 2014; Jones et al., 2016). Hence, the principle of materiality provides the armamentarium for a firm’s opportunistic use of reporting discretion in IR and allows to reasonably proxy IRQ.

Research objective 1: Developing a materiality disclosure score to proxy IRQ.

Building upon the materiality disclosure score as put forth in research objective 1, there is merit in investigating the determinants of IRQ. While a plethora of studies investigated determinants of IR adoption (e.g. Frias-Aceituno et al., 2013a, 2013b; Garcia-Sanchez et al., 2013; Sierra-Garcia et al., 2015; Lai et al., 2016; Vaz et al., 2016; Garcia-Sanchez and Noguera-Gamez, 2018; Garcia-Sanchez et al., 2019), studies that explore determinants of IRQ are as yet under-represented and capture only a handful of influencing factors (e.g. Haji and Anifowose, 2016; Fasan and Mio, 2017; Rivera-Arrubla et al., 2017; Kilic and Kuzey, 2018; Velte, 2018a).⁶

Most of the aforementioned IRQ studies focus on the time periods between 2011 and 2013, i.e. the early phases of IR that were driven by pioneering engagements and experimentation (Haji and Anifowose, 2016; Fasan and Mio, 2017; Rivera-Arrubla et al., 2017) and thereby neglect any potential development of IRQ over time. Given that firms need time to install an appropriate reporting infrastructure and to establish internal control systems, one might assume that reporters benefit from learning effects in IR preparation as they iteratively refine their reporting in subsequent periods. Hence, future research should investigate *integrated report-specific determinants* of materiality disclosure quality (to measure IRQ), such as learning effects. Moreover, many studies do not differentiate between mandatory (South Africa) and voluntary IR reporting

⁶ For a literature review on governance determinants of IR adoption as well as IRQ, see Velte and Gerwanski (2020).

regimes (e.g. Europe), although it is reasonable to assume that determinants of IRQ vary between firms that are obliged to adopt IR and those that opt to voluntarily embark on IR. Against this backdrop, there should be a distinct focus on different *country-specific determinants* (e.g. voluntary or mandatory reporting regime) of IRQ. Albeit most studies that deal with IRQ determinants focus on *corporate governance factors*, as yet, extant literature misses several governance determinants that are relevant for imbuing the understanding of IRQ. For instance, it is yet unknown whether listing in sustainability indices (and corresponding monitoring efforts by sustainable investors) are associated with higher IRQ. In spite of the multidisciplinary character of the IR concept (i.e. combining the financial, sustainability and governance spheres), most studies neglect the impact of *accounting-based determinants* on IRQ (Velte and Gerwanski, 2020). For example, there would be merit in investigating whether firms' engagement in earnings management translates into differences in IRQ.

Research objective 2: *Investigating a set of different integrated report-, corporate governance- and financial accounting-specific determinants of materiality disclosure quality (to measure IRQ) in order to account for the transdisciplinarity of the IR concept.*

Some leading academic scholars in the domain of SME-specific research have documented a rising interest in non-financial information (disclosure), which, despite disproportionately high preparation costs, materialized in a more frequent adoption of the related CSR reporting concept also among smaller firms (Fassin, 2008; Nielsen and Thomsen, 2009; Fassin et al., 2011). While larger firms have taken the pioneering role in the adoption of the new IR concept, the number of SMEs to report in an integrated way has increased significantly (Del Baldo, 2015; 2017), largely owing to the fact that SMEs possess high degrees of agility and flexibility and often are committed to stakeholder accountability and ethical values, that, in sum, may encourage IR adoption (Fassin, 2008; Baumann-Pauly et al., 2013). Although the <IR> Framework emphasizes that IR is suitable for “companies of any size” (IIRC, 2013a, p.4), there is a distinct lack of research on IR in a SME setting. In the light of the relevance of SMEs for the European

economy – in 2017, 99.8% of all European firms were SMEs (European Commission, 2018) – and the further diffusion of IR, Reuter and Messner (2015, p.302) note that “it would seem critical to involve such firms [SMEs] in the development of integrated reporting”. Since the decision to embark on IR depends upon management, who sets the reporting agenda (Beck et al., 2017), managers arguably are a relevant piece of the jigsaw in the adoption of IR. In the light of Chaidali and Jones (2017, p.16), who talk about a “knowledge vacuum” on IR preparers’ views, there would be merit in elucidating SME managers’ perceptions of incentives and disincentives to engage with IR.

A handful of extant action research and case studies that retrospectively analyze SMEs’ transition towards IR come to the conclusion that SME managers’ interest in IR is primarily driven by a genuine will for ethical values and stakeholder accountability (Del Baldo, 2015, 2017, 2019; Lodhia, 2015; Vesty et al., 2018; Girella et al., 2019), which aligns to a strong culture of shared values among SMEs (Fassin, 2008; Nielsen and Thomsen, 2009; Fassin et al., 2011; Baumann-Pauly et al., 2013). Contrarily, another explorative research stream that engages with managers of large corporations identifies business case endeavors and legitimacy reasons as core motives for IR adoption (Higgins et al., 2014; Steyn, 2014; Robertson and Samy, 2015; Chaidali and Jones, 2017; Lai et al., 2018; Adhariani and de Villiers, 2019). As yet, it remains an open question in academic literature as to whether the accountability and business case perspectives on IR are mutually exclusive and whether SME managers’ interest in IR might be likewise kindled by business case reasons. However, earlier findings insinuate that answering this question might be more complex and needs a thorough and careful explorative investigation.

On the other side, in light of the extolled benefits of IR, it appears to be paradoxical that IR still is in a ‘dormant stage’ (Hahn et al., 2018) and has, as yet, to reach its breakthrough in corporate practice (Adhariani and de Villiers, 2019). Albeit this conundrum is of high relevance to the further development of IR, extant literature largely misses out on the opportunity to elaborate on the question as to which factors actually impede the further diffusion of IR. In

particular, earlier studies assess the ex-post views of challenges during IR implementation (particularly among PIEs) (e.g. lack of reporting guidance, internal deficiencies, current IR appearance, preparation costs; e.g. Robertson and Samy, 2015; Lai et al., 2018; Adhariani and de Villiers, 2019), but do not consistently answer why firms – and particularly SMEs – do not embark on IR.

From a methodological standpoint, extant research tends to be biased towards the opinions of managers of the few firms that have (voluntarily) adopted IR. Specifically, as yet, the handful of studies that assess the ex-post views of those managers that have successfully overcome the challenges of IR (and thus are highly committed, ‘selection bias’), may be regarded a limited method for producing convincing data about managers’ actual motivators for IR (dis-)engagement. At this juncture, there is merit in investigating the views of managers of those firms that have *not* adopted IR in order to paint a more representative picture of the status quo of IR and to shed light on the questions derived. Corresponding attempts might deliver relevant insights on the thoughts of those, who are representative for the vast majority of firms that have not adopted IR. While studies with non-engagers are common practice in the related discipline of CSR reporting (e.g. de Villiers, 2003; Martin and Hadley, 2008; Stubbs et al., 2013), this approach has not been applied in an IR setting. Corresponding explorative results might allow contrasting the rather etic, theoretical and conceptual critical IR scholars (e.g. Milne and Gray, 2013; Flower, 2015; Thomson, 2015; Stent and Dowler, 2015) with more emic perspective from practice.

Research objective 3: Investigating the (critical) perceptions of IR-non-preparing SME managers of potential reasons for engagement or disengagement with IR adoption.

Consistent with the dominant shareholder focus in IR (e.g. Milne and Gray, 2013; Flower, 2015), the <IR> Framework postulates that it is IR’s primary objective to increase the capital allocation efficiency of investors, or, more specifically, “equity and *debt holders* and others who provide financial capital, both existing and

potential, including lenders and other creditors” (IIRC, 2013a, p.33, emphasis added). While traditional annual reports are past-oriented, the future-oriented focus in IR should help to better assess the future viability of the business model (Mio, 2013), and, according to the proponents of IR, provide value added to investors (Eccles and Krzus, 2010; de Villiers et al., 2014). Given that earlier studies have shown that IR entails different capital market reactions, such as lower information asymmetry (Frias-Aceituno et al., 2014; Lee and Yeo, 2016; Garcia-Sanchez and Noguera-Gamez, 2017), increased firm value (Lee and Yeo, 2016; Barth et al., 2017), higher stock liquidity (Barth et al., 2017), less transient investors (Serafeim, 2015), higher analyst forecast accuracy and lower cost of equity (Zhou et al., 2017), one might assume that IR might likewise be beneficial for creditors as it may lead to a better assessability of the investment risk (Merton, 1987; Mazumdar and Sengupta, 2005; Gong et al., 2018). However, in the light of structural differences between equity and debt holders – lenders are particularly exposed to the risk that shareholders redistribute wealth at the cost of debt providers through underinvestment, asset substitution, overinvestment or wealth expropriation (Gelb and Strawser, 2001; Armstrong et al., 2010; Benlemlih, 2017) – the value relevance of IR adoption to shareholders does not necessarily translate into the same effect among lenders. Further, to overcome asymmetric information, equity and debt holders have different information screening processes and opportunities, which might translate into a different relevance of the focal information (Bolton and Freixas, 2000).

The integrated thinking approach in IR as well as corresponding decreases in information asymmetry led Carvalho and Murcia (2016) to postulate that IR adoption should lower the cost of a company’s debt. While several studies find that related sustainability reporting decreases total, systematic and idiosyncratic firm risk (Lueg et al., 2019) and leads to lower cost of debt (Guidara et al., 2014; Magnanelli and Izzo, 2017; Gong et al., 2018; La Rosa et al., 2018), there is a distinct lack of corresponding empirical research on the association between IR adoption and debt providers. Muttakin et al. (2020) provide the only related quantitative study and reveal that IR adoption leads to lower cost of debt in the mandatory IR regime South Africa. In a qualitative inquiry, Lai et al. (2018) find

that managers engage in IR to facilitate debt holders' assessment of a firm's risk of default. In the light of the low research density, future research should elaborate on the value relevance of IR adoption to debt providers, especially in voluntary reporting regimes where firms have the choice to engage in IR or not.

***Research objective 4:** Investigating the relevance of voluntary IR adoption for debt providers.*

Given the absence of compulsory reporting guidelines for IR, the lack of enforcement mechanisms and the corresponding managerial leeway during IR preparation (Camodeca et al., 2018), reporting addressees face high uncertainty on whether the information in the (heterogeneous) integrated reports is reliable (Eccles and Krzus, 2015a; Lai et al., 2016; Chaidali and Jones, 2017; Reimsbach et al., 2018). In practical terms, report addressees often are unable to ascertain whether the information is trustworthy, or, instead, whether managers opportunistically use the integrated report as an impression management vehicle to obfuscate negative and emphasize positive information (Delmas and Burbano, 2011; Haji and Hossain, 2016). Drawing upon earlier experiences from the related domain of CSR reporting, information reliability can be enhanced through the assurance by an independent external assessor, who fulfills a monitoring role on behalf of the shareholders (stakeholders) (e.g. Simnett et al., 2009; Casey and Grenier, 2015; Sethi et al., 2017b; Velte and Stawinoga, 2017b). Similar to the assurance of CSR reports (CSRA), firms should be interested in providing an IRA in order to signal reliability, confidence and commitment to the information provided. Confirmatory, a handful of archival studies come to the conclusion that an IRA increases reporting quality (Rivera-Arrubla et al., 2017; Maroun, 2019), attenuates the downsides of low reporting quality (Caglio et al., 2020) and entails different positive market reactions, such as higher market values (Caglio et al., 2020; Gal and Akisik, 2020), increased return on equity, return on assets and stock price growth (Akisik and Gal, 2019) as well as higher liquidity and decreased analyst forecast dispersion (Caglio et al., 2020).

Aside from this ‘aggregated’ capital market perspective and the corresponding outcome measures, there is merit in investigating how specific investor groups react to an IRA. While the effects of an assurance on investors’ financial decision-making have been investigated *ad nauseam* for financial and CSR reporting (for a literature review, see Velte and Stawinoga (2017b)), related evidence in the IR context is rare. The only exception is an experiment by Reimsbach et al. (2018), who find that an IRA leads to higher investment confidence among professional investors. An open question in academic literature remains the role of an IRA for the financial decision-making of *non-professional investors (NPIs)*, who account for substantial investment volumes in the European and German stock markets and are highly relevant for firms (e.g. Elliott et al., 2007, 2008; German Investor Relations Association and Ipreo, 2017). Given that particularly NPIs are neither able to cope with the information complexity of traditional financial reports, nor are they able to approve the veracity of the data (Frederickson and Miller, 2004; Elliott, 2006; Rennekamp, 2012), an IRA may serve as a valuable quality seal that testifies the reliability of the information to less knowledgeable investors. Given that the IR concept with the underlying integrated thinking approach intends to quantify all *material* (and hence only the decision-useful) financial and non-financial information within one report, IR has the potential to decrease information overload and establish as a relevant information memorandum particularly for NPIs.

It would be further of high academic and practical interest to ascertain whether different assurance providers and assurance levels qualify the value of an IRA to NPIs. While studies from the related CSRA discipline found the assurance provider (e.g. Hodge et al., 2009; Perego and Kolk, 2012; Zorio et al., 2013; Cohen and Simnett, 2015) and the assurance level (e.g. Hodge et al., 2009; Fuhrmann et al., 2017) to be relevant to investors, it is unclear whether this is transferrable to the decision-making of (non-professional) investors in the IRA setting. Moreover, no IRA-related study has yet addressed the “assurance expectations gap” that may curtail a corresponding investment effect particularly among NPIs (e.g. Monroe and Woodliff, 1993; Gay et al., 1997; Schelluch and Gay, 2006).

Research objective 5: Investigating the effects of an IRA as well as its peculiarities (i.e. assurance provider and assurance level) on the financial decision-making of NPIs.

Alongside different scholars and practical voices that recommend an IRA in order to increase the reliability of integrated reports, a strand of literature that is critical about (the worth of) prevailing IRA practice has emerged in academia. Among others, some IR-specific peculiarities, such as the intertwined financial and non-financial as well as the forward-looking character, are criticized for being non-auditable under present assurance standards that are considered to be not fit-for-purpose for IRA engagements (Cheng et al., 2014; Briem and Wald, 2018; Maroun, 2018). Against this backdrop, it remains an unsolved question as to whether current IRA practice really leads to higher degrees of confidence or rather creates the impression of higher confidence. This is commensurate with other critical scholars from the related domain of CSRA. In recent work, Boiral et al. (2019), for example, apply semi-structured interviews with sustainability assurance agents and find that sustainability assurance is driven by commercialism, symbolic nature of the verification process, interdependency between auditing and consulting activities as well as familiarity with contracting parties, which curtail the value of corresponding assurance engagements. Similar in vein, other scholars criticize that, in practice, the independence of the assessor often is thwarted through economic bonding and management involvement (Maury, 2000; O'Dwyer and Owen, 2005; Smith et al., 2011). Hence, in the light of different assurance-critical scholars, there would be merit in critically assessing the views of knowledgeable participants ('insiders', e.g. managers) on the topic of IRA to draw conclusions on current shortcomings and opportunities for its further development.

Research objective 6: Exploring opinions and (critical) voices of experienced participants towards IRA (in its current practice).

1.3 Summary of research articles

This dissertation is composed of four core articles, which are embedded and contextualized within a dissertation framework paper. Figure 1 visualizes how the articles are related one to another.

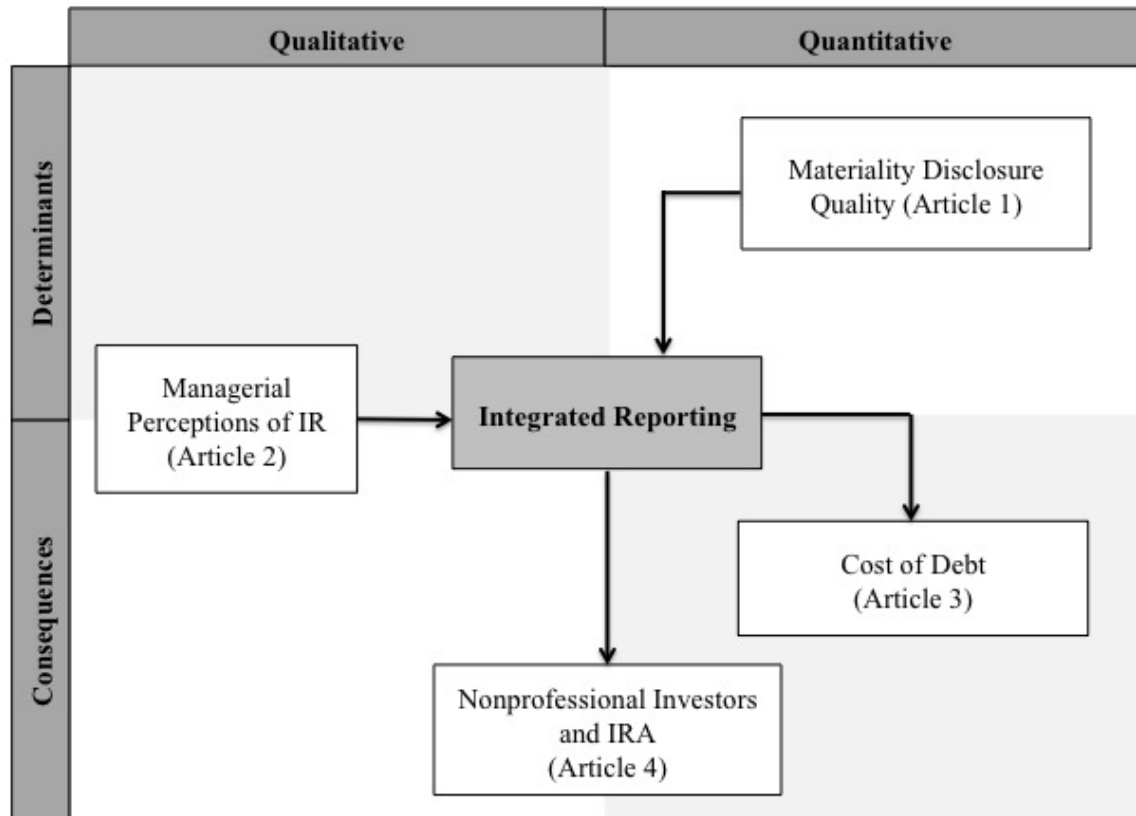


Figure 1: Overview of research articles

The horizontal line of the figure describes the empirical method applied (qualitative or quantitative), while the vertical sphere displays whether input or output factors (determinants or consequences) are analyzed. At this juncture, it should be pointed out that, depending on the research objective, a variety of empirical methods have been applied, both qualitative and quantitative, in order to provide a more integral view on different areas of IR. While archival approaches were applied to investigate IR-specific factors among those firms that already apply IR (i.e. determinants of IRQ and the effects of IR adoption for a firm's cost of debt), explorative research designs were deemed helpful to explore those factors that yet cannot be adequately addressed with archival data but require primary data collection. Along these lines, de Villiers et al. (2019)

emphasize the relevance of qualitative inquiries for accounting research in general, and for IR in particular, as explorative approaches help to study “complex interconnections and relationships without reducing the complexity to simple numbers” (p.1459), which often allows to “develop better understandings and generate new theories on how accounting develops, functions and influences behaviour” (p.1459). Hence, interview approaches were applied in order to capture critical voices from practice regarding IR adoption (i.e. why managers do not engage in IR) on the one hand, and to explore managers’ thoughts about present IRA practice on the other hand. Finally, to explore behavioral aspects in an IR context, an experimental study helped to investigate the investment behavior of NPIs in case of an IRA, while holding constant all other factors. For the sake of clarity, figure 2 presents the different IR variables/dimensions (IR adoption, IRQ, IRA) addressed within the four research articles. As visualized in the figure, the articles explored the determinants and consequences of IR adoption, analyzed different determinants of IRQ and assessed the effects of an IRA. An investigation of the consequences of IRQ and the determinants of an IRA is outside the scope of this dissertation, but should be further elaborated on in future research.

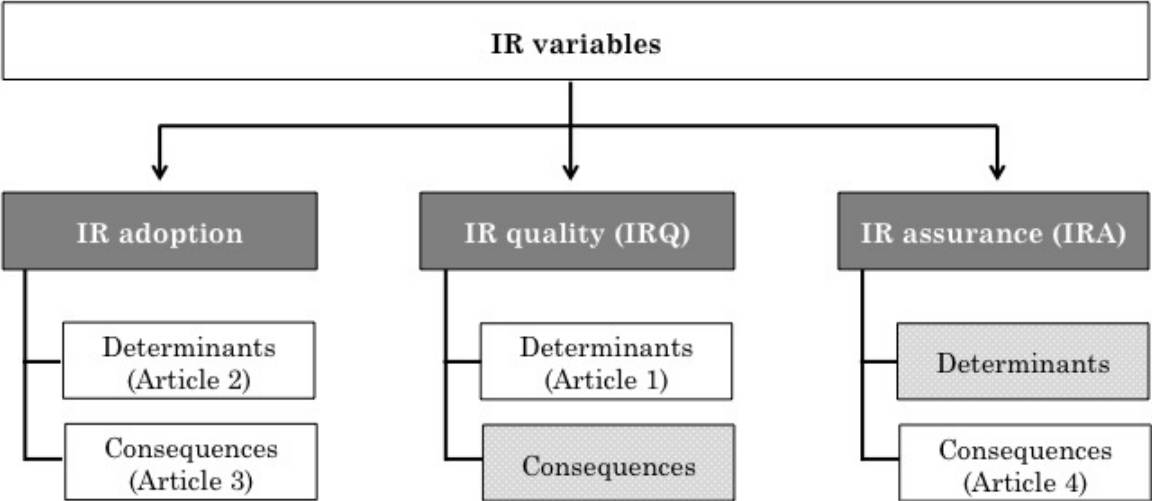


Figure 2: Overview of IR variables

Figure 3 briefly juxtaposes the articles including their title, authors, methodology, sample, data source, as well as publication status, journal metrics and their presentation to the scientific community. Further, each article is linked to the research objectives derived in section 1.2. In order to account for the multidisciplinary of the IR concept – it combines elementary aspects of the sustainability-, management- and accounting science – and to benefit from the different viewpoints of referees from different disciplines throughout the peer-review procedure, target journals were selected from the disciplines of sustainability science, management and accounting. While the following part of this section provides a brief summary of each article, the original articles are provided in the annex (annex 1 to 4). In case of joint authorships, the distribution of work is explained in annex 5.

The first article entitled “Determinants of materiality disclosure quality in integrated reporting: Empirical evidence from an international setting” investigates a set of integrated report-, firm-, and governance-specific factors that were expected to determine a firm’s materiality disclosure quality (MDQ) in IR. To this purpose, an original MDQ score, composed of seven items that shape the materiality assessment in corporate practice, was developed, which allowed to measure the abstract concept of IRQ. The rationale behind the choice of the materiality principle was as follows: materiality is a central but discrete guiding principle in IR, which needs to be disclosed in each report, but coincidentally allows to assess a firm’s willingness to exercise reporting discretion. The data for the MDQ score was collected by means of a manual content analysis of the integrated reports in the sample. The final sample for the empirical-quantitative (archival) investigation was composed of 359 firm-year observations from Europe and South Africa between 2013 and 2016. Results showed that MDQ is positively associated with learning effects, which suggests that firms iteratively learn from earlier IR experiences and build upon an established reporting infrastructure, which leads to increased reporting quality over time. Besides, different governance factors were identified as determinants of MDQ: first, MDQ was positively associated with board gender diversity, which implies that more diverse boards lead to higher reporting quality. Besides, an external assurance of the non-financial

information in the integrated report was positively associated with MDQ. Against expectations, inclusion in the Dow Jones Sustainability Index (DJSI), report readability as well as engagement in earnings management were not associated with MDQ. The article has been jointly developed with Othar Kordsachia and Patrick Velte and has been published in the journal *Business Strategy and the Environment* (VHB Jourqual 3: B, ABS: 3-star; SCIMAGO H-index: 88, Impact factor: 6.38).

The second article “Managers’ Incentives and Disincentives to Engage with Integrated Reporting, or Why Managers Might Not Adopt Integrated Reporting: An Exploratory Study in a Nascent Setting” investigates the question why, despite the extolled benefits of IR, managers actually refuse from adopting IR in corporate practice. In pursuit of this research objective, this article aims to spotlight and contrast both the expected benefits and prevailing barriers to IR adoption in corporate practice. To achieve this goal, this article applied an explorative in-depth interview design that deliberately engaged with 16 managers of large SMEs from various different industries that as yet have not engaged with IR but are potential candidates to do so in the future. Against expectations, results indicate that SME managers’ interest in IR primarily centers around expected business case benefits of IR, while stakeholder accountability plays only a subordinate role. In practical terms, managers regard IR a potentially valuable reporting tool primarily for image reasons and to achieve legitimacy, but are also interested in its contribution to improving investor dialogue and recruiting employees. However, despite their interest in IR, managers did not adopt it in practice. This paradoxical behavior was attributable to three major impediments that outweigh any expected benefits and inhibit managers from reporting in an integrated way: a perceived lack of interest by the relevant publics, infeasibility of the IR concept to actually address user needs (lack and vagueness of reporting guidance, high discretion), and preparation costs. A subsequent comparison with reasons that earlier prevent(ed) SMEs from embarking on CSR reporting shows similar tendencies. Hence, results justify doubts about the ‘revolutionary’ character of IR and imply that IR has yet not overcome the drawbacks of earlier reporting formats as postulated by its

proponents and that the future of IR depends on addressing these challenges. The article is a single author article and, after two major revisions and one minor revision (in this order), currently again is under review in *Qualitative Research in Accounting and Management* (VHB Jourqual 3: B, ABS: 2-star; SCIMAGO H-index: 22, Impact factor: 1.98).

The third article entitled “Does it pay off? Integrated reporting and cost of debt: European Evidence” investigates with an empirical-quantitative (archival) design whether the voluntary engagement in IR leads to lower marginal cost of public debt among voluntary IR reporters. The sample consists of 2,196 firm-year observations of European firms between 2015 and 2017. After controlling for different debt-, risk-, and other firm-specific factors, results suggest that IR adoption is negatively associated with a firm’s marginal cost of debt. Subsequent moderation analyses show that this effect is stronger for firms with lower ESG performance (i.e. firms with lower ESG performance disproportionately benefit from IR adoption, possibly due to higher marginal decreases in information asymmetry or a higher signaling value), and only holds for those operating in environmentally sensitive industries. In practical terms, results show that the publication of an integrated report can compensate for low ESG performances and can offset the industry-specific risk premium levied for a firm’s affiliation to a sensitive industry. Results are robust to a battery of modifications, such as hierarchical linear modeling and different tests for endogeneity (e.g. additional variables models and propensity score matching techniques). The article is a single author article and is published (online first) in *Corporate Social Responsibility and Environmental Management* (VHB Jourqual 3: C, ABS: 1-star; SCIMAGO H-index: 58, Impact factor: 5.51).

The fourth article, named “Do Nonprofessional Investors Value the Assurance of Integrated Reports? Exploratory Evidence” uses a mixed methods approach to assess whether NPIs value a firm’s decision to have its integrated report voluntarily assured. In the first step, the study uses a 2 x 2 + 1 experimental design, where participants take an investment decision on the basis of a two-page extract from an integrated report, accompanied by an assurance statement. In

the second step, in-depth interviews were carried out with a sub-sample of the participants to later on triangulate and explain the results. The experimental strategy intended to rely on two different samples of NPIs, namely 142 Masters students (less sophisticated, theoretical-academic decision-frame), who participated in a within-subjects design, and 97 German managers (highly sophisticated, practical decision-frame) from different industries, who – due to limited time – participated in a between-subjects design. Results reveal that NPIs, if proxied by Masters students, invest higher amounts in case of an IRA, especially if the assurance level is high/reasonable, whereas the choice of the assurance provider had no effect of their financial decision-making. Contrary to expectations, an IRA had – dependent on the model specification – either no or even an investment-decreasing impact on managers, while neither the provider nor the level affected investments. In order to subsequently contextualize this puzzling finding, follow-up interviews were carried out with 16 managers that had earlier participated in the experiment. Results reveal three superordinate critical dimensions that drive managers' attitude towards voluntary assurance engagements: first, interlocutors expressed negative practical experiences with audit and assurance engagements (i.e. time pressure, over-standardization, insufficient willingness to scrutinize underlying assumptions, lack of independence and economic bonding). Second, managers were critical about IRA-specific factors, such as missing guidance, technical challenges, forward-looking focus and managerial leeway. Third, after past scandals, executives expressed emotional caveats regarding the assurance and audit profession that may have shaped the investment-decreasing tendency of an IRA. The study concludes that, at least in the eyes of more experienced NPIs, IRA has a long way to go and many challenges to overcome before it leads to *actually* higher reliability. The article has been developed jointly with Patrick Velte and Mario Mechtel and, after a major revision, currently is under review in *European Management Journal* (VHB Jourqual 3: B, ABS: 2-star; SCIMAGO H-index: 89, Impact factor: 2.99).

	Article 1	Article 2	Article 3	Article 4
Research Objectives	Research Objectives 1, 2	Research Objective 3	Research Objective 4	Research Objectives 5, 6
Title	Determinants of materiality disclosure quality in integrated reporting: Empirical evidence from an international setting	Managers' Incentives and Disincentives to Engage with Integrated Reporting, or Why Managers Might Not Adopt Integrated Reporting: An Exploratory Study in a Nascent Setting	Does it pay off? Integrated reporting and cost of debt: European Evidence	Do Nonprofessional Investors Value the Assurance of Integrated Reports? Exploratory Evidence
Authors	Gerwanski, J., Kordsachia, O., Velte, P.	Gerwanski, J.	Gerwanski, J.	Gerwanski, J., Velte, P., Mechtel, M.
Methodology	Empirical-quantitative, archival, panel data structure: <ul style="list-style-type: none"> • Generalized least squares random effects estimation • Three-level variance component maximum likelihood estimation (hierarchical-linear modeling) 	Empirical-qualitative: <ul style="list-style-type: none"> • In-depth interviews (four-stage-process) 	Empirical-quantitative, archival, panel data structure: <ul style="list-style-type: none"> • Generalized least squares random effects estimation • Three-level variance component maximum likelihood estimation (hierarchical-linear modeling) • Propensity score matching 	Empirical-quantitative/qualitative: <ul style="list-style-type: none"> • Mixed methods approach (experiment and in-depth interviews)
Sample	359 firm-year observations between 2013 and 2016; international (Europe and South Africa)	16 interviews with German top and middle managers of large German SMEs between January and March 2018	2,196 firm-year observations between 2015 and 2017; international (Europe)	Stage 1: Experiment with 142 German Masters students and 97 German managers Stage 2: Interviews with 16 German managers
Data source	Thomson Reuters Datastream, Eikon, Asset 4; manual screening of around 800 integrated reports	Proprietary interview data; access to managers acquired by aid of a major German bank	Thomson Reuters Datastream, Eikon, Asset 4, Starmine Analytics; manual screening of around 600 integrated reports	Proprietary experimental and interview data; access to managers acquired by aid of a major German bank
Points	0.33	1	1	0.6
Status	Published	3 rd Round (Minor Revisions)	Published	1 st Round (Major Revision)
Journal / Book	Business Strategy and the Environment, Vol. 28, 750-770	Qualitative Research in Accounting & Management	Corporate Social Responsibility and Environmental Management (online first)	European Management Journal
Ranking	<ul style="list-style-type: none"> • VHB-JOURQUAL 3: B • ABS: 3-star • SCIMAGO H-index: 88 • Impact factor: 6.38 	<ul style="list-style-type: none"> • VHB-JOURQUAL 3: B • ABS: 2-star • SCIMAGO H-index: 22 • Impact factor: 1.98 	<ul style="list-style-type: none"> • VHB-JOURQUAL 3: C • ABS: 1-star • SCIMAGO H-index: 58 • Impact factor: 5.51 	<ul style="list-style-type: none"> • VHB-JOURQUAL 3: B • ABS: 2-star • SCIMAGO H-index: 89 • Impact factor: 2.99

Awards/ Conferences	<ul style="list-style-type: none"> • Research Award Leuphana University 2019 • Wiley Award: Among to 10% most downloaded papers in BSE within last year • EAA 2019 (Velte) • EURAM 2019 (Gerwanski) 		<ul style="list-style-type: none"> • EAA 2020 (accepted) • EURAM 2020 (accepted) 	
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Figure 3: Description of research articles

1.4 Structure of the dissertation

In the following, the dissertation framework paper begins with embedding the concept of IR within the theoretical landscape (section 2). At this point, the concept of IR is spotlighted from different theoretical angles in order to derive an integral and comprehensible theoretical understanding of the new reporting medium. Subsequently, section 3 outlines the regulatory outset, with a predominant focus on Europe and Germany. Ensuing, section 4 presents a review of relevant earlier empirical studies related to the individual articles underlying this dissertation, which allows to define the status quo of current knowledge on IR and to relate this dissertation’s findings to extant literature. Subsequently, section 5 presents the results of the single studies and discusses their contributions and implications for academia, regulators and corporate practice. Finally, this dissertations framework paper ends with a conclusion and outlook (section 6). In the annex, the original articles are presented (annex 1 to 4). Illustration 4 visualizes the structure of the dissertation.

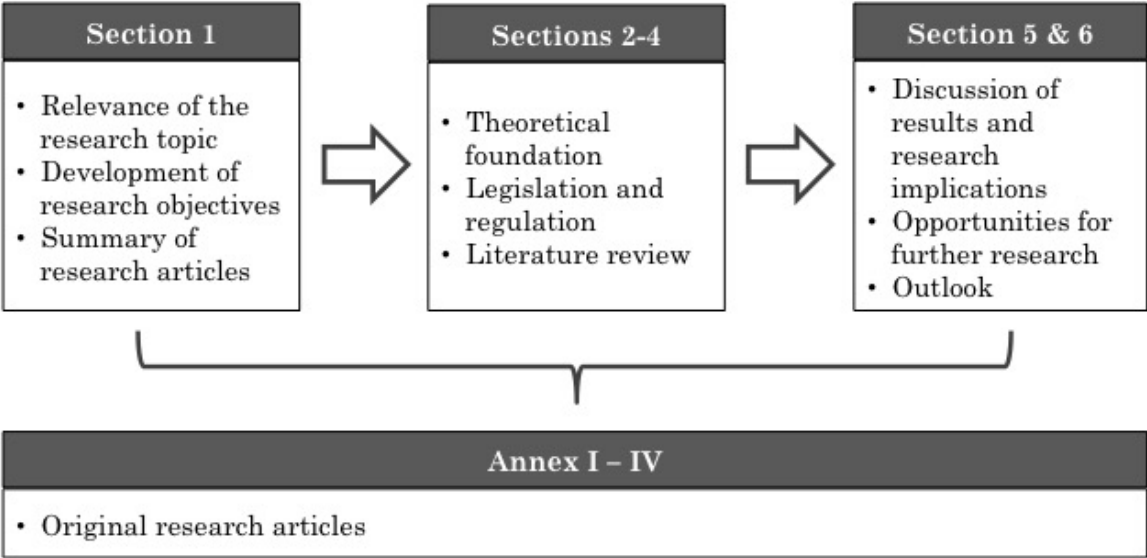


Figure 4: Structure of the dissertation

2. Theoretical foundation

2.1 Overview

In line with the multidisciplinary character of IR, extant literature uses a wide array of theoretical approaches to explain the new reporting concept. Reflective of the ongoing discussion about whether investors (IIRC, 2013a) or stakeholders more generally (Milne and Gray, 2013; Flower, 2015) should be the ‘*right*’ focus group in IR, agency theory (Jensen and Meckling, 1976) and stakeholder theory (Freeman, 1984) might be regarded as the two most established theories in IR literature (Speziale, 2019). As displayed in figure 5, the concept of IR (adoption) as well as relevant factors surrounding IR (IRQ, IRA) are described from a shareholder theoretical perspective (section 2.2), which applies principal agent theory (Jensen and Meckling, 1976) and signaling theory (Spence, 1973), and a stakeholder theoretical lens (section 2.3) that draws upon stakeholder theory (Freeman, 1984) and legitimacy theory (Dowling and Pfeffer, 1975; Suchman, 1995). In section 2.4, theories that are critical about firms’ voluntary reporting engagements, such as critical theory⁷ (Gray and Milne, 2002; O’Dwyer, 2003; Brown and Fraser, 2006; Burritt and Schaltegger, 2010) and impression management theory (Schlenker, 1980), are applied to the IR concept in order to provide a more holistic theoretical lens on IR, especially since the novel reporting concept and its development are substantially shaped by its critics, which thus need to be carefully taken into account. Each of the sections 2.2 to 2.4 embeds complementary theory pairs (i.e. agency theory and signaling theory, stakeholder theory and legitimacy theory, critical theory and impression management theory), which might be regarded as substitutive among each other. In line with the adage ‘unity in diversity’, a broadly diversified pluralistic theoretical approach helps to provide theoretical references to the plurality of the IR concept.

⁷ Unlike other theoretical approaches, critical theory has emerged as the outcome of critical literature on voluntary corporate reporting. Critical theory is based on a deep skepticism about corporations’ underlying intentions, which are regarded as the result of corporate opportunism and capital-oriented dominance.

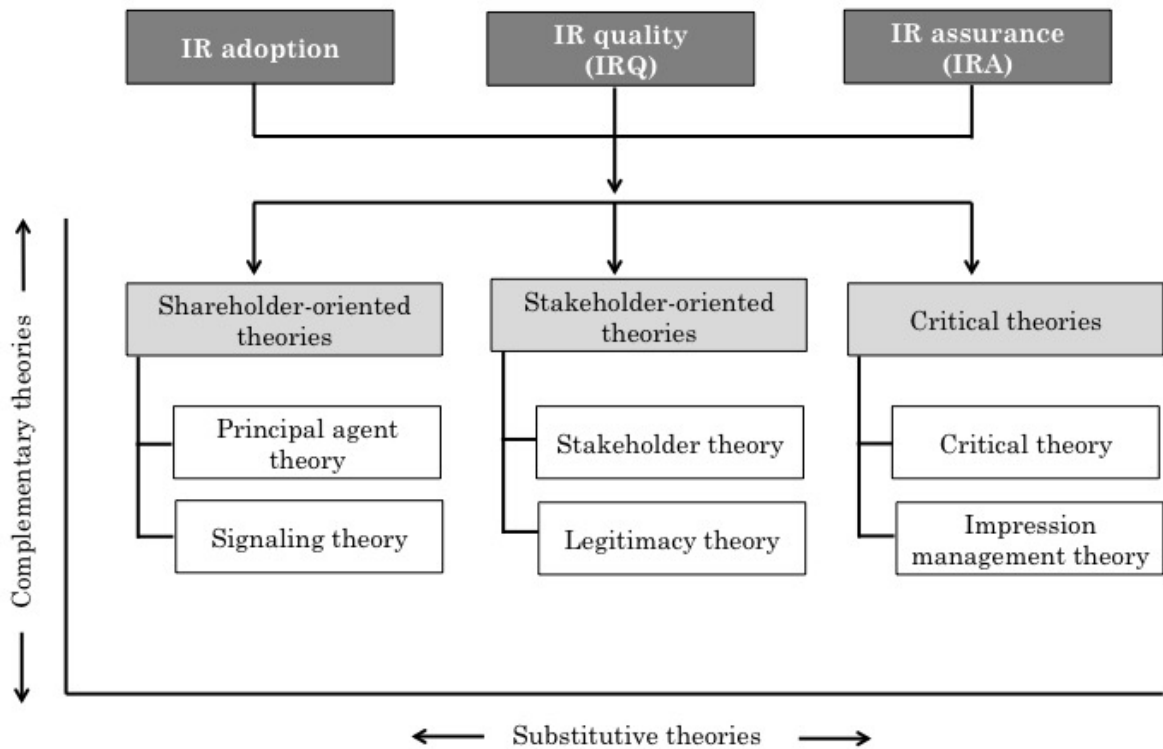


Figure 5: Theoretical framework

2.2 Principal agent theory and signaling theory

According to classical *principal agency theory* (PAT) (Jensen and Meckling, 1976), the principal assigns an agent to act on his/her behalf, who receives compensation in return. However, according to the underlying assumptions of PAT, the interests of the agent and the principal often are not aligned, which leads to conflicts of interest (Obermann et al., 2020). By its very nature, the self-serving agent has an information advantage over the principal (hidden information), which may be abused to extract additional rents from the principal. The principal is unable to control all actions (hidden action) and intentions (hidden characteristics) of the agent due to restrained time and monetary efforts, which would otherwise lead to disproportionately high monitoring costs (Fama and Jensen, 1983). In order to decrease the agent's information advantage and thereby to curtail his/her opportunity to abuse this information asymmetry, different (corporate) governance mechanisms have established.

One major mechanism is the disclosure of corporate reports, which increase transparency and provide accountability towards shareholders (and other stakeholders).⁸ While the disclosure of a firm's annual report is mandatory (under the European NFRD major German firms are also obliged to provide relevant non-financial information; the directive is discussed in greater detail in section 3.1.4), the preparation of an integrated report, however, is a voluntary management decision (with the exception of South Africa). While, according to classical PAT assumptions, managers in their role as opportunistic agents assumedly are interested in preserving prevailing information asymmetries, outside shareholder pressure and bargaining power of institutional investors often render voluntary reporting initiatives, such as IR adoption, a 'voluntary duty' and force managers to 'voluntarily' disclose additional information.⁹ The strong investor focus in IR (IIRC, 2013a; Flower, 2015; Thomson, 2015) qualifies IR as a valuable investor relations tool that management can engage in to release outside investor pressure for more transparency, and thereby to decrease costly information asymmetries (Frias-Aceituno et al., 2014; Lee and Yeo, 2016; Garcia-Sanchez and Noguera-Gamez, 2017). This should particularly apply to satisfying the information demands of long-term oriented or sustainable investors (Serafeim, 2015; Humphrey et al., 2017), who – unlike transient investors, who are interested in short-term gains and thus might consider the preparation of an integrated report as unnecessary costs – are interested in an active monitoring of the firm (Dhaliwal et al., 2011).

⁸ There is a wide array of corporate governance mechanisms that have established to mediate and mitigate conflicts of interest between principals and agents, such as corporate disclosure (e.g. financial disclosure, CSR reporting), board monitoring (e.g. supervisory board, non-executive directors, one-tier and two-tier board structures), internal committees (CSR committee, audit committee), external and internal audit/assurance etc. In regards to the IR concept, the focus is placed on corporate reporting, while elaborating on the other governance mechanisms in greater detail is outside the scope of this dissertation.

⁹ While the following section focuses on outside pressure by monitoring investors/shareholders as a predominant explanation for managers' voluntary engagement with IR, for the sake of completeness, it should be mentioned that managers might voluntarily adopt IR due to a genuine will for stakeholder accountability or an IR-, reporting- or transparency-specific target agreement in the manager's incentive systems/schemes. For instance, there is a growing research body that explores the effects of managerial salaries being tied to sustainability performance and the subsequent reporting thereon (e.g. Walls et al., 2012; Karim et al., 2018; Velte, 2018b).

From an agency theoretical standpoint, the preparation of an integrated report leads to a twofold reduction in information asymmetries that facilitates outsiders' monitoring of the firm: first, by combining a firm's financial and non-financial value drivers within one single report, IR provides long-term oriented and sustainable investors (i.e. additional incremental information) with decision-useful information, such as how strategic issues are targeted, how risks (e.g. ESG- or climate-specific) are identified and mitigated and how (value relevant) sustainability-related issues are addressed, implemented into daily business and contribute to a firm's overall value creation. Second, by disclosing material information only, an integrated report provides an accumulated essence and thereby decreases the complexity of a firm's extant disconnected reporting environments (e.g. annual report, CSR report, corporate governance report, remuneration report, climate report), which leads to a better access to information and lower information searching costs for long-term oriented investors that are interested in the active monitoring of the firm.

However, taking into consideration that the decision usefulness of the information provided as well as the financial decision-making of investors (Biddle et al., 2009; Costello and Wittenberg-Moerman, 2011) is determined by the quality of the focal report, it is reasonable to assume that the ability of the integrated report to decrease information asymmetry and to serve as a monitoring instrument is determined by IRQ. In practical terms, a flawed application (e.g. disregard of the connectivity principle), the inclusion of too much or too few information (e.g. disregard of the materiality principle, risk of information overload or greenwashing), or the disclosure of boilerplate information does neither lead to a superior access to information nor does it provide a reasonable basis for the monitoring of the firm.

While the classical PAT assumed that opportunistic managers engage in IR in anticipation of outside pressure exerted by monitoring investors, related *signaling theory* (Spence, 1973), which is prevalent in accounting studies to explain corporate voluntary disclosure decisions (Zhang and Liao, 2015), presumes that managers are actually willing to provide additional information.

Specifically, the basic idea of signaling theory is that managers of high-quality firms opt to voluntarily disclose information (as a quality signal) to reduce information asymmetry and to differentiate from others (Mitchell, 2006; Kanagaretnam et al., 2007; Zhang and Liao, 2015). While firms with lower (e.g. financial or ESG) performance are less likely to disclose additional information, leading firms are more eager to communicate their superior performance.

Through the provision of information on the firm's value creation and its adherence to social norms by means of IR, management can signal to long-term oriented and sustainable investors the advantageousness (and long-term orientation) of the investment opportunity compared to other investment targets, for example of firms within the same industry that have not embarked on IR and are not willing to provide additional information in an integrated way. Moreover, voluntary adoption of IR signals a strong corporate will for transparency, a pioneering role in the transition of new reporting instruments, as well as a good corporate governance (Cong and Freedman, 2011). Besides, the assessment of the different corporate capitals in IR requires high degrees of management control and an established risk management and reporting infrastructure, which signals well-developed internal processes. As the adoption of IR has a signaling function, so has the IRQ. With the preparation of a high-quality integrated report, management can signal transparency and good corporate control. Besides, high IRQ assumedly helps to differentiate from other firms that have adopted IR, particularly when mimetic isomorphism (DiMaggio and Powell, 1983) and peer-pressure lead other firms to follow suit as regards IR adoption. Given that IRQ *inter alia* is strongly related to engagement with the relevant publics by means of ongoing stakeholder engagement, firms with high-quality reports can be assumed to be more likely to engage with their (long-term oriented) investors.

PAT and signaling theory do also have a relevant role in explaining a firm's decision to voluntarily have their integrated report assured (IRA). The reliability and credibility of the information provided in the integrated report is bounded by its voluntary character and managerial discretion, e.g. in the application of the materiality principle (Simnett and Huggins, 2015; Simnett et al., 2016; Maroun,

2018; Goicoechea et al., 2019). While a firm's management (agent) knows about the veracity (falsity) of the information provided in the integrated report, investors (principal) as company outsiders are hardly able to prove the veracity of the data, which leads to information asymmetry between preparers and report addressees. The degree of information asymmetry further depends on the particular investor group: just like the reports are heterogeneous, so are the investors. While professional investors, such as analysts, brokers or fund managers, possess high in-depth knowledge to 'read between the lines' and may instinctively gauge the general plausibility of the data, less experienced (non-professional) investors do neither possess complex information search strategies nor are they able to approve the veracity of the data (Frederickson and Miller, 2004; Elliott, 2006; Rennekamp, 2012). In order to provide remedy and to increase the reliability of the information contained in the integrated report, management can opt to have their report externally assured by an independent party, either an auditor or a consultant, to verify (parts of) the integrated report.¹⁰ Dependent on the level and scope of the assurance engagement, the assurator in its independent gatekeeper function tests for the plausibility/veracity of the data.¹¹ Hence follows that an IRA increases the reliability of the data and thereby decreases (costly) information asymmetries between the firm and the investor. In case of an IRA, the assurator has engaged in the monitoring of the integrated report on behalf of the investors, which implies that investors do not have to test for the plausibility of the data by themselves and face lower monitoring costs. Besides, since the IRA is voluntary, it likewise has a signaling function to investors, who consider the external verification as a quality seal. Through an IRA, management commits to the reliability of the data and can emphasize the quality of/promote the investment decision (compared to competitors who disclose integrated reports without an IRA).

¹⁰ While the board of directors typically engages the financial auditor with assistance of the audit committee (e.g. Hussey, 1999; Krishnan and Ye, 2005; Chen and Zhou, 2007), the IRA is a voluntary assurance engagement and a management choice.

¹¹ It should be pointed out that the assurator also provides assistance to the non-executive directors in fulfilling their monitoring duty. This applies particularly to Germany, where the transposition of the European NFRD into German law has resulted in a stronger liability of non-executive directors of PIEs as regards the veracity of the non-financial information disclosed in either the management report or a separate report (section 3.1.4 elaborates on this in greater detail).

2.3 Stakeholder theory and legitimacy theory

Contrary to the ‘capitalistic’ PAT with its exclusive shareholder focus – albeit long-term oriented and sustainable investors addressed by PAT are interested in the long-term success of the firm, which arguably necessitates taking into account and satisfying other stakeholder interests – *stakeholder theory* (Freeman, 1984) has a distinct accountability and public welfare focus. Following stakeholder theory, a firm’s existence is bounded by the support of its stakeholders, which translates into the necessity to address their material interests (Gray et al., 1995; Zhang and Liao, 2015). It follows that firms that satisfy the demands of their various stakeholders are likely to create more value over time (Freeman et al., 2007). Freeman’s (1984) specification of stakeholder theory states that all business decisions have ethical context (and *vice versa*), which implies that firms’ adoption of voluntary reporting initiatives is driven by an intrinsic managerial will to embrace genuine accountability towards stakeholders and society at large beyond all profit maximizations (Brown and Fraser, 2006; Laczniak and Murphy, 2012; Solomon, 2013). Hence, voluntary reporting initiatives help firms to establish a dialogue with their stakeholders and to achieve their approval (Gray et al., 1995; Zhang and Liao, 2015). However, given that firms do not possess indefinite resources and different stakeholder groups impose differing requirements (van Bommel, 2014), firms are likely to focus on identifying and addressing their salient stakeholders in voluntary reporting initiatives (Mitchell et al., 1997; Kamal et al., 2015).

In line with stakeholder theory, the IIRC’s <IR> Framework (2013a) proclaims that IR shall focus on “all stakeholders interested in an organization’s ability to create value over time” (p.4) and hence help firms to “respond to key stakeholders’ legitimate needs and interests” (p.2). Moreover, the <IR> Framework (2013a) stresses the role of IR for providing (stakeholder) accountability, which is the result of an “ethical responsibility to accept, or choose to accept stewardship responsibility and be guided in doing so by stakeholder expectations” (p.18). Against this backdrop, prior literature revealed that firms adopt IR to address and reach out to a variety of different stakeholders, such as employees, customers, suppliers and the broader society (Steyn, 2014; Lai et al.,

2018; Adhariani and de Villiers, 2019). This is hardly surprising given the various stakeholder-related content in the <IR> Framework. For instance, stakeholder relationships are prominently considered as one of the seven guiding principles in IR. As the result of ongoing stakeholder engagement, firms should “provide insight into the nature and quality of the organization’s relationships with its key stakeholders, including how and to what extent the organization understands, takes into account and responds to their legitimate needs and interests” (IIRC, 2013a, p.17). The ongoing stakeholder engagement further helps firms to identify their salient stakeholder groups (Gianfelici et al., 2018) – the <IR> Framework uses the term of ‘key stakeholders’ – and to identify, balance out and mitigate conflicts of interest between them. To give a fictitious, but illustrative example: as the result of its ongoing stakeholder dialogue, a firm identifies investors, employees and customers as key stakeholders that determine its future success. With this information in mind, the firm can prominently address these stakeholder groups in its integrated report and show how different aims, opinions and values of these stakeholders are (or can be) aligned. The firm could operationalize how higher employee satisfaction (e.g. through childcare offers, flextime) translates into higher productivity (higher quality) and, in consequence, higher returns; or how a reduction in carbon emissions leads to higher satisfaction among employees, lower costs for permission rights, externalities and litigation, and higher returns.

Through the disclosure of an integrated report, management is not only able to address and engage with its relevant stakeholder groups, but likewise to legitimate in society. The underlying idea of *legitimacy theory* (Dowling and Pfeffer, 1975; Suchman, 1995) is that there is a ‘social contract’ between a firm and the society the firm operates in (Patten, 1992). The community confers the firm its ‘license to operate’, which is bounded by the adherence to social norms and society’s expectations, and is threatened in case the firm violates this social contract (Zhang and Liao, 2015). With the disclosure of the integrated report, firms can provide relevant information that helps to signal its adherence to these social norms. Further, it can describe its place and role in broader society and unfold how material risks are managed in future, e.g. those that threaten the

environment (waste of resources, carbon emissions, water pollution) or social justice (child labor, exploitation, corruption).

However, the legitimacy theoretical lens on IR likewise bears the risk that firms opportunistically adopt IR in a symbolic manner, e.g. through re-branding their annual report as an integrated report (Briem and Wald, 2018), in order to achieve, maintain or repair legitimacy without actually applying the underlying idea of IR. Specifically, firms might henceforth provide disconnected CSR and financial reports within one ‘integrated’ document (i.e. risk of information overload) or present themselves in a too favorable light, for example as regards their sustainability performance (i.e. risk of greenwashing) to unjustifiably legitimate in society. To diminish the risk of a symbolic IR application – as discussed in the aforementioned section – there is the need for IRQ and IRA.

From a legitimacy theoretical standpoint, higher IRQ should lead to a better assessability of a firm’s abiding by society’s expectations and should help to confer the future ‘right to be’ to the firm. Moreover, higher IRQ does not only decrease the risk that the concept of IR is abused for symbolic purposes, but increases the likelihood that the idea of IR is properly applied and implemented in corporate practice. This suggests that the firm engages in a reasonable stakeholder dialogue, as part of the IR process, and addresses issues that are relevant to its salient stakeholders (e.g. specific environmental topics), which in turn leads to a higher stakeholder identification with the firm.

In the light that integrated reports are very heterogeneous as regards their quality and are inherently not objective (to differing degrees), an IRA can further decrease the risk of greenwashing or a symbolic abuse of the IR concept, which corresponds to Eccles et al.’s (2012, p.162) expectation that “the full value of integrated reporting will only be realized when integrated assurance is provided on the report”. In order to receive an (unqualified) IRA opinion, all data in the integrated report has to be correct, or, at least plausible (dependent on the specification of the assurance engagement and assurance level). Moreover, assurance engagements often compel minimum requirements that need to be

fulfilled in order to receive an (unqualified) IRA opinion. In case that an integrated report is of symbolic nature only, assurers might not be willing to provide an IRA as long as the integrated report does not comply (in all material aspects) with the reporting guidelines.

2.4 Critical theory and impression management theory

Proponents of the *critical theory* (Gray and Milne, 2002; O'Dwyer, 2003; Brown and Fraser, 2006; Burritt and Schaltegger, 2010) are deeply skeptical about firms' underlying intentions to engage in voluntary reporting initiatives such as IR. In line with the aforementioned discussion on an opportunistic abuse of the IR concept to legitimate in society, critical theory builds upon the rather nihilistic idea of a malicious and intentional abuse of reporting concepts. Specifically, according to critical theorists, firms engage in voluntary reporting initiatives to opportunistically appropriate their original purpose, especially if these reporting initiatives are 'premature' and allow high degrees of freedom and discretion. Critical theorists believe that new reporting formats generally are unstable and will vanish over time if they are unable to overcome drawbacks of earlier initiatives (Brown and Fraser, 2006; Kuhn and Deetz, 2008; Burritt and Schaltegger, 2010; Dillard and Vinnari, 2019; Brown et al., 2020).

As previously outlined, the abstract and non-binding IR concept provides high degrees of managerial leeway and allows management to decide about how to and what to include in the integrated report (disclosure selectivity). For this reason, critical theorists regard IR as a vehicle for impression management (Haji and Hossain, 2016; Camodeca et al., 2018). *Impression management theory* (Schlenker, 1980) posits that management tends to emphasize positive and obfuscate negative information to create an overall positive framing of the firm. While IR has promised to overcome shortcomings of earlier reporting initiatives (e.g. CSR reporting) in order to avoid the risk of greenwashing, window dressing and impression management, earlier studies criticize the current shape of integrated reports as being too long, incomplete, hardly readable and appropriated (e.g. Atkins and Maroun, 2015; Lai et al., 2016; Lueg et al., 2016;

Chaidali and Jones, 2017; du Toit, 2017). Hence, critical theorists do not only question the worth of IR in its current form, but are skeptical about its future.

The critical theory assumptions, the impression management theoretical lens as well as the current shape of IR in practice lead to the relevance of IRQ, which, from the standpoint of critical theorists, does not change managerial malicious intent, but decreases the risk of impression management, greenwashing and window dressing. By providing high IRQ, e.g. through strong alignment with the underlying <IR> Framework and the adherence to its major reporting guidelines and principles (e.g. materiality, conciseness), firms have fewer opportunities to present the firm in an inadequate (i.e. too positive) way by omitting specific matters that are detrimental to firm value. Besides, reports with higher IRQ arguably provide more decision-useful information and are better comparable one to another.

Along these lines, critical theorist welcome an IRA as another major credibility-enhancing mechanism that decreases the risk of the integrated report to fall victim to managerial capture. This is particularly the case in the light of earlier studies, which have shown that integrated reports verified by an independent external party are more reliable, have higher quality and curtail managers' room for impression management (Haji and Anifowose, 2016; Maroun, 2018; Wang et al., 2019). On the other side, in the light of economic bonding and intense client-assuror relationships, critical theorists may put into question the actual independence of an external assuror and its contribution to reporting quality (e.g. Maury, 2000; O'Dwyer and Owen, 2005; Smith et al., 2011; Al-Okaily et al., 2020), which Hussey (1999) labels as the "familiarity threat" to auditor independence.

3. Standardization and institutional recommendations

3.1 Driving forces of IR adoption

3.1.1 Overview

Since the financial crisis in 2008/09, there is an ongoing trend of a steadily increasing regulation of (non-)financial reporting (Velte, 2020a). With the exception of South Africa – the nucleus of IR – IR is a voluntary reporting concept throughout all other countries in the world (de Villiers et al., 2014). While firms have voluntarily engaged in IR for reasons of business case endeavors or stakeholder accountability (Burke and Clark, 2016), the idea of IR in Europe lately has been encouraged by different international reform efforts that might foster its adoption (Lueg et al., 2016). All these efforts have in common a call for a consequent reporting on and/or integration of material non-financial dimensions (e.g. ESG factors, climate risks) into corporate (risk) management processes, which constitutes an indirect invitation to adopt IR. While there are various institutional drivers that can be expected to impact the diffusion and further development of IR, the following four reform efforts might be considered as the most prominent ones, are particularly directional and thus will be elaborated on in greater detail in the following sections 3.1.2 to 3.1.5 (sorted by focus: international, Europe, Germany): (i) UN SDGs, which are an integral part of the 2030 Agenda for Sustainable Development, (ii) FSB's TCFD, (iii) European NFRD (2014/95/EU) and its transposition into German law (CSR-DIL), and (iv) German SFAB's sustainable finance strategy. These selected driving forces as well as their primary focus on (all or specific) ESG dimensions are visualized in figure 6.

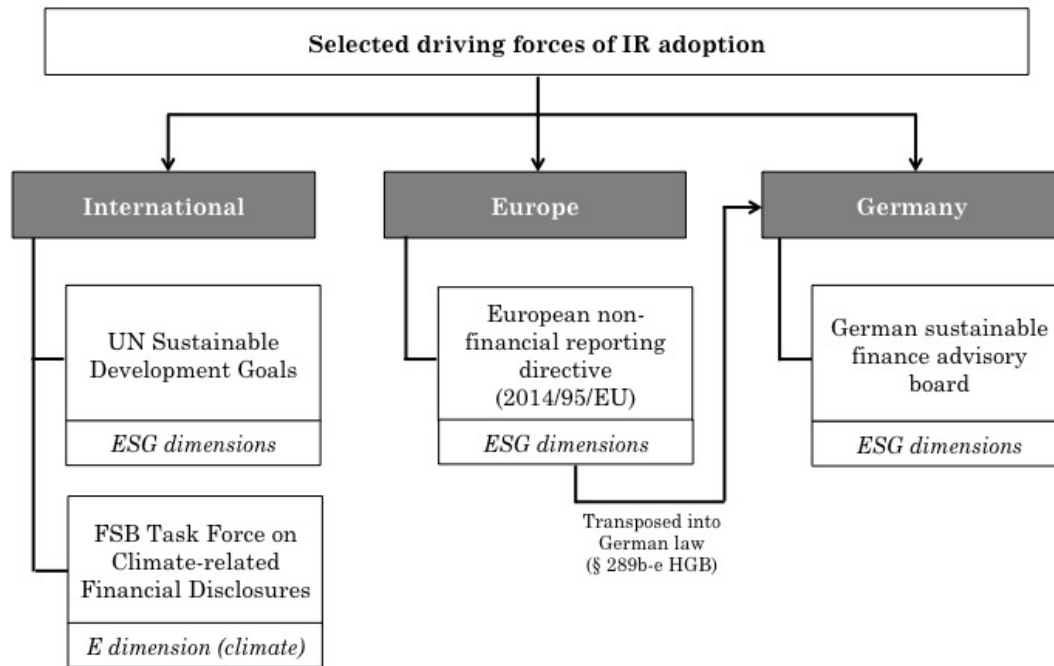


Figure 6: Overview of selected driving forces of IR adoption

3.1.2 UN Sustainable Development Goals

With the launch of the 17 SGDs (e.g. no poverty, good health, quality education, water, usage, gender equality, economic growth, climate action and partnerships to name but a few), the UN addresses some of the biggest global challenges and encourages firms to voluntarily report on their social and environmental contribution. In practical terms, business leaders shall incorporate the SGDs “into company strategy and to communicate on performance and practice in a way that pushed for a financial system oriented towards longer-term sustainable investment” (Malloch-Brown, 2017, p.3; Chair of the Business and Sustainable Development Commission), which aligns to the idea that firms need to account for the broader society and preserve the environment they operate in.

In the light of the strong congruency between the non-binding SDG guidelines and the IR concept, an increasing number of firms have adopted IR as a means to report on their adherence to the SDGs (e.g. Chartered Global Management Accountant, 2018; Deloitte, 2018; Association of Chartered Certified Accountants, 2019) and different institutions promote IR as a vehicle to respond to the SDGs

(e.g. IIRC, 2017; Chartered Global Management Accountant, 2018; Adams et al., 2020). In a recently published paper, the Chartered Global Management Accountant (2018), for instance, explicitly encourages IR adoption as a suitable way to adhere to the SDGs. Adams et al. (2020, p.6) develop SDG Disclosure Recommendations that propose to (i) “identify material sustainable development risks and opportunities relevant to long term value creation for organisations and society”, (ii) “changing what an organisation does and how it does it in order to contribute to the achievement of the SDGs”, and (iii) “the communication of implications for and impact on achievement of the SDGs”. Adams et al. (2020) define fundamental concepts that have to be applied in order to provide a reliable and relevant SDG disclosure (e.g. long-term value creation for the organization and society, sustainable development context and relevance, materiality, strategic focus, stakeholder inclusiveness, conciseness, connectivity of information (p.9-10), to name but a few). These recommendations and concepts resemble the guiding principles and content elements in IR and underpin the necessity of an integrated thinking-based controlling process. It follows that the SDGs arguably encourage the adoption of the principles-based IR that, by definition, allows firms to respond to the relevant SDGs, to communicate the impact on stakeholders, and to describe how sustainable development risks will be addressed in the future.

3.1.3 FSB Task Force on Climate-related Financial Disclosures

Another IR-encouraging impetus are the recommendations put forth by the FSB’s TCFD, an initiative that has been established by the G20’s Financial Stability Board to develop an authoritative voluntary guidance on the disclosure of financially material information related to climate-related risks and opportunities (European Commission, 2019; TCFD, 2019). Building upon the urgent need for significant changes in both countries’ and firms’ climate policies to meet the goals of the Paris Agreement, the TCFD advises firms to provide more transparency on the pricing of the firm-specific climate risk in order to allow for more informed and efficient capital allocation decisions (TCFD, 2019). This approach coincides with a strand of academic scholars on the relevance of

climate-related disclosures and ‘carbon finance’ to capital markets (e.g. Clarkson et al., 2015; Brouwers et al., 2018; Schiemann and Sakhel, 2019; for a detailed review, see Velte et al., 2020).

Following the TCFD, the management of climate risks does not only have to be financially operationalized, but needs to be integrated into corporate strategy and reduced to a minimum. In practical terms, the TCFD recommends the disclosure of climate information and their financial impact related to the areas of governance, strategy, risk management as well as a set of different metrics and targets (TCFD, 2019). Given that climate-related topics should be integrated into a firm’s governance and risk management process, in a study with more than 1,000 reporters, the TCFD (2019) found integrated reports to be a popular instrument for firms to report on their climate-related impact. With the “Guidelines on reporting climate-related information”, the European Commission (2019) recently published a supplement to the NFRD, which endorses and integrates the recommendation of the TCFD (Velte and Stawinoga, 2019a, 2019b). In this document, the European Commission emphasizes the compatibility of the climate-related reporting guidelines with the IIRC’s <IR> Framework, which aligns to Velte (2020a) who considers an integrated management and reporting of climate-related aspects indispensable. A similar position was recently published by the Working Group “Integrated Reporting” (AKIR) of the Schmalenbach-Gesellschaft e.V. (2020). The expert working group strongly recommends the integration of ESG- and particularly climate-related aspects into firms’ business models as part of their risk management. This standpoint is driven by the belief that an integrated climate risk management process leads to increased firm value as well as better access to capital, stakeholder ties and overall company risk management.

3.1.4 European Non-financial Reporting Directive and German transformation

Since the end of the financial year 2017, the European NFRD (2014/95/EU) compels “large” listed corporations (listing is not required for banks and insurance companies) with more than 500 employees to explicitly provide

relevant non-financial information in a non-financial declaration (Velte and Stawinoga, 2019b). Specifically, the directive obliges firms to report (on a comply or explain basis) about their business model, material risks, impact on broader society, as well as corresponding mitigation strategies, and relevant non-financial performance indicators. This non-financial declaration can be included in the management report within the financial report, disclosed as a separate CSR or integrated report, or published on the website of the firm. Against this backdrop, Richard Howitt (2018), the CEO of the IIRC, expects that the new directive “will see at least 6,000 companies across Europe change their reporting during the next 12 months” (p.1) and appreciates the opportunity for firms to adhere to the new regulation by engaging in IR. The enthusiasm is not least due to the fact that the information requirements of the NFRD strongly align with the major schools of mind in IR that aim to paint a more holistic picture about the firm’s (future-oriented) business strategy, its role in broader society, as well as the management of material risks (IIRC, 2013a, 2013b).

Generally speaking, the EU directive’s objective to encourage large firms to provide more accountability towards society may be regarded as the next logical step towards more transparency in Europe (Wulf et al., 2014), a longstanding and steady process that is rooted in the long European tradition of stakeholder accountability, information transparency and investor protection (e.g. Kolk, 2003; Hahn and Scheermesser, 2006; Chen and Bouvain, 2009; Beck et al., 2010; Gamerschlag et al., 2011).¹² As part of the implementation of the directive, in

¹² However, it should be pointed out that, as yet, the NFRD has not contributed to harmonizing present fragmented corporate reporting environments. In particular, the NFRD encourages IR adoption and explicitly mentions IR as a way to correspond to the directive, but misses the opportunity to implement and promote more ‘integrated’ and future-oriented reporting requirements, such as a stronger integration of financial and non-financial information in the management report (if firms do not opt to report in an integrated way) and a more integrated risk management and control system (§ 91 para. 2 AktG). Moreover, recent EU regulations – such as the EU directive 2017/828 (which amends directive 2007/36/EC as regards the encouragement of long-term shareholder engagement) that obliges firms to disclose a remuneration report and to establish a policy that guarantees shareholders the right to vote on the remuneration policy at the general meeting (mandatory say on pay) – do not follow the trajectory of reporting in an integrated way (Velte and Stawinoga, 2019a). Hence, it remains an open question as to whether the EU regulation promotes IR diffusion or contributes to a further fragmentation of corporate reporting. In the light of the EU’s increasing regulation of the governance dimension (‘G’ of ‘ESG’), for instance with the abovementioned remuneration report/shareholder rights directive or the introduction of the corporate governance statement, it

2017, the European Commission published a set of non-binding guidelines that provide guidance for companies on how to report on non-financial information, which – as part of the Sustainable Finance Action Plan – were amended by guidelines on reporting climate-related information in 2019 (European Commission, 2020). As a response to the European Green Deal, which *inter alia* shall lead to a stronger sustainable finance strategy, the European Commission announced to review the NFRD by end of 2020 (European Commission, 2020). Against this backdrop, the European Commission recently opened a consultation process in order to gather the views of different stakeholder groups (preparers, users, other important stakeholders) with the aim of gaining insights on specific issues that need further consideration and rethinking. These are in particular “the application of the materiality principle in non-financial reporting; the assurance of non-financial information; the knock-on effect of the reporting requirements on SMEs in the value chain” (European Commission, 2020, p.1). These topics are prominently addressed in the scientific articles underlying this dissertation.

The NFRD was transposed into German law with the CSR directive implementation law (CSR-DIL), which obliges PIEs to report on their relevant non-financial information by the business year 2017. The two central member state options (i.e. disclosure medium and assurance of the non-financial information) are within the responsibility of applying firms (Velte and Stawinoga, 2019a) that enjoy major voting rights as regards the implementation of the directive and decrease the comparability of the non-financial declaration.

According to the CSR-DIL, firms can choose whether they are willing to disclose a non-financial declaration as part of their management report or whether they prefer a separate (CSR or integrated) report (§§ 289b, para. 3, 289c HGB), while a separate report might be particularly relevant to firms that have already prepared stand-alone full CSR or integrated reports (Velte and Stawinoga, 2019a). However, the fact that firms should, but are not obliged to, refer to a

should be pointed out that integrated reports shall not only comply with the requirements of the CSR guidelines (NFDR), but need to integrate relevant governance information and adhere by corresponding governance regulations.

specific reporting framework, such as the GRI or <IR> (§ 289d, para. 1 HGB), might prevent from a thorough engagement with non-financial or integrated reporting and its underlying guidelines (Velte and Stawinoga, 2019a). The CSR-DIL defines a set of minimum requirements that firms need to report on, such as a short description of the business model (§ 289c, para. 1 HGB), material information as regards non-financial matters (i.e. environmental-, employee-, social matters, human rights and corruption prevention (§ 289c, para. 2, no. 1-5 HGB)), material risks that impact the business (§ 289c, para. 3, no. 3-4 HGB), the most relevant non-financial performance indicators (§ 289c, para. 3, no. 5 HGB) and a statement in case that several aspects are not covered within the report (“comply or explain”) (§ 289c, para. 4 HGB).

The second voting right is related to the external verification of the non-financial declaration or report, respectively (Velte and Stawinoga, 2019a). According to the CSR-DIL, the non-financial declaration (report) has to be formally ‘appreciated’ by an auditor, i.e. it has to be formally at disposal. However, there is no obligation for an (material) assurance of the non-financial declaration (report) (§ 317, para 2 HGB). This discretion, however, is relativized by § 171 para. 1 AktG, which extends the liability of the supervisory board under CSR-DIL that is obliged to monitor the information provided in the non-financial declaration (report). The supervisory board has the right to engage a third party (e.g. an audit firm) to assure the non-financial declaration (CSR or integrated report) and the underlying content (§ 111, para. 2, no. 3 AktG).

In sum, the European NFRD as well as its transposition into German law (CSR-DIL) reinforce the need for a more transparent (and integrated) reporting of non-financial dimensions and may encourage reporters to engage in a voluntary assurance of (the non-financial declaration in) the report (CSRA, IRA).

3.1.5 German Sustainable Finance Advisory Board

Building upon international and European reforms and recommendations, the German SFAB was charged by the respective ministries with the objective to

develop a long-term sustainable finance strategy for Germany. A recently published interim report provides information on the positioning of the German government and concrete recommendations for action vis-à-vis the future development of corporate reporting concepts on a national level. Among others, the advisory board strongly committed to the IR concept by declaring that, in future, firms' "financial and nonfinancial reporting shall be standardized to 'integrated reporting' and successively apply to medium-sized corporations and small- and medium-sized enterprises as well as firms with particular risks" (German SFAB, 2020, p.4), which implies that, in future, the principles of the European NFRD as well as the CSR-DIL shall likewise apply to several non-capital market-oriented corporations. Particularly in the light of more reporting transparency, the SFAB specifically appreciates the IIRC and declares the alignment of the recommendations with related initiatives, such as the European NFRD, its transposition into German law (CSR-DIL) and the TCFD, which complement each other.

Specifically, the SFAB shares the opinion that the connection of the financial and sustainability report will lead to a better flow of information between firms and the financial industry and, hence, shall be pursued despite any initial hurdles (para 1.3). In practical terms, the SFAB lists several factors that need to be addressed in future, such as the enrichment of corporate reporting by specific future-oriented sustainability information and the standardization of sustainability reporting formats (German SFAB, 2020, p.16). The provision of more non-financial information should lead to more transparency – especially in conjunction with an assurance and in case of IR (para 4.1.2e). Besides, the SFAB stresses the necessity for more clarity about the concept of materiality in corporate reporting, which should lead to more transparency on the one hand and better alignment with the 'comply or explain' principle on the other hand (para. 4.1.2c). In this light, the SFAB simultaneously alluded to several aspects that are considered critical to the future of corporate reporting (e.g. higher transparency, higher standardization of reporting formats, more future-orientation, more clarity about materiality, higher reporting quality), which are addressed in the course of this dissertation.

3.2 Non-financial assurance standards in the context of IRA

In its ‘Assurance on IR consultations draft’, the IIRC (2015) considered the voluntary assurance as a key mechanism to increase the reliability of integrated reports. In a recent statement, Velte (2020a) expressed the relevance of an IRA to achieve the objective of IR to become the future reporting norm, as an IRA is expected to be highly relevant for its quality and to attenuate the risk of greenwashing. However, as yet, no IR-specific assurance standard exists that accounts for the peculiarities of the new reporting concept, such as its narrative, forward-looking and intertwined character (Simnett et al., 2016). Despite the critics voiced by different academic scholars that question existing assurance standards’ ability to cope with the uncertainty arising from the operationalization of the abstract and forward-looking information (as well as its combination) in IR (e.g. Simnett and Huggins, 2015; Maroun, 2017, 2018; Briem and Wald, 2018), assurors refer to prevailing assurance frameworks that are applied for the assurance of non-financial information in the related CSR discipline. The two most popular and established frameworks are the ISAE 3000 ‘Assurance Engagements Other than Audits or Reviews of Historical Financial Information’ by the International Auditing and Assurance Standards Board, as well as AccountAbility’s Assurance Standard AA1000AS.¹³ While the ISAE 3000 provides guidance to professional accountants, the AA1000AS has been developed alongside the accounting professional and can be applied by all types of assurors, such as auditors and consultants.

Both assurance standards distinguish between two different assurance intensities that express the depth of work undertaken and determine the assurance providers’ liability in case of failure (Manetti and Becatti, 2009). While a low assurance intensity represents a review engagement (for plausibility), in case of a high assurance intensity an in-depth examination is undertaken that encompasses an analytical information evaluation, a detailed risk assessment

¹³ On a national level, the German Institute of Public Auditors (Institut der Wirtschaftsprüfer e.V.) recommends the IDW ASS 821 ‘Generally Accepted Assurance Principles for the Audit or Review of Reports on Sustainability Issues’. Other than the international standards ISAE 3000 and AA1000AS, the IDW ASS 821 is only rarely applied, which may explain the IDW’s announcement that the standard will be revised or replaced in due course. In the light of its little practical relevance, it is not discussed in greater detail throughout this dissertation.

and an audit of the underlying reporting and internal control systems (Maroun, 2017). Specifically, the ISAE 3000 refers to the terms ‘reasonable assurance’ and ‘limited assurance’, while the AA1000AS equivalently applies the expressions of ‘high assurance’ and ‘moderate assurance’. While the moderate assurance of the AA1000AS is formulated in a positive wording (e.g. “Our responsibility is to provide a limited level of assurance on the Report based on our review”; Hodge et al., 2009), the limited assurance of the ISAE 3000 is expressed in negative form (e.g. “Based on our work described in this report, nothing has come to our attention that causes us to believe that internal control is not effective, in all material respects”; International Auditing and Assurance Standards Board, 2005, p.308). While an assurance cannot eliminate total risk (‘zero audit risk’), the general rule is as follows: the higher the assurance intensity, the higher the likelihood of detecting material misstatement and thus the lower the assurance risk (Manetti and Becatti, 2009).

4. Literature review

4.1 General outline

In tandem with the upsurge in interest in IR in academia and practice, a seemingly endless academic research field has emerged over the past years. In an attempt to condense the variety of successively increasing knowledge on IR, a plethora of scholars have conducted reviews of the different facets of IR. While some pioneering critical normative studies (Flower, 2015; Thomson, 2015) and reviews (e.g. Cheng et al., 2014; de Villiers et al., 2014; Velte and Stawinoga, 2017a) condensed first IR-specific knowledge at an early stage to provide guidance for its further development, over time many more literature reviews followed (e.g. Dumay et al., 2016; de Villiers et al., 2017a, 2017b; Rinaldi et al., 2018; Kannenberg and Schreck, 2019). For a more granular and fine-grained review of specific aspects of the IR concept than those provided in the following – which is not within the scope of this dissertation framework paper – reference is made to the above-mentioned reviews.

To later on contextualize the results and the contributions of the individual articles underlying the dissertation, the following literature review contrasts extant studies that are related to the research areas covered within this dissertation and are attributable to three broader categories (see figure 2 at the beginning of this dissertation): the first part (section 4.2) engages with quantitative-archival studies that investigate capital market reactions following the *adoption of IR* (research paper 3), as well as explorative-qualitative studies that investigate corporate reasons for engagement and disengagement with IR (research paper 2). The subsequent part of the review (section 4.3) focuses on determinants and measures of *IRQ* as well as the handful of studies that deal with the so far under-investigated principle of materiality in the IR context (research paper 1). The last part (section 4.4) condenses and structures extant but scarce knowledge related to the consequences and critics of voluntary *IRA* (research paper 4).

4.2 IR adoption

4.2.1 Economic consequences

In line with the intention of the <IR> Framework to increase the capital allocation efficiency of investors by providing decision-useful information that describes the firm's ability to create value in the short-, medium-, and long-term (IIRC, 2013a), IR is intended to provide information incremental to financial and stand-alone CSR reporting. The proponents of IR expect that the disclosure of the (previously unknown) interconnection of a firm's capitals, the future-oriented focus of the information (Mio et al., 2020) as well as the risk management property of IR provide value-relevant information to capital market participants (Eccles and Krzus, 2010, 2015a). While the <IR> Framework emphasizes that IR should be valuable for "equity and debt holders and others who provide financial capital, both existing and potential, including lenders and other creditors" (IIRC, 2013a, p.33), there is a distinct focus on equity markets in prior empirical-quantitative literature (with the exception of Muttakin et al. (2020) and a qualitative inquiry by Lai et al. (2018)). The following section structures extant findings on the capital market relevance of IR adoption by differentiating

between measures of information asymmetry, analyst estimations (forecast accuracy or dispersion), firm value and cost of capital (e.g. cost of equity, weighted average cost of capital, cost of debt), as presented in figure 7. It should be pointed out, however, that these measures are not mutually independent but are likely to affect each other. For instance, lower information asymmetry may also lead to better analyst estimations, higher firm values or lower cost of capital.

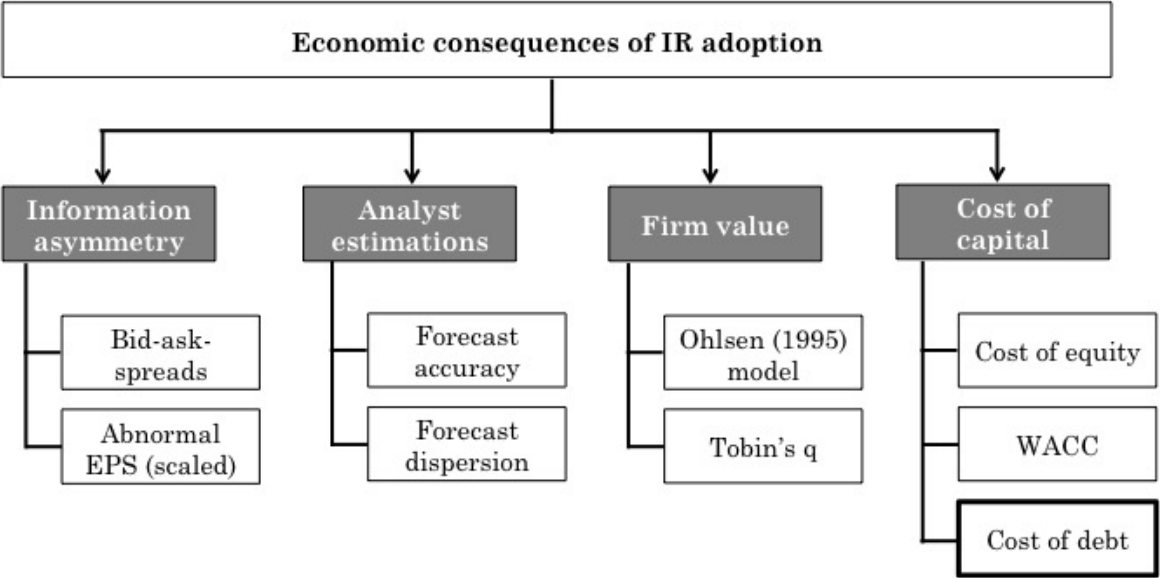


Figure 7: Economic consequences of IR adoption

Along these lines, different studies find that firms that engage in IR have lower bid-ask spreads, which suggests that IR adopters face lower information asymmetries and exhibit a better information environment for investors. For an international sample, Garcia-Sanchez and Noguera-Gamez (2017), for instance, find a negative association between voluntary IR adoption and the degree of information asymmetry (measured as abnormal earnings per share (EPS), defined as $(EPS - \text{median of EPS forecast})/\text{share price}$). Barth et al. (2017) provide similar results for the mandatory IR regime South Africa, where IR adoption is negatively associated with information asymmetry (measured as bid-ask-spreads).

In an international context, Flores et al. (2019) find that IR leads to more accurate earnings forecasts by analysts, which suggests that the publication of an integrated report provides information incremental to traditional reporting formats and leads to a better assessability of the (future) firm performance. Zhou et al. (2017) confirm aforementioned findings in a South African sample by showing that firms that report in an integrated way (especially in case of high levels of alignment with the <IR> Framework) benefit from lower analyst forecast errors and forecast dispersion.

In an international sample, Cortesi and Vena (2019) reveal that firms that embarked on IR are rewarded by shareholders, who trade shares of IR-compiling firms at a premium (measured with Ohlson (1995) model). Lee and Yeo (2016) find that South African IR adopters enjoy higher firm values (measured by Tobin's q), especially those with higher organizational complexity and external financing needs. The results suggest that IR leads to lower information processing costs for investors and that the benefits of IR exceed its costs. Barth et al. (2017) confirm prior results and emphasize that IR adoption among South African firms is positively related to firm value (measured by Tobin's q).

Investigating the effect of IR adoption for a firm's cost of capital, Zhou et al. (2017) find that South African firms that have embarked on IR enjoy lower cost of equity. Vena et al. (2020) find that IR adoption is negatively associated with a firm's weighted average cost of capital. Subsequent moderation analyses show that this effect is moderated by the cultural dimensions of power distance, individualism and masculinity, which indicates that the effect investors place on IR depends on country cultural factors. Muttakin et al. (2020), who are the first to investigate the impact of IR adoption on a firm's debt side, find that South African firms that issue an integrated report face lower cost of debt. The authors further find that an inverse relation between financial reporting quality and cost of debt is accentuated by IR, which suggests that integrated reports deliver information incremental to financial reporting. Although this section focuses on empirical-quantitative studies, for the sake of completeness and in the light of the debt focus of research article 3, it is worth mentioning Lai et al.'s (2018)

qualitative inquiry. The authors explore that, among others, IR reporters adopted IR in order to improve the information environment for debt investors, who firms considered as highly sophisticated beneficiaries of IR.

However, it should be pointed out that empirical evidence is less straight forward: applying a systematic artificial intelligence textual analysis for firms operating in sectors particularly exposed to environmental and social risks, Camodeca et al. (2018) find that investors do not value IR adoption, which leads the authors to conclude that IR is ‘cheap talk’. Wahl et al. (2020) conclude that IR fails to fulfill its promises regarding an enhanced information environment and value creation for adopters as results show that voluntary IR adoption is neither associated with higher earnings forecast accuracy nor with higher firm values (Tobin’s q). Similar results are provided in an experiment by Kellner (2019), who expects that IR is particularly relevant for NPIs as it would ‘democratize’ the access to information between professional and non-professional investor groups; findings, however, reveal that a firm’s engagement in IR does not lead to higher investments among NPIs.

In sum, extant studies provide evidence that IR adoption entails capital market benefits, such as lower information asymmetry and analyst forecast error dispersion, higher firm value and lower cost of capital. However, results are not unambiguous and specific research questions, such as the effect of voluntary IR adoption (outside the mandatory IR regime of South Africa) on a firm’s debt financing, have not been addressed in quantitative literature yet.

4.2.2 Determinants: Reasons for engagement and disengagement with IR

The review of prior studies on the capital market relevance of IR adoption suggests that one reason for firms’ voluntary engagement with IR are endeavors to benefit from capital market rewards. However, it is reasonable to assume that a firm’s decision (not) to engage with IR is a more multilayered one and rather is the result of the interplay of different strategic aspects. A small stream of explorative-qualitative studies have dared an attempt to unfold the sense-making

process of firms' decisions for IR (dis-)engagement. In practical terms, extant studies shed light on different managerial perspectives of benefits of IR as well as its drawbacks in current reporting practice. However, it can be advanced already that, although a variety of benefits and shortcomings are put forth in earlier literature and two studies come to the conclusion that managers are positively inclined to IR but, paradoxically, refuse to engage with it (Robertson and Samy, 2015; Adhariani and de Villiers, 2019), so far, no study conclusively answers the question as to which factors actually prevent firms from embarking on IR.

Although prior literature does not explicitly contrast the perceptions of managers of PIEs and SMEs towards IR, it is advisable to consider empirical results separately from each other.¹⁴ Given that firm size has been identified as a relevant determining factor in the application of voluntary corporate reporting initiatives (e.g. Adams, 2002; Baumann-Pauly et al., 2013), the following review structures managerial perceptions of IR depending on whether the underlying firm is a PIE (Higgins et al., 2014; Steyn, 2014; Robertson and Samy, 2015; Chaidali and Jones, 2017; Lai et al., 2018; Adhariani and de Villiers, 2019) or a SME (Del Baldo, 2015, 2017, 2019; Lodhia, 2015; Vesty et al., 2018; Girella et al., 2019). While studies with managers of PIEs primarily built on interviews, the perceptions of SMEs all were sought by means of case studies.

Overwhelmingly, the qualitative inquiries with *managers of large corporations* reveal that IR is primarily seen as a *business case* that helps to achieve or increase legitimacy. Lai et al. (2018), for instance, show that managers of an Italian insurance company use narratives in IR to reduce complexity and to increase attractiveness of external reporting, thereby “establish[ing] a

¹⁴ Although the differentiation between managerial perceptions towards IR of large corporations and SMEs is in anticipation of a major content-related component of article 2, it is deemed most suitable and purposeful to introduce this aspect here. The rationale for a separate presentation of findings is as follows: unlike large corporations that generally possess high expertise and ample financial resources, SMEs often have low degrees of management control and documentation as well as limited resources, but simultaneously show a lower formalization and bureaucracy, faster decision-making abilities, a strong embeddedness of value-based management and a culture of shared values (e.g. Perrini et al., 2007; Fassin, 2008). Arguably, these factors may either encourage or prevent from IR adoption. Hence, large firms and SMEs have different structures and peculiarities which each may concomitantly serve as a curse and a savior when it comes to IR.

meaningful dialogue with a growing variety of [primary financial] stakeholders” (p.1381). For Australian IR adopters, Higgins et al. (2014) argue that narratives help preparers to overcome prevailing challenges of IR, such as the non-availability of standards. In a survey in the South African setting, Steyn (2014) point out that managers regard IR as a strategic means to increase image and reputation but critically evoke internal deficits that complicate the generation of relevant data, as well as preparation costs. Chaidali and Jones (2017) unfold that FTSE 100 managers were suspicious of the motives behind IR, uncertain of its benefits and (the identification of) beneficiaries and complained about a lack of adequate guidance, preparation costs and report appearance. In a UK survey with managers of FTSE 100 corporations, Robertson and Samy (2015) find that managers were aware and supportive of IR, but, paradoxically, had not engaged with it. Although the different corporate motives articulated by the UK managers (e.g. listing in social funds, corporate legitimacy, peer-pressure, providing accountability) strengthen the relevance of IR, most participants voiced reservations regarding its practical applicability, voluntary character and the absence of clear guidance, which jointly hamper its implementation and diffusion. These findings are reinforced in a survey by Adhariani and de Villiers (2019), who show that participants from Indonesia were interested in IR and regarded the new reporting medium as valuable in terms of satisfying shareholders and other stakeholders, but, potentially due to incurring preparation costs and the lack of both adequate information system infrastructure and stakeholder interest, were reluctant to implement IR in practice.

A review of explorative studies that investigated *SME managers' perceptions* of IR shows different motives and challenges. Unlike the dominant business case framing of IR among executives of large firms, SMEs are distinctly driven by an *accountability-centered perspective*. Specifically, any expected economic benefits resulting from IR appear subordinate to the intrinsic managerial commitment to ethical values and the genuine will to provide accountability to society and stakeholders. Investigating an Australian customer-owned bank's transition towards IR, Lodhia (2015) finds that managers' motivation to engage with IR was

the result of an inherent commitment to transparency and ethical values. However, the author stresses that the complexity and effort involved in the adoption of IR were perceived as challenging. Similar results are provided by Vesty et al. (2018) who likewise emphasize that an Australian customer-owned bank's motivation for IR is based on a set of firm-specific shared values and the will to develop further present attempts to provide accountability and transparency. Although the bank does not regret the transition to IR, the process of IR was more compliance-oriented than expected and incurred high costs and time allocation. In different case studies with Italian SMEs, Del Baldo (2015, 2017, 2019) and Girella et al. (2019) investigate SMEs' motives that have driven the decision to commit to the upcoming reporting instrument and reinforce shared values and the wish for a more accountability-centered reporting trajectory as major motives.

Results uniformly confirm earlier findings: while the transition to IR has entailed different economic (business case) benefits among SMEs, such as image, credibility, employee loyalty and stakeholder engagement, the will for transparency and accountability were identified as dominant determining factors for interest in IR. However, all studies have one thing in common: IR is considered a demanding 'journey' that confronts (especially smaller) firms with various challenges that need to be overcome. More precisely, SMEs complained about challenges with the abstract and principles-based IR guidelines that do not properly translate to SMEs (Italian Network for Business Reporting, 2018) and led to confusion about how to generate and operationalize the relevant information, especially in the light of weak management control systems. In consequence, several SMEs stated that they had engaged in specific working groups and drew upon external consultancy to implement IR.

In sum, PIE managers seem to primarily value the business case properties of IR (e.g. legitimacy, image, investor relations, competitive advantage), while the interest of SME managers is rather kindled by ethical values and stakeholder accountability. The studies reveal a variety of challenges that managers reminisced about and that were overcome throughout IR implementation.

However, although managers see the business case benefits for IR, occasionally, they (paradoxically) are reluctant to implement IR. This conundrum demonstrates the necessity for a more fine-grained exploration of the question as to why managers do not embark on IR.

4.3 IR Quality

4.3.1 *Determinants and measures of IRQ*

Given the relatively unregulated nature of IR, the corresponding heterogeneity in current reporting practice (Wulf and Behncke, 2014; Chaidali and Jones, 2017) and firms' attempts to opportunistically appropriate the IR concept, for example by re-branding the annual report as an integrated report (Briem and Wald, 2018), another stream in contemporary literature focuses on IRQ. Since the investigation of economic consequences of IRQ is outside the scope of this dissertation, the following review has a distinct focus on studies that explore the determinants of IRQ (see Velte and Gerwanski (2020) for a literature review on governance determinants of IR as well as IRQ). The synopsis of prior literature on IRQ determinants suggests two factors that should be elaborated on in greater detail in order to condense extant knowledge: first, in the light of the various opportunities to operationalize the abstract and hardly distinctive concept of IRQ, a plurality of *metrics and proxies* exists. These metrics can be structured into three different dimensions: (i) disclosure scores, (ii) textual attributes and word count techniques, (iii) proprietary EY Excellence in Integrated Reporting Awards scores, which will be briefly presented in the first section of the following review (section 4.3.2). Second, results of extant literature on *IRQ determinants* are presented and structured according to a (i) governance (corporate governance and country-specific governance), (ii) financial, and (iii) integrated report- or integrated reporting-specific sphere (section 4.3.3).

4.3.2 *Measures of IRQ*

As described above and visualized in figure 8, prior literature has applied three different categories to proxy the abstract concept of IRQ.

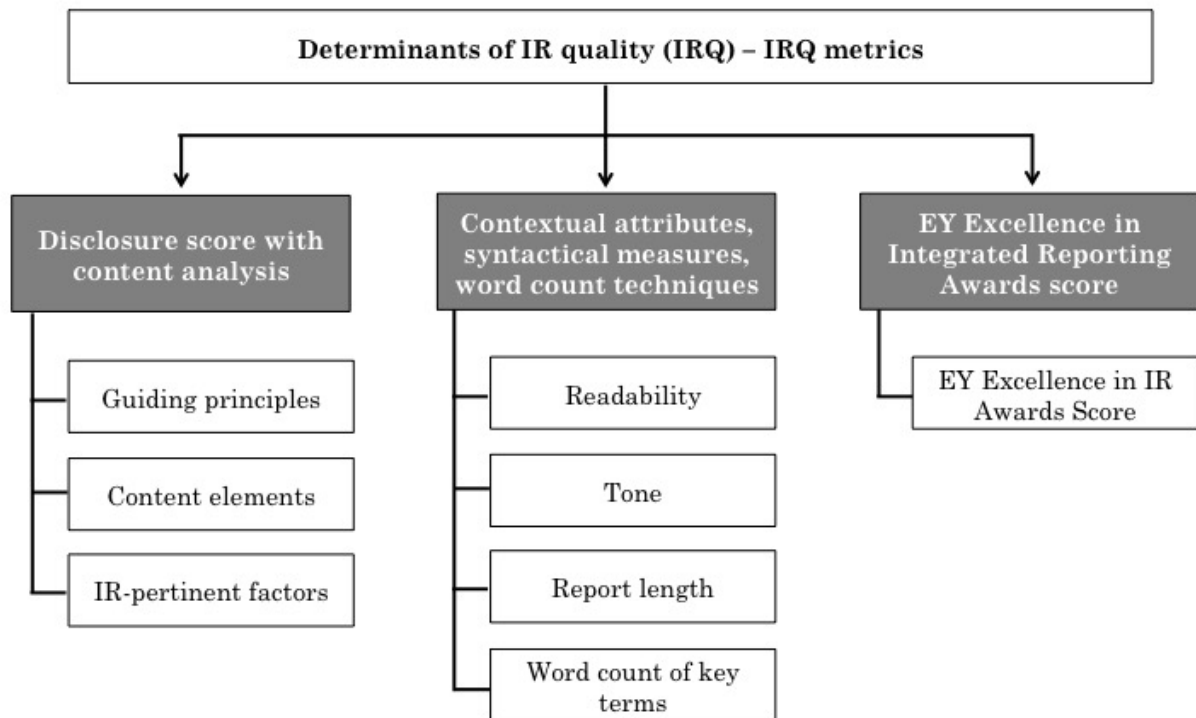


Figure 8: Overview of measures of IRQ

The first and most common way to measure IRQ is the development of a *disclosure score* that is subsequently generated by means of a manual *content analysis* of integrated reports. In sum, these disclosure scores can be subdivided into three broader categories: The first disclosure score type is based on the report’s adherence to the *guiding principles* put forth in the <IR> Framework (i.e. strategic focus and future orientation, connectivity of information, stakeholder relationships, materiality, conciseness, reliability and completeness, consistency and comparability), where several studies refer to all of the guiding principles (Haji and Anifowose, 2016), or subsets, such as connectivity (Rivera-Arrubla et al., 2017; Grassmann et al., 2019), materiality (Fasan and Mio, 2017; Rivera-Arrubla et al., 2017) and future orientation (Stacchezzini et al., 2016; Kilic and Kuzey, 2018). The second disclosure score type is based on the *content elements* in the <IR> Framework (i.e. organizational overview and external environment, governance, business model, risk and opportunities, strategy and resource allocation, performance, outlook, basis of preparation and presentation,

general reporting guidance) (Lee and Yeo, 2016; Rivera-Arrubla et al., 2017; Ghani et al., 2018). The third disclosure score type uses a set of *IR-pertinent factors*, which are individually selected by the authors from guiding principles, content elements and further IR-related topics (e.g. motivation, beneficiaries, CEO commitment, title) (Pistoni et al., 2018; Vitolla et al., 2019b, 2020a, Raimo et al., 2020).

The second established IRQ proxy is based on contextual attributes, syntactical measures and word count techniques, which is commensurate with earlier literature that has applied corresponding attributes as measures for financial disclosure quality (Li, 2008; Loughran and McDonald, 2014). Building upon the notion that high-quality integrated reports are written in an objective, balanced and plain way (which should translate into higher decision usefulness), established measures are report readability (Melloni et al., 2017; Velte, 2018a; Roman et al., 2019), tone (Melloni et al., 2017; Beretta et al., 2019; Roman et al., 2019), length (Melloni et al., 2017) and word count of key terms (e.g. ‘material’ and ‘materiality’, Fasan and Mio, 2017).

The third established IRQ measure is the use of *proprietary IR scores*, first and foremost the EY Excellence in Integrated Reporting Awards score, which is set out by EY each year for the top 100 firms listed on JSE and is measured against a set of criteria based on the <IR> Framework (Barth et al., 2017; Wang et al., 2019).

4.3.3 Determinants of IRQ

As presented in figure 9 (the list is not exhaustive), the determinants of IRQ can be subdivided into a governance (corporate governance and country-specific governance), financial and integrated report-/integrated reporting-specific dimension, which is reflective of the intricacy and multidisciplinary character of the IR concept (i.e. combining financial-, CSR- and corporate governance reporting) and corresponds to the structure introduced in recent work by Velte (2020b).

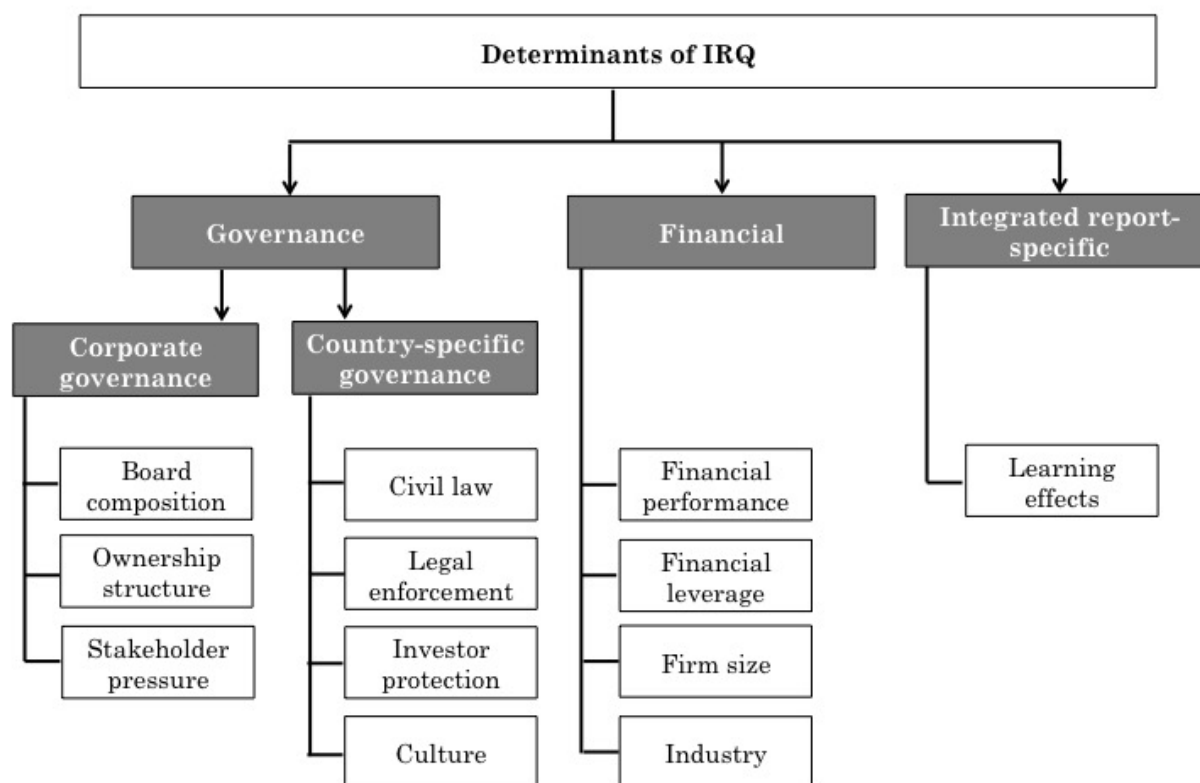


Figure 9: Overview of IRQ determinants

Corporate Governance determinants

In the light of the monitoring role of the board (control of the management, but also monitoring of corporate reporting, particularly since the board of directors is increasingly responsible for the correctness of the information disclosed in the non-financial declaration or a corresponding stand-alone report in Germany), it is reasonable to assume that *board composition* and board-specific factors as relevant internal corporate governance factors have an impact on IRQ. Against expectations, in an early study, Fasan and Mio (2017) find that IRQ is negatively associated with board size and board gender diversity, which the authors consider to be “apparently counter-intuitive” (p.302). Reinvestigating this association, Vitolla et al. (2020a) come to the opposite conclusion as results show that board size is positively related to IRQ. In the same year, Vitolla et al. (2020b) reinforce aforementioned results by outlining that board size, independence, diversity and activity are positively related to IRQ. Likewise, Kilic and Kuzey (2018) find board gender diversity to accelerate IRQ and Stacchezini

et al. (2016) point out that board independence results in higher IRQ. In recent work, Wang et al. (2019) reveal that strength of the board of directors, audit committee and sustainability committee (each measured with a composite score of the four characteristics: independence, diligence, size and expertise) as well as non-financial performance measures in executives' annual bonus compensation contracts are positively associated with IRQ. Tapping into this notion, Haji and Anifowose (2016) confirm that IRQ is related to audit committee effectiveness, meeting frequency and authority, as well as the presence of a sustainability committee. The results meet Velte's (2018a) findings that audit committee financial expertise, sustainability expertise, as well as their interaction are positively related to IRQ.

In addition to the board of directors, a firm's *ownership structure*, which is representative of emerging shareholder interests and monitoring efforts, has been identified as a relevant external corporate governance factor that affects IRQ. For instance, Haji and Anifowose (2016) find that ownership concentration is positively associated with IRQ. Similar in vein, Raimo et al. (2020) discover that higher degrees of institutional ownership are positively associated with IRQ, which can be explained through monitoring pressure. Results further show that ownership concentration, managerial ownership and state ownership lead to significantly lower IRQ. With regard to the bargaining power of shareholders, Grassmann et al. (2019) show that firms with a higher importance of strategic shareholders and debt providers tend to provide integrated reports of superior quality.

The third corporate governance determinant refers to *stakeholder pressure*. In order to mitigate the risk of information overload and greenwashing, stakeholders are increasingly demanding mechanisms that ensure reporting quality, such as an external assurance by an independent third party. Rivera-Arrubla et al. (2017), for example, find that an external IRA leads to higher IRQ. Ghani et al. (2018) add that audit firm size contributes to IRQ, where larger audit firms are positively related to higher levels of IRQ.

Country-specific governance determinants

While the aforementioned studies focused on a firm's corporate governance, IRQ is likely to be determined by different country governance factors. Vitolla et al. (2020a) find that firms domiciled in civil law countries are more likely to provide high-quality integrated reports. Investigating whether IRQ is affected by Hofstede's cultural dimensions, Vitolla et al. (2019b) reveal that IRQ is negatively related to power distance, individualism, masculinity and indulgence, while uncertainty avoidance is positively associated with IRQ. In opposition to the idea of IR to increase transparency to investors and other stakeholders, Roman et al. (2019) add that firms from countries with a stronger culture of transparency show lower degrees of IRQ.

Financial determinants

Given that IR preparation (particular in case of high IRQ) is costly and particularly relevant for firms with large audience, prior studies found that IRQ is positively associated with firm size (Haji and Anifowose, 2016; Ghani et al., 2018; Kilic and Kuzey, 2018; Vitolla et al., 2020a; contrary: Fasan and Mio, 2017). Besides, in the light that (financially) profitable firms are more likely to prominently communicate their results, prior studies reveal that corporate financial performance is positively related to IRQ (Fasan and Mio, 2017; Grassmann et al., 2019; Vitolla et al., 2020a). Similar results are provided by Melloni et al. (2017), who find that firms with weak financial performance try to obfuscate this circumstance by disclosing longer, less readable and more optimistic integrated reports. Correspondingly, Roman et al. (2019) come to the conclusion that higher financial performance leads to more balanced integrated reports. The authors further conclude that younger companies make use of a more optimistic tone in their reporting, while adopters of the International Financial Reporting Standards tend to provide less readable reports. Moreover, extant studies suggest that a firm's financial leverage affects IRQ, although prior research has not reached a consensus here: while Kilic and Kuzey (2018) conclude that highly leveraged firms provide integrated reports of inferior quality, Vitolla et al. (2020a) report higher IRQ scores for firms with higher leverage. Besides, Grassmann et al. (2019) add that firms with high business

model complexity and those operating in competitive environments provide integrated reports of lower quality. Taking up the competitive environment, a handful of studies reveal a firm's industry affiliation to determine IRQ (Haji and Anifowose, 2016; Rivera-Arrubla et al., 2017; Roman et al., 2019), while predominantly firms operating in either environmentally or socially sensitive industries or the financial industry tend to provide better quality integrated reports.

Integrated report- or integrated reporting-specific determinants

Although most studies focus on either governance or financial determinants of IRQ, there is merit in pointing out also one integrated report- or integrated reporting-specific determinant of IRQ. Ghani et al. (2018) and Pistoni et al. (2018) find that IRQ is low, but increases over time, which suggests that IRQ might be driven by learning effects (e.g. due to an established or iteratively refined reporting infrastructure) over time.

In sum, the review shows that IRQ is determined by various corporate and country governance factors, as well as financial and integrated report-/integrated reporting-specific determinants, while the latter two groups should be more elaborated on in future research. Additionally, the landscape of present studies shows how heterogeneously the abstract concept of IRQ is operationalized. In the light of the centrality and actuality of the materiality principle (various calls for research; institutional discussion, e.g. as central part of the announced revision of the <IR> Framework) as well as its suitability as a proxy for IRQ, the following section will provide a brief summary of related academic literature.

4.3.4 IRQ and the concept of materiality

Despite the high relevance of the materiality principle for IR (IIRC, 2013a, 2013b) and its prominent discussion in academia (Mio, 2013; IIRC, 2013b; Eccles and Krzus, 2015a; Cerbone and Maroun, 2019), empirical studies – particularly quantitative approaches – that investigate materiality in an IR context are rare.

To provide a brief juxtaposition of extant knowledge on this topic, the following section succinctly discusses earlier (i) institutional and normative, (ii) empirical-qualitative and (iii) empirical-quantitative studies.

Driven by various academic and practical voices for greater clarity concerning the materiality principle, in 2013, the IIRC published a background paper on the principle of materiality and its application to firms' reporting practice (IIRC, 2013b). However, normative scholars criticize that subsequent to the issuance of the background paper the principle still remains relatively non-distinctive. In their pioneering reviews, de Villiers et al. (2014) and Cheng et al. (2014), for instance, draw attention to the abstractedness of the materiality principle in IR and the resulting risk of its abuse. Describing materiality as a "delicate assessment[s]" (p.119) and a firm-specific social construct, Eccles and Krzus (2015a) discuss how the materiality approach might be applied in reporting practice. The authors recommend that firms should report on the application of the materiality concept in a transparent and detailed manner since investors have been found to be sensitive to this information.

Besides these institutional and normative studies, a handful of empirical-qualitative studies explored how firms deal with the materiality principle and, overwhelmingly, conclude that firms face great challenges with its application. For example, Higgins et al. (2014) argue that different materiality judgments lead to different manager responsibilities and different applications of the IR concept. Lodhia (2015) points out that IR preparers are confused about what materiality means and how it has to be applied in the IR context, a view reinforced by Steyn (2014), who found in a survey with South African CEOs and Chief Financial Officers (CFOs) that the application and determination of materiality were perceived challenging. Similar in vein, Lai et al. (2017) consider the materiality principle to be a 'black box'. Investigating the conception of materiality among a large insurance company, the authors find that the materiality determination process is within the responsibility of the CFO and is put into practice by a specific IR working group ('IR hub'). Cerbone and Maroun (2019) find that organizations with market-, professional- and stakeholder logics

aligned have the best materiality determination process. Staying with the stakeholder focus, in an explorative study with various stakeholder groups, Stubbs and Higgins (2018) cite one manager who emphasizes the need for a “meaningful discussion around materiality” (p. 500).

Aside from the qualitative inquiries, as yet, two empirical-quantitative studies have addressed the materiality principle. The first is Fasan and Mio (2017) who assess firms’ MDQ by means of a word count of the terms “materiality” and “material” scaled by report length, and an index that captures the relevance of the materiality concept in the report. As discussed in the preceded section, the authors find that MDQ is positively related to a firm’s profitability and negatively associated with firm size, board size and gender diversity. In the light that the concept of materiality is essential for both, IR and IRA, in recent work, Green and Cheng (2019) investigate auditors’ materiality judgments in an IR setting and find that auditors face difficulties in determining audit materiality under IR.

4.4 IR Assurance

4.4.1 Overview

The emerging topic of IRA has been dealt with by a handful of academic studies that, in the following, are structured into two major strands: (i) empirical-quantitative studies that investigate the consequences of an IRA (i.e. effects on reporting quality and value relevance) as well as its specifications (i.e. assurance providers and assurance level), and (ii) predominantly normative and qualitative studies that are critical about present IRA practice and guidance. Since an investigation of determinants of IRA is not within the scope of this dissertation, corresponding literature is not presented here. Figure 10 visualizes the structure of this section.

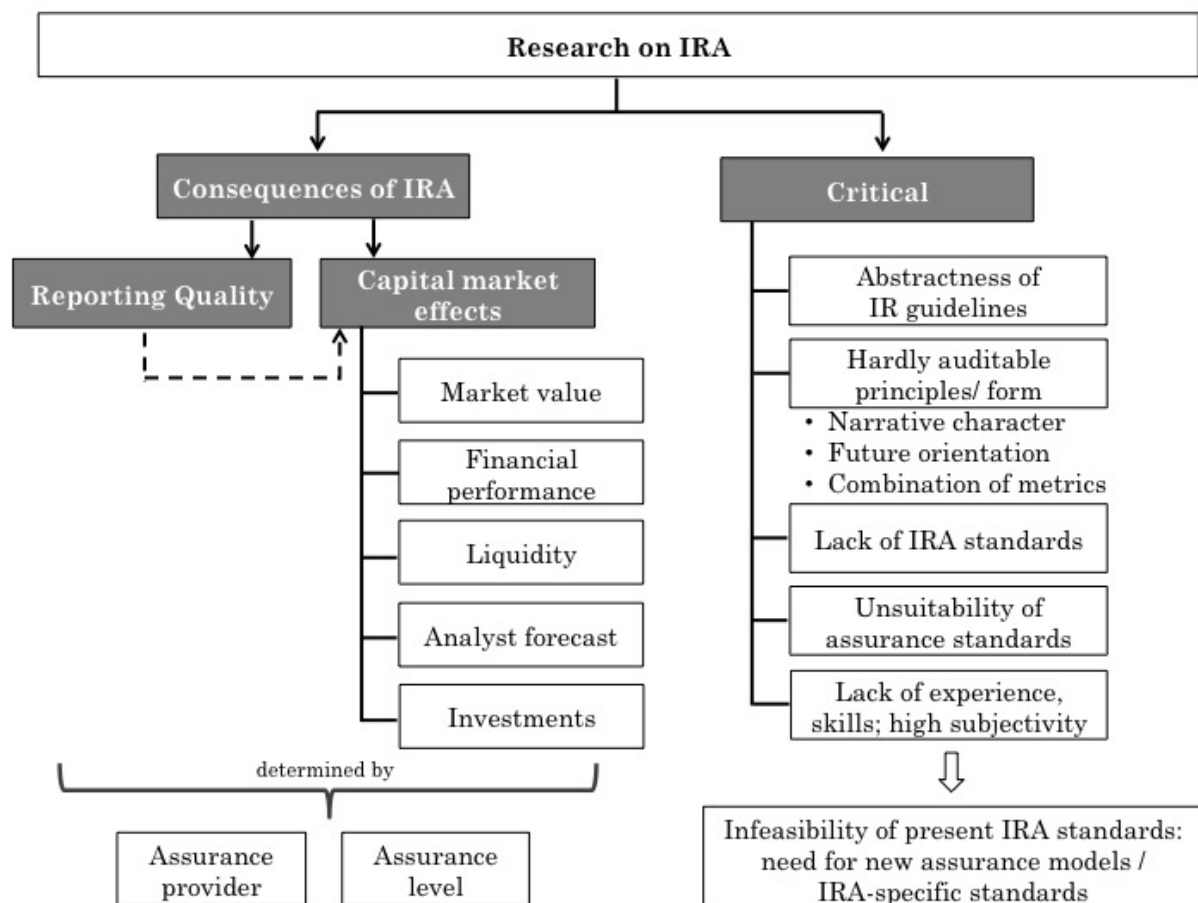


Figure 10: Structure of IRA literature

4.4.2 Consequences of IRA

In line with the notion that an external verification leads to higher reporting quality, which in turn might increase decision usefulness and trigger corresponding capital market effects (see dashed line in figure 10), Rivera-Arrubla et al. (2017) find that an external IRA has led to higher reporting quality among IIRC pilot program companies. Similar results are provided by Maroun (2019), who finds that integrated reports are of higher quality when more elements have been subject to an external IRA, especially if the assurance was provided by a Big 4 auditor and the assurance level was reasonable.

However, the effect of an IRA does not only materialize into higher reporting quality, but likewise is recognized by capital markets as outlined in several studies. In recent work, Gal and Akisik (2020) find that IR only leads to higher

market values if an IRA is present, while this effect further depends on whether the IRA was conducted by an accounting firm or a specialized consultant. While firms' market value is positively associated with the presence of an auditor, the appointment of a specialized consultant for the IRA has led to a decrease in market value. In a related study, Akisik and Gal (2019) provide similar results. When measuring financial performance with a market-based performance measure (stock price growth), an IRA by an auditor (consultant) is positively (negatively) related to stock price growth. However, when referring to accounting-based performance measures (i.e. return on equity, return of assets), an IRA has a positive effect for both providers. Caglio et al. (2020) find that an IRA acts as a credibility-enhancing mechanism for external users as it attenuates the downsides of low-quality textual attributes on market value and liquidity and leads to decreased analyst forecast dispersion, particularly if the IRA was provided by auditors compared to providers outside the accounting profession. In an experiment with professional investors, Reimsbach et al. (2018) find that an IRA leads to higher credibility and, in consequence, investments, although this effect was stronger in case of two separate reports compared to an integrated report. The authors explain this behavior by an emanating halo effect, which means that investors attach less value to an IRA since it regardless contains mandatorily audited financial information.

4.4.3. IRA and its application in practice

While the aforementioned review suggests that an IRA is valuable as regards reporting quality and reliability, a second strand of predominantly normative and empirical-qualitative academic scholars is critical about current IRA practice and posits that, in its present form, an IRA often presents form over substance.

In an early review on IR, Cheng et al. (2014) emphasize that IRA faces a number of challenges, such as liability concerns of accounting firms and problems in the application of the IR guidelines, which altogether result in the question whether the application of the present <IR> Framework leads to appropriate criteria and subject matters that make an assurance possible in the first place. Drilling into

this notion, Goicoechea et al. (2019) point out that IR users and auditors perceive an IRA as important, but stress that auditors need to overcome many challenges (e.g. auditability of non-financial information, lack of assurance standards and guidance, lack of uniformity as regards the materiality principle, determination of the IR boundary, cost-benefit considerations). Similar in vein, Briem and Wald (2018) find that auditors regard themselves as change agents that help firms with the implementation of the <IR> Framework, but that the absence of IR- as well as IRA-specific guidance leads auditors often to follow the appropriated IR definition of their clients, which contravenes the intention of an IRA to increase reporting quality/reliability. Exploring the perspectives of practitioners, academics and report users, Corrado et al. (2019) find that interviewees question an IRA's value added for users and the provision of social accountability, which stems from the non-distinctiveness of the materiality concept, incompleteness of non-financial information (e.g. lack of stakeholder engagement, managerial discretion and subjectivity), as well as the lack of regulation and specific standards. The authors conclude that the interviewees emphasize the need for innovative IRA standards that overcome shortcomings in present IRA practice.

Exploring the responses to the IIRC's public consultation phases on IRA, Simnett and Huggins (2015) as well as Simnett et al. (2016) reinforce the concerns postulated by prior scholars and point out that it is an open question as to whether traditional assurance models (such as those for non-financial assurance engagements, e.g. ISAE 3000 and AA1000AS) are fit-for-purpose for the IR concept. In the light of the broad subject matters in IR (i.e. narrative, forward-looking and intertwined financial and non-financial information), which require specific skill sets and lead to disproportionate high costs, the authors recommend to explore whether new assurance standards need to be developed. Hence, according to the authors, 'traditional' financial audit and non-financial assurance metrics, such as the typical materiality and risk determination techniques, as well as 'reasonable' and 'limited' assurance levels may not be suitable for IRA engagements. This opinion is commensurate with the results of an experimental study conducted by Green and Cheng (2019). The authors find that auditors have problems in determining audit materiality under IR as they tend to under-audit

risky strategically relevant information, which implies a high risk of not detecting misstatements in key strategic information.

By means of a qualitative inquiry with audit experts and IR preparers, Maroun (2017) discusses an interpretative assurance model, which might better suit the current IRA situation, being characterized through high uncertainty and the absence of a fit-for-purpose assurance standard. One year later, Maroun (2018) advances the latter and recommends an interpretative assurance model for IRA that critically scrutinizes the methods and processes applied rather than testing the accuracy of the data itself. Following Maroun (2018) this interpretative model allows coping with the IR-specific peculiarities that render traditional assurance approaches infeasible and should complement traditional assurance attempts.

5. Research results and implications

5.1 Context of research objectives and findings

In the following, the results of the individual articles are discussed within the realms of the research objectives defined in section 1.2 (gaps in academic literature). It should be noted that, for the sake of brevity, results are presented in a condensed manner and are based on the original articles, which are provided as supplement (annex 1 to 4). The focus of this chapter is on the contextualization of the findings within the broader scope of IR as well as the discussion of implications for academics, practitioners and legislators derived from the articles. Another focal point is the development of opportunities for further research that are derived throughout this section. The following section is structured analogous to the three dimensions of IR adoption (section 5.2, articles 2, 3), IRQ (section 5.3, article 1), and IRA (section 5.4, article 4).

5.2 IR adoption – Economic consequences and managerial perceptions

5.2.1 IR adoption and cost of public debt (article 3)

The review of prior literature has shown that, as yet, the economic consequences of IR adoption on a firm's cost of debt have been barely addressed and received scant attention in academia (Muttakin et al., 2020). To this purpose, article 3 addressed the implications of IR adoption for European firms' public borrowing costs, which corresponds to research objective 4.

Inspired by prior evidence on the positive effects of IR to capital markets (Lee and Yeo, 2016; Barth et al., 2017; Zhou et al., 2017) and IR's ability to decrease costly information asymmetry between firms and investors (Frias-Aceituno et al., 2014; Lee and Yeo, 2016; Garcia-Sanchez and Noguera-Gamez, 2017), this study investigates whether the marginal cost of public debt issuances are affected by firms' embarking on IR for a sample of 2,196 European firm-year observations between 2015 and 2017. In line with the idea that non-financial information is increasingly relevant to debt providers (Grunert et al., 2005; Hoepner et al., 2016), but often is insufficiently integrated in corporations' strategy and risk management process, the issuance of an integrated report is expected to decrease costly information asymmetries as it provides information incremental to traditional financial and CSR reporting. Moreover, the risk management property of IR as well as the focus on material risks and mitigation strategies may lead to a better and more transparent identification of risk factors that impair a firm's debt repayment capacity and should lead to a better overall assessment of the risk of a loss default.

Results show that IR adopters face significantly lower marginal cost of public debt. Subsequent moderation analysis reveals that this effect is stronger for firms with low ESG performance, which implies that the utility of IR adoption in terms of borrowing costs gradually attenuates with increasing ESG performance. The disclosure of an integrated report by firms with lower ESG performance seems to result in disproportionately higher decreases in information asymmetry and, in consequence, higher relative decreases in borrowing costs. Results reveal

that the publication of an IR – in terms of cost of debt – is beneficial for firms with an ESG performance up to 96.6 (on a scale ranging from 0 to 100). A second moderation analysis further qualifies above-mentioned findings as it suggests that IR adoption only decreases cost of debt for those firms operating in environmentally sensitive industries (Reverte, 2009). Specifically, an integrated report allows firms of ‘sin industries’ to completely compensate for the penalizing interests levied due to a higher litigation and default risk in the corresponding industry. The findings are robust to a battery of model alterations (e.g. hierarchical linear modeling), as well as controlling for potential endogeneity (e.g. additional variable models, propensity score matching).

With respect to this study, there are several directions in which research could proceed. For instance, this study has an isolated focus on the marginal cost of public bond issues, while neglecting any effect on bank loans or private debt. Future research might reassess whether IR adoption is also recognized by ‘delegated’ private lenders (Diamond, 1984), who inherently face lower information asymmetries (e.g. banks in the context of large syndicated loans, insurance companies or rating agencies), but are increasingly implementing non-financial information (as well as their relation to financial measures) in their debt contracting (Goss and Roberts, 2011; Ge et al., 2012; Kim et al., 2014). To give an example, by means of an experimental study design, further research could investigate how experienced bankers value an integrated report (compared to a stand-alone CSR report) in loan contracting and pricing, and whether a firm’s decision to adopt IR might materialize in the qualitative part of bank-internal rating schemes for assessing managements’ as well as the firms’ risk management quality.

***Research opportunity 1:** Assessing the value relevance of IR adoption for private lenders (banks, insurance companies, rating agencies) as well as its impact on corresponding corporate risk assessment.*

Besides, the study only covered firms outside the financial industry, due to systematic differences in their refinancing, asset structure, leverage and

disclosure regulation and supervision (Fama and French, 1992; Barth et al., 2004). However, particularly banks and insurers have been prominently covered in press for earlier misconduct and are subject of high outside pressure for more transparency. Hence, it is reasonable to assume that the adoption of IR – with its ability to achieve, increase or repair legitimacy, its narrative focus on a firm’s capitals and its material (financial) implications – might be a relevant tool for banks’ strategic capital market communication.

Along these lines, Higgins et al. (2014) reveal that IR preparers belonging to the financial service industry regard IR as a valuable communication strategy. Drawing upon the narrative focus in IR, Lodhia (2015) and Vesty et al. (2018) point out that IR adoption helped Australian customer-owned banks to better tell their value creation story and thereby to differentiate from competitors. A similar view is shared by Doni et al. (2019), who find that an IR-applying bank uses a multiple capitals approach to make visible associations and tensions among capitals, which leads to higher reporting transparency. The upsurge of interest in IR among banks is likewise underpinned by Lai et al. (2016), Barth et al. (2017), Rivera-Arrubla et al. (2017) and Vitolla et al. (2020a), who indicate that firms belonging to the financial industry are (more) likely to engage in IR, and provide reports of superior quality (Barth et al., 2017; Rivera-Arrubla et al., 2017). While, as yet, there is only limited evidence on the implications of IR adoption for firms belonging to the financial service or banking industry, there is merit in investigating the potentially emanating economic effects – such as on a firm’s cost of capital (e.g. cost of equity, refinancing costs) and information asymmetry (e.g. bid-ask spreads) – as well as non-economic implications (e.g. ‘soft facts’ such as customer loyalty) following IR adoption.

Research opportunity 2: Assessing the economic and non-economic consequences of IR adoption for banks or firms belonging to the financial service industry.

5.2.2 Managerial perceptions of drivers of and barriers to IR adoption (article 2)

In the light of the aforementioned results, it is reasonable to assume that firms' motivation to voluntarily adopt IR *inter alia* is rooted in an economic imperative. The review on motives and challenges of IR adoption suggests, however, that the decision (not) to adopt IR is more complex and requires a thorough investigation. While extant interview studies with managers focus on current IR prepares that reminisce about challenges that were successfully overcome, they miss the opportunity to explore the perceptions of those who deliberately not (yet) engage with IR. Further, earlier literature does not reach a clear consensus on the actual motivations of SME managers to engage with IR, since the business case perspective and stakeholder accountability lens on IR seem not to be mutually exclusive. In pursuit of these objectives and to balance out the rather etic theoretical perspectives on voluntary reporting adoption with more emic perspectives from practice, the second study applies an explorative interview design with 16 managers of large SMEs that, as yet, have not engaged with IR, but are potential candidates to do so in the future. In doing so, the second article investigates the perceptions of SME managers towards IR, thereby elucidating their motives for a potential future engagement with IR as well as reasons that presently prevent from IR adoption. The article covers research objective 3.

Findings show that, in opposition to prior literature, SME managers' interest in IR was driven by strong business case considerations, while accountability played only a subordinate role. Specifically, managers were interested in IR to achieve legitimacy and improve corporate image, which was considered especially relevant for firms (and industries) that have been earlier covered in press for corporate misconduct (Deegan, 2002; Bansal and Clelland, 2004; Cho and Patten, 2007; Reverte, 2009; Beck et al., 2017). Another major incentive for a potential IR engagement was its role in recruiting employees in times of the 'war for talents' as well as improving dialogue with investors. At this juncture, several managers alluded to sustainable investors and green bonds, which are increasingly gaining relevance for firms (e.g. Benson et al., 2006; Salzmann, 2013). This association has not been covered in prior literature and should be investigated in future studies. In the light of Serafeim (2015), who found that IR adopters have less

transient investors and Humphrey et al.'s (2017, p.53) belief that the endurance of IR depends on the IIRC's success to "mobilize or create the long-term enlightened investor", it is reasonable to assume that – contrary to short-term oriented investors that may regard IR as an unnecessary expense – particularly sustainable investors have a distinct long-term orientation and hence show a greater interest in a close monitoring of the firm. Besides, information on how strategic and sustainability-related issues and risks are identified, targeted and implemented into daily business as well as an assessment of their impact on a firm's short-, medium- and long-term value creation should be particularly relevant for sustainable investors.

Research opportunity 3: Does IR adoption lead to higher awareness/valuation by sustainable investors?

Despite the strong interest of managers for IR (some have already started to interconnect corporate value drivers in their corporate strategy), interlocutors refrained from IR adoption (Robertson and Samy, 2015; Adhariani and de Villiers, 2019). However, what seems paradoxical at first glance, is, upon closer inspection, a management decision that compares expected benefits with more severe barriers. In other words, the idea of IR is considered to be valid in principle, but presently is not practical, which suggests that the business case property of IR is not taken as unproblematic as it is envisioned by the proponents of IR. This concern can be traced back to three subordinate inhibitors to IR: first, managers voiced a perceived *lack of interest by the relevant publics*, which is attributable to managerial experiences with the overestimated relevance of corporate reports to their stakeholders. Managers pointed out that there were more effective ways to engage with their stakeholders than IR. The second concern was the opinion that IR was *infeasible to actually address user needs*, especially since it lacks specific guidance, is too complex (length, readability) for the readership of SMEs and allows for high degrees of discretion that lead the idea of IR *ad absurdum*. Third, SMEs possess limited financial resources and specific expertise, which would lead to a disproportionately high *administrative and financial burden* that would curtail any benefits of the new reporting

instrument. In sum, these drawbacks prevent firms from reporting in an integrated way ('IR talk') – also those that have begun to implement to align different corporate value drivers ('IR walk') –, which leads to a strategy of silence (Nielsen and Thomsen, 2009; Baumann-Pauly et al., 2013).

Another focal point, which, in parts, may correspond to managers' fear of the administrative and financial burden, is the necessity to install internal control systems that allow gathering all reliable information for IR preparation. Although a reasonable level of management control and the establishment of an appropriate controlling infrastructure are the starting point for a successful transition to and application of IR, there is a distinct lack of research dedicated to the management control perspective on IR (Grassmann et al., 2019; Velte, 2020c). This is particularly surprising given the internal benefits that are expected to arise from the integrated thinking approach in IR, such as a better connectivity of process between business units, enhanced internal decision-making or breaking down organizational silos (Higgins et al., 2014; Robertson and Samy, 2015; Adhariani and de Villiers, 2019). Velte (2020c) emphasizes the relevance of a developed controlling infrastructure ('measurement and monitoring system', IIRC, 2013a, para 2.28) to properly adhere to and apply the guiding principles (e.g. connectivity, materiality) and to manage and report on the different capitals in IR (Dumay et al., 2017). This corresponds to Günther et al. (2015, p.159) who state that the quality of controlling determines the quality of the IR. One exception is Mio et al. (2016), who investigate the internal application of the IR principles in a case study with a large insurance company. Comparing the concept of IR with a management control system, the authors identify a set of mechanisms underlying IR that can advance management control (e.g. aligning internal value creation process, continuous improvement and management integration, increasing identification with values and goal alignment).

Research opportunity 4: How does management control as well as its specific factors contribute to IR adoption and vice versa?

5.2.3 Implications for regulators and practice

The results of the studies on IR adoption have several valuable implications for regulators and practice. First, the value relevance of IR adoption for debt providers may encourage firms that are highly leveraged or intend to increase their financial leverage to adopt IR to benefit from lower interest payments. In the light of the findings, this should be particularly relevant for firms with low sustainability performance and those operating in sensitive industries to offset the corresponding risk premium. Likewise, this circumstance should encourage the IIRC to put more emphasis on the debt side in the (announced revision of the) <IR> Framework (IIRC, 2020a, 2020b). In this context, the <IR> Framework should be more explicit with respect to IR-specific features beyond traditional financial and CSR reporting that render the novel reporting instrument relevant for debt investors, such as the risk management property of IR as well as its value to corporate and management control.

The results on the challenges that actually prevent firms from embarking on IR may provide another valuable impetus for the announced revision of the <IR> Framework. A glance at the related social and environmental accounting and reporting literature shows similar challenges (e.g. O'Dwyer, 2002, 2003, 2005; Owen, 2008) that seem to go along with new reporting formats (Tschopp and Huefner, 2015), which IR has yet not overcome. Although these findings do not look quite bleak, however, they provide the opportunity to develop the concept of IR further in order to reach out to more firms that as yet have not engaged with IR or have decided to refrain from its adoption. For instance, the IIRC might consider revising the <IR> Framework so that firms can either apply the IR concept as a 'light version' or on a modular basis. A similar approach was taken by the GRI in the renewal of their G4 standards, where CSR reporting firms can choose between three reporting options – a core (i.e. reduced form) and a comprehensive (i.e. long form) option, as well as GRI-referenced claim (i.e. topic-related form) if firms decide to report on a single topic or dimension (e.g. environment). Although the GRI and the <IR> Framework and the underlying concepts differ, this approach might be transferred to IR, particularly since Brown and Dillard (2014, p.1135) state that the IIRC is “ostensibly building on

the GRI, but makes no attempt to engage with critiques of GRI reports”. In practical terms, firms should have the option to choose between a reduced (fewer content elements and guiding principles) and a full form of IR, or to decide for an integrated report related to a specific topic (e.g. a specific capital). These options would allow to better account for company peculiarities and decrease preparation costs as a major entry barrier for first-time adopters and SMEs.

Besides, given the strong prevailing investor and business case logic in IR, the IIRC may consider to put accountability more at the core in order to prevent IR from becoming just another anachronistic and vanishing reporting tool that failed to focus on contemporary problems of modern society, such as poverty, biodiversity loss and global warming. A re-configuration of the IR concept towards more stakeholder accountability could also lead to a higher acceptance among its relevant stakeholders, such as managers, investors, employees and society (Brown and Dillard, 2014; Flower, 2015; Thomson, 2015).

5.3 IR quality – Determinants

5.3.1 Determinants of materiality disclosure quality (article 1)

The first scientific paper is related to research objectives 1 and 2, ergo developing a materiality disclosure score that allows to proxy IRQ, as well as investigating a set of different integrated report-, corporate governance- and financial accounting-specific determinants of IRQ.

In the first step, to measure the abstract concept of IRQ (*research objective 1*), an original MDQ score was developed, which is composed of seven observable items that shape the materiality assessment process in corporate practice and allow for an assessment of how reasonable the materiality principle was applied by the focal company. The MDQ score is composed of the following seven items: (1) presence of a materiality section, (2) materiality identification process, (3) description of material aspects, (4) time horizon, (5) materiality matrix, (6) disclosure of risks and opportunities and (7) mitigation actions. Instead of following existing measures for IRQ, the idea put forth by Fasan and Mio (2017)

to address the materiality concept was developed further. The reason to proxy IRQ with the MDQ score is as follows: materiality is not only a central concept of IR, but with its abstractedness and non-distinctively simultaneously is a major source of discretion and managerial leeway and thus should allow assessing a firm's willingness to exercise reporting discretion (Lo, 2010; Hsu et al., 2013; Edgley, 2014). Coincidentally, a proper application of the materiality principle places far-reaching requirements upon a firm's management control and should be disclosed in each integrated report to transparently provide the underlying assumptions of the materiality determination process to addressees.

In the second step, the effect of different relevant integrated report- (learning effects, readability), corporate governance- (board gender diversity, DJSI listing) and financial accounting-specific (earnings management) determinants on MDQ was investigated (*research objective 2*). The selection of determinants accounts for the multidisciplinary of the IR concept on the one hand, and covers as yet under- or non-investigated factors that were derived from a thorough engagement with earlier literature on IR or related reporting concepts (such as CSR reporting) on the other hand. Disaggregating the MDQ score into its single components shows that firms have particular deficiencies in the disclosure of a specific and clearly defined time horizon of their material issues, a materiality matrix and details regarding specific risks and opportunities. Descriptive results further reveal that integrated reports in mandatory reporting regimes (South Africa) have significant higher MDQ compared to those originating from voluntary reporting regimes (Europe). Multivariate results unfold that learning effects in IR (i.e. number of prior years of IR adoption), board gender diversity and the assurance of the non-financial information in the integrated report are positively associated with MDQ, while report readability, sustainability index listing as well as earnings management do not determine reporting quality. The positive effect of gender diversity on MDQ responds to Fasan and Mio's (2017) call for a re-investigation of the association between MDQ and gender diversity and aligns with prior findings in disclosure literature, which show that female representation enriches board decisions (Williams, 2003; Burgess and Tharenou, 2002; Nielsen and Huse, 2010), affects sustainability performance (Bear et al.,

2010; Boulouta, 2013; Li et al., 2017; McGuinness et al., 2017) and improves disclosure quality (Rupley et al., 2012).

This study opens several directions for further research. Given that the development of the MDQ score focuses on a content analysis of the materiality section of the integrated report, future research should refine the developed MDQ score or should investigate whether higher quality of materiality-related information disclosure likewise translates into a better application of the materiality principle itself throughout the report. To this purpose, in a first step, by means of a survey or experimental study design, future studies should validate whether the ‘desk based’ developed MDQ score (based on the materiality principle as put forth by the IIRC in the <IR> Framework) properly corresponds to stakeholders’ and report addressees’ perceptions of material matters. For instance, in order to seek participants’ opinions as to whether different information in an integrated report is actually material, there would be merit in exploring whether the information provided in a materiality matrix corresponds to addressees’ assessment of material matters. Such an explorative approach could help to scrutinize the expediency of the MDQ score from a more emic practitioners’ perspective.

***Research opportunity 5:** Based on an experiment or survey with stakeholders, how can the MDQ score be developed further to better assess a firm’s adherence to the materiality principle?*

While this study investigates a set of different IRQ determinants derived from an integrated report-, corporate governance- and financial accounting-specific dimension, future research should analyze whether individual or behavioral characteristics affect IRQ. Since the decision to adopt IR often is driven by values of managers (particularly among SMEs, see e.g. Del Baldo, 2015; Lodhia, 2015; Girella et al., 2019), who have the reporting authority (Higgins et al., 2014; Steyn, 2014), future research should investigate whether CEO, CFO or Chief Sustainability Officer (CSO) characteristics, such as narcissism, overconfidence or sustainability expertise (for opportunities to measure these behavioral patterns

with attributes disclosed in corporate reports, see e.g. Rijsenbilt and Commandeur (2013)) determine IRQ. While there is a lack of research in an IR context, there is a wide array of corresponding research in the related domain of CSR (for a review, see Velte (2019)). This might contribute to an avalanche of earlier studies that have shown that corporate disclosure behavior is affected by different managerial characteristics, such as decision horizon (Trotman and Bradley, 1981), education and professional background (Lewis et al., 2014), personality and preferences (Gibbins et al., 1990), as well as sustainability-related attitude (Helfaya and Moussa, 2017).

***Research opportunity 6:** Do individual/behavioral managerial characteristics such as narcissism, overconfidence or sustainability expertise affect IRQ?*

While this study focuses on the determinants of MDQ, ergo input factors, related studies have shown that higher IRQ can lead to positive capital market effects. For example, Barth et al. (2017) find that IRQ (i.e. EY Excellence in Integrated Reporting Awards Score) is positively associated with liquidity and firm value, a view reinforced by Caglio et al. (2020), who show that higher IRQ (i.e. contextual and syntactical attributes) leads to increased market values, higher stock liquidity and less dispersed analysts' estimates. Zhou et al. (2017) reveal that higher IRQ (i.e. alignment with the <IR> Framework) is associated with lower analysts' forecast error and dispersion, which translates into a subsequent reduction in cost of equity. Similar, Lee and Yeo (2016) find that IRQ (i.e. disclosure score) is positively associated with firm value, particular in case of high organizational complexity and higher external financing needs, which suggests that higher quality integrated reports improve the information environment in complex firms and decrease information asymmetry. Given that the materiality principle is particularly important for investors and financial decision-making, there would be merit in investigating as to whether better MDQ scores are rewarded by capital markets, e.g. through lower information asymmetry (e.g. bid-ask spreads), lower cost of capital (e.g. cost of equity, cost of

debt, weighted average cost of capital), better analyst coverage and lower degrees of analyst forecast errors and dispersion.

***Research opportunity 7:** Are higher MDQ (IRQ) scores rewarded by capital markets?*

5.3.2 Implications for regulators and practice

This study's findings have several implications for regulators and practitioners: first, the IIRC should consider learning effects in IR preparation when contemplating different ways in the upcoming revision of the <IR> Framework by end of 2020 (IIRC, 2020a). In practical terms, the transition towards IRQ can be considered as an iterative learning process that increases with more IR experience (Feng et al., 2017), especially since firms often develop the IR concept on the basis of the preceding CSR report, need to establish a corresponding (reporting and controlling) infrastructure to gather and generate the relevant data and to implement these data into strategy and risk management. Keeping this in mind, regulators should think about issuing an exemplified 'best practice guide on materiality' that provides practical recommendations for (first-time) practitioners and complements the background paper on materiality (IIRC, 2013b). In this regard, the IIRC might consider to develop a predefined set of quality standards that firms should adhere to, for instance, comparable to the GRI standard 'G4 sustainability reporting guidelines' (GRI, 2016). Against this backdrop, legislators should take the opportunity to install and enforce quality criteria for IR which are contingent on firms' opportunity to adhere to the novel reporting instrument in order to fulfill recent regulations (e.g. NFRD, TCFD, SFAB).

In the light of the findings, one of these quality criteria might be an independent IRA (e.g. Maroun, 2017; Rivera-Arrubla et al., 2017). In the light of shortcomings in present IR practice, such as low reporting quality, high reporting heterogeneity, information overload and the abuse of the IR concept for greenwashing and impression management, it is crucial for the further

development of IR to install mechanisms that increase and ensure IRQ (Eccles et al., 2012). The results show that an external verification may contribute to achieving this goal and should impel regulators to push forward the ongoing debate on the need for IRA specific guidelines (e.g. Maroun, 2017, 2018) in order to ensure that assurers have a fit-for-purpose armamentarium to actually increase IRQ by means of an external verification. This aligns with the last article that focuses on the implications of and challenges around IRA.

5.4 IR assurance – Economic consequences and critical voices

5.4.1 Non-professional investors' reactions to IRA (article 4)

The fourth study drew upon an experimental design to explore the effect of an IRA on the financial decision-making of NPIs. Subsequently, the findings were contextualized by means of in-depth interviews. The study addresses the research objectives 5 and 6.

The experiment was designed to assess the effect of an IRA, as well as two of its major specifications, namely the assurance provider (Big 4 assessor and specialized consultant) and the level of assurance (high/reasonable and moderate/limited), on the investment behavior of NPIs, who were proxied by Masters students and managers of large corporations. The selection of two different types of NPIs targets at taking note of different investment-related decision frames (e.g. Abdel-Khalik, 1974; Dyer et al., 1989; Monroe and Woodliff, 1993; Gold et al., 2012) between highly sophisticated participants with an experienced-practical background (managers) and less experienced participants with an academic-theoretical background (Masters students). The manipulated variables, the IRA assessor (either a Big 4 accountant or a specialized consultant) as well as the level of assurance (either high/reasonable or moderate/limited), are located in the IRA statement while the IR extract is the same for all treatments. Based on the information provided, participants were instructed to take an investment-decision.

In line with the expectation that an IRA leads to higher reliability of the information provided and signals a firm's commitment to the correctness of the disclosure, students invested significantly higher amounts in case of an IRA, which corresponds to earlier findings on the beneficial effect of an assurance (e.g. Hodge et al., 2009; Brown-Liburd and Zamora, 2015; Cheng et al., 2015; Shen et al., 2017; Velte and Stawinoga, 2017b; Reimsbach et al., 2018; Maroun, 2019). While subsequent analyses revealed that higher assurance levels led to higher investments (e.g. Pflugrath et al., 2011; Akisik and Gal, 2019; Maroun, 2019; Caglio et al., 2020; Gal and Akisik, 2020), the choice of the assurance provider did not affect subjects' investments. Against expectations, depended on the model specification, managers' investments were either not affected by an IRA, or an IRA was even detrimental to investments; the assurance level and the assurance provider did not affect investments.

To assess the sense-making process underlying this behavior and to triangulate the results, 16 in-depth interviews were carried out with managers, which revealed three subordinate factors that managers were critical about: first, managers complained about *negative practical experience* with audit and assurance engagements that, in practice, were characterized by time pressure, over-standardization, a lack of rigor, as well as economic bonding and a lack of independence. Second, managers were critical about *technical doubts specific to IRA practice*, such as difficulties in reliably assuring the combination of financial and non-financial information, high degrees of managerial leeway and the subjectivity of information, technical challenges and the absence of an IRA-specific standard. As a final reservation, managers pointed out *emotional caveats* towards the audit and assurance profession that has lost weight due to past scandals (e.g. Enron).

The critical attitudes (i.e. particularly the *negative practical experience* and *technical doubts specific to IRA practice*) sought throughout the interviews provide relevant stimuli for future research.

One prominent concern that shaped managers' *negative practical experience* with voluntary assurance engagements was a (perceived) lack of independence of the assessor, which aligns to a vast strand of earlier studies, which criticize intense auditor-client relationships to curtail assessors' independence (e.g. Maury, 2000; O'Dwyer and Owen, 2005; Smith et al., 2011). However, academic literature has not reached a consensus here. While critical scholars disparage a lack of independence (e.g. joint audit of financial report and sustainability report, advisory services), other scholars argue that these relationships lead to higher reliability due to higher assurance quality. One recent example is Barbadillo and Martinez-Ferrero (2020), who find that a joint provision of audit and sustainability assurance services by an incumbent auditor results in knowledge spillover and thereby leads to higher assurance quality. The authors add that this association is moderated by industry specialization, which leads to a higher awareness of sustainability assurance-related matters. While one common way to address this topic would be assessing audit quality under different auditor-client relationships with established measures (e.g. restatements), there is merit in experimentally investigating investors' psychological reactions to different *perceived* degrees of (in-)dependence in auditor-client-relationships, such as (1) the auditor has only assured the integrated report, (2) the auditor has audited both the financial report and the integrated report, (3) the auditor has participated in IR preparation and subsequently did the IRA, or (4) joint IRA by two assurance parties.

Research opportunity 8: Experimental assessment of (non-professional) investors' reactions to different degrees of (perceived) independence in auditor-client-relationships in IRA engagements.

With respect to the *technical doubts specific to IRA practice*, future research should seek to provide more fine-grained insights on the implications of the choice of the assessor in IRA engagements. Earlier studies from the related discipline of CSRA provide a fruitful impetus for future IRA research that may help to gain an even deeper understanding for IRA-specific factors. Prior research suggests that particularly when it comes to assuring new reporting concepts and

initiatives (such as CSR reporting in the past and IR nowadays), multidisciplinary assurance teams benefit from shared competencies and provide higher assurance quality. For instance, in investigating the initial experiences of an auditor with a CSRA as new assurance service, Wallage (2000) emphasizes the relevance of multidisciplinary assurance teams. Similar in vein, according to Huggins et al. (2011), greenhouse gas statement assurance warrants multidisciplinary teamwork, a view shared by Cohen and Simnett (2015), who point out the relevance of multidisciplinary assurance teams to assemble the assurance and subject matter to complete CSR assurance engagements.

This might particularly apply to IRA, an upcoming but new assurance matter on a reporting initiative that is characterized by an interdisciplinary nature, high complexity and the need for highly specialized knowledge (Higgins et al., 2014). Beside, the lack of specific IRA guidance confronts assurers with high degrees of uncertainty and vagueness, which places far-reaching requirements upon subject- and assurance-specific expertise (Cheng et al., 2014; Simnett and Huggins, 2015; Simnett et al., 2016; Maroun, 2017, 2018). Consequently, multidisciplinary assurance teams – for example consisting of experts on financial accounting, sustainability and data science, or auditors and assurers outside the audit profession (specialized consultants) – might benefit from shared competences. Anecdotal evidence is provided in recent work by Canning et al. (2019), who show that that accountant and non-accountant assurance providers seek synergies when it comes to auditing novel and discretionary assurance services, which might translate into higher assurance quality. This research question may be addressed with an explorative interview design (e.g. engaging with auditors or consultants to explore their experiences with and perceptions of multidisciplinary assurance teams) or an experimental study, where participants decide as to whether multidisciplinary assurance lead to higher (perceived) assurance quality and, in consequence, investments.

Research opportunity 9: Do multidisciplinary assurance teams (e.g. experts on financial accounting, sustainability, data science; or auditors

and specialized consultants) lead to higher IRA quality and, if yes, is it recognized by investors?

Managers' *technical doubts specific to IRA practice* may further be rooted in the infeasibility of present assurance standards that are not fit-for-purpose for the assurance of narrative, qualitative, intertwined and forward-looking information in IR. As presented in the literature review section on IRA, Maroun (2017, 2018) discusses the need for new assurance forms, such as interpretative assurance models that focus on testing the underlying methods and processes rather than the inherently subjective data itself (Maroun, 2018). Nevertheless, despite the landmark studies by Maroun (2017, 2018) corresponding evidence in the IRA setting is rare. Against this backdrop, future research should investigate whether interpretative assurance models are more suitable to assure information contained in integrated reports and whether they are recognized by IR addressees, practitioners and the audit profession.

Research opportunity 10: *Are there other forms of IRA, e.g. interpretative assurance models, that are more fit-for-purpose for IR and how do stakeholders (e.g. audit profession, investors, practitioners) assess these proposals?*

As a final methodological opportunity for future research, further studies should explore the choice and suitability of different proxies that go beyond Masters students as surrogates for investors. The insight that the reliability-enhancing or investment-increasing effect of an IRA seems to depend upon the experience of the focal investor should be further elaborated on in future research. In line with one manager's statement that an external assurance was a rather "theoretical thing", higher degrees of IRA-related experience seem to be detrimental to the perception of value that can be achieved through an external verification. However, since highly sophisticated managers represent only a small fraction of investors in capital markets, future research should reinvestigate whether managers might likewise be representative of the broader group of highly skilled or leading employees.

Research opportunity 11: *Are managers as experimental participants also representative for other target groups, such as highly skilled or leading employees?*

5.4.2 Implications for regulators and practice

The results of this study have several valuable implications for firms, regulators, as well as the audit and assurance profession.

First, by means of an IRA firms can increase the reliability of their integrated report, provide a quality seal and increase the investment confidence of (non-professional) investors (if proxied by Masters students), especially in case of high assurance levels. This should encourage IR preparers to contemplate an external verification of the integrated report (with a high assurance level), while taking into consideration their target group/audience. In the light of the value relevance of the IRA, firms should prominently make aware of the presence of an external verification of the information contained in the integrated report. The insight that the choice of the assurator had no effect on NPIs' investments may provide a solid basis for negotiation on IRA fees since the assurator seems to be interchangeable and does not affect report addressees.

Particularly the factors that currently impair the value of an IRA should be of high relevance to standard setters and regulators. Managers, as key players in the voluntary adoption (and thus diffusion) of IR as well as IRA, question the value of an IRA in the light of perceived *technical doubts specific to IRA practice*. Among others, managers mentioned difficulties in reliably assuring the combination of financial and non-financial information, managerial leeway, subjectivity of information, technical challenges and the absence of an IRA-specific standard. The critical results contribute to the ongoing debate about the necessity for an IRA-specific standard (e.g. Maroun, 2017, 2018) and reaffirm Reimsbach et al.'s (2018) concerns that an IRA is no guarantee of higher reliability (if not being properly conducted). In practical terms, the IIRC should

refine and extend their document on the ‘Assurance on <IR>’ (IIRC, 2015) and promote the development of an (interpretative) IRA standard that allows to reliably assure the narrative, intertwined and forward-looking information in IR while decreasing subjectivity. As postulated by Maroun (2018), instead of testing for the correctness of the data, such an assurance model might rather focus on testing for the plausibility of the underlying methods and processes.

The auditing and assurance profession should be interested in addressing managers’ *emotional caveats* and should be eager to learn from their *negative practical experience* with audit and assurance engagements (time pressure, over-standardization, economic bonding, lack of rigor and independence). The results suggest a systematic mistrust in the value of voluntary assurance engagements among managers, who are a key piece of the jigsaw for IRA. In this light, it is highly important for the assurance profession to demolish prevailing perceptions, for example by installing mechanisms that increase transparency of assurance engagements to addressees. To give an example, aside from the obligatory assurance opinion and the statement on the work performed, firms should transparently disclose additional key aspects of the assurance contract relevant to report addressees (e.g. negotiated assurance fees, discovered reporting errors subsequently rectified by the firm). Moreover, to address the criticized lack of independence, the assurance profession might consider to voluntarily transposing different regulatory and enforcement mechanisms of the recent European audit legislation directive (2014/56/EU, amending 2006/43/EC; applies to PIEs), such as audit firm rotation, restriction on non-audit services, expanded audit committee responsibilities, expanded auditor reporting requirements, also to non-financial assurance engagements and IRA.

6. Conclusion and outlook

As the latest transition in the continuous evolution of corporate reporting, the timely phenomenon of IR has gained considerable attention among firms, investors, stakeholders and regulators all over the world (de Villiers et al., 2014; Atkins and Maroun, 2015; Behncke and Wulf, 2015; Dumay et al., 2016;

Humphrey et al., 2017; Velte and Stawinoga, 2017a). Driven by the idea to connect a firm's financial and non-financial dimensions within one succinct single report while concurrently overcoming the drawbacks of prior (non-)financial reporting formats (e.g. window dressing, greenwashing, information overload), IR has elicited exuberant appraisal among its proponents who foretell that the new reporting phenomenon will revolutionize and democratize corporate disclosure behavior and will substitute for other reporting formats in the long run (Eccles and Krzus, 2015a; Eccles et al., 2015). IR enjoys noteworthy regulatory and institutional support by different international and national reform efforts (e.g. UN SDGs, FSB's TCFD, European NFRD and its transposition into German law (CSR-DIL), German SFAB's sustainable finance strategy), which encourage IR adoption (Velte and Stawinoga, 2019a, 2019b; Adams et al., 2020; Velte, 2020a), thereby providing additional momentum to the IR journey. However, while the idea of IR has received noteworthy attention in academia, extant scholars on IR leave several essential questions unanswered that are considered relevant for imbuing the understanding of IR to a more integral level. In line with Francis Bacon's (1561-1626) winged adage *scientia potentia est* – in other words, knowledge is power – this dissertation has ventured an attempt to address major, so far unsolved, or at least insufficiently addressed, questions around *IR adoption*, *IRQ* and *IRA*.

With respect to *IR adoption*, results show that firms reporting in an integrated way benefit from lower cost of borrowing, although this effect is especially strong for firms with low sustainability performance and only holds for firms operating in environmentally sensitive industries. An engagement with key players in the voluntary adoption of IR, namely managers, showed that corporate decision-makers are interested in the business case property of IR, but currently regard IR infeasible to actually achieve these business case goals. This insight contextualizes the conundrum that managers often are positively inclined to IR, but, paradoxically, are reluctant to implement it (Adhariani and de Villiers, 2019) and adds to critical scholars, which emphasize that IR lacks practicality and needs to overcome many challenges in order to establish as a reliable reporting concept (Brown and Dillard, 2014; Flower, 2015; Thomson, 2015;

Dumay et al., 2017). In the light of these drawbacks and the risk that IR with its abstract and barely developed guidance that allows high degrees of managerial discretion (Flower, 2015; Dumay et al., 2017) falls victim to information overload, greenwashing and impression management, IRQ and IRA are at the forefront of the two further studies. Focusing on the central principle of materiality to proxy *IRQ*, results show that reporting quality increases with learning effects, board gender diversity and the assurance of the non-financial information in the integrated report. Staying with the external verification, an experimental study provides evidence that an *IRA* increases the investment likelihood of NPIs, especially if assurance levels are high. However, sophisticated investors (managers) questioned the worth of an *IRA*, primarily due to earlier negative practical experiences (e.g. time pressure, over-standardization, lack of independence and economic bonding), emotional caveats and the belief that *IRA*-specific factors, such as missing guidance, technical challenges, the forward-looking focus and managerial leeway, at present would render an *IRA* infeasible.

The results of the studies led to the formulation of different recommendations that should be addressed by the IIRC to take IR to the next level in order to prevent IR from being an impracticable fad that fades away in time. In all modesty, there might be merit for the IIRC to take into account several of the abovementioned findings when revising the <IR> Framework by the end of 2020, which is about time (IIRC, 2020a).

In the light of the managerial inertia to take the decisive step towards IR adoption, the IIRC should contemplate to allow reporters to report in a less complex or scaled-down manner ('light' version or a modularization of the <IR> Framework analogous to the GRI), which should decrease preparation costs and administrative efforts as major entry barriers especially for SMEs and first-time adopters. At this juncture, the IIRC should take into account also the foci of various scholars that criticize the strong business case and investor logic in IR. At present, the <IR> Framework neglects to continue the arduous transition of earlier voluntary reporting initiatives towards more stakeholder accountability ("avoidance of any recognition of the prior 40 years of research and

experimentation”, Milne and Gray (2013), p.25), but falls back to ‘old patters’ of shareholder wealth and an anachronistic homo oeconomicus-centered perspective, which was already declared dead by the German Financial Times in 2001 (Häring, 2001). Hence, it is recommendable for the IIRC to take into consideration a paradigm shift that puts stakeholder accountability at the core of IR, which might lead to a higher acceptance of the novel reporting instrument.

Moreover, the IIRC should promote different initiatives, metrics and circumstances that may result in higher reporting quality and, thus, a higher likelihood for IR to establish over the long run. For instance, when revising the <IR> Framework, the IIRC might predefine precise quality requirements, which need to be fulfilled to either define the report as an ‘integrated report’ or to adhere to recent regulations by means of IR (e.g. NFRD, TCFD, SFAB). Building upon critical managerial voices, the IIRC (as well as professional bodies and the audit profession) should insist on the development of an IRA-specific standard since extant non-financial assurance standards are frequently criticized for being not suitable for the IR concept. At this juncture, one might refer to the impetus provided by Maroun (2017, 2018), who recommends an interpretative assurance model, which critically reflects on the methods and processes instead of the information itself, which often is not properly auditable (forward-looking, intertwined financial and non-financial dimensions). Against this backdrop, those responsible for the development of an IRA standard should engage with knowledgeable and experienced practitioners outside the audit profession (e.g. managers) as well as different stakeholder groups, who should become involved in this venture (Manetti and Toccafondi, 2012).

By the end of May 2020, the IIRC issued the long awaited consultation draft of the <IR> Framework (IIRC, 2020b), which, however, appears superficial as regards the proposed changes. While the IIRC announced several minor adjustments, the standard setter ostensibly has missed the opportunity to engage with critical scholars from the academic community and to address high impact issues that actually determine the future of IR (e.g. concept of materiality, mechanisms to increase IRQ, external verification, etc.). Referring to Flower’s

(2015) notion that the IIRC has fallen victim to capture by preparers and the accounting profession, one might suggest that the IIRC, as a global coalition of parties with diverse interests, is incapable of acting when it comes to realizing disruptive changes that are vital to the future of IR. Despite all disappointment, in its consultant draft, the IIRC (2020b) provides a glimpse of future issues that are under evaluation. Among others, the IIRC announced to discuss a shift from the emphasis on ‘providers of financial capital’ to ‘providers of other forms of capital’, which aligns to the necessity for more stakeholder accountability and less economic-centered trajectory (Milne and Gray, 2013; Brown and Dillard, 2014; Flower, 2015).

At the bottom line, the future of IR is uncertain. As yet, it is hard to gauge whether IR will continue its journey in the long run, whether it will establish as *the* (mandatory) future reporting norm or whether an IRA will be obligatory sometime. It is however clear that the future of IR is in the hands of many different stakeholder groups that are as diverse and heterogeneous as the idea of IR itself. While in the light of the ongoing interest in IR there is reason to believe that the best is yet to come, scholars that are critical about IR have their reason for being as well. While new, further developed, or simply differently designated reporting concepts have begun to emerge, such as the ‘value balancing alliance’ with its aim to “integrate business into society and nature for a better future” (Value Balancing Alliance, 2020, p.1), they all build upon the idea to interconnect a firm’s financial and non-financial value drivers to create more transparency and accountability for those who are interested in the firm.

Below the line of this dissertation project, I bed to provide my personal conclusion: in the light of the ongoing transition of corporate reporting towards more transparency and accountability, the idea of IR is about time and will persist. Whether a reporting format that interconnects a firm’s financial and non-financial dimensions within one report will be called *integrated reporting*, value balancing alliance or has another completely different denomination, however, is in the stars.

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Annex 1: Determinants of materiality disclosure quality in integrated reporting: Empirical evidence from an international setting (article 1)

Abstract¹⁵

This study examines determinants of materiality disclosure quality (MDQ) in integrated reporting (IR) in an international setting. To this purpose, we constructed a novel, hand-collected MDQ score in line with the <IR> guiding principles introduced by the International Integrated Reporting Council (IIRC). On the basis of a cross-national sample consisting of 359 firm-year observations between 2013 and 2016, we find that MDQ is positively associated with learning effects, gender diversity and the assurance of nonfinancial information in the integrated report. On the other hand, we find that IR readability, listing in the Dow Jones Sustainability Index (DJSI) and earnings management do not affect MDQ. Our results are robust to different statistical models. We expand on earlier empirical findings on IR disclosure quality and provide valuable insights for research, practice and standard setting.

Keywords

Integrated Reporting, Materiality, Disclosure Quality, Corporate Governance, Gender Diversity, Stakeholder Engagement

¹⁵ The style, form and citation style are in accordance with the individual journal guidelines and hence may differ from the other parts of this dissertation.

1. Introduction

The prevailing heterogeneity and disconnectedness of financial and nonfinancial reporting is increasingly associated with greenwashing, information overload, and decreased decision usefulness to investors and other stakeholders (Miller, 2010; de Villiers, Rinaldi and Unerman, 2014). By connecting all *material* financial and nonfinancial information into one concise business report, integrated reporting (IR) seeks to increase transparency and enable addressees to make more informed decisions (Eccles and Krzus, 2010; Frias-Aceituno, Rodríguez-Ariza and García-Sánchez, 2014; Lai, Melloni and Stacchezzini, 2016; Mervelskemper and Streit, 2017). In particular, as determined by materiality considerations, investment decisions are substantially driven by what is (and is not) included in the report (Deegan and Rankin, 1997). Without strong reliance on materiality and ‘integrated thinking’, the risk of greenwashing and information overload would not be mitigated, and IR might be abused as a “marketing tool” without distinct improvements regarding transparency and decision usefulness. This is especially relevant due to the principle-based nature of the <IR> Framework, which allows significant variation with regard to the application in practice (Lai, Melloni and Stacchezzini, 2017). Disregard of the materiality principle would defeat the purpose of IR, and there would be no substantial benefit as opposed to standalone CSR reporting. Due to its centrality, the concept of materiality constitutes one of the seven core principles of the <IR> Framework issued by the International Integrated Reporting Council (IIRC) (Fasan and Mio, 2017). The concept of materiality has substantial influence on the formulation and execution of a company’s business strategy and its risk management process (IIRC, 2013a; Higgins, Stubbs and Love, 2014), and this strategic importance of the materiality concept is explicitly emphasized in the IIRC background paper on materiality, which refines the nature and scope of material matters (IIRC, 2013b). Accordingly, a matter is to be considered material “if it is of such relevance and importance that it could substantively influence the assessments of providers of financial capital with regard to the organization’s ability to create value over the short, medium and long term” (IIRC, 2013b, paragraph 8).

Despite extensive discourse on materiality by researchers and standard setters, the concept may still be regarded as inherently nondistinctive due to the lack of a clear dividing line between material and nonmaterial matters (Bernstein, 1967; Lo, 2010; Whitehead, 2017; Kitsikopoulos, Schwaibold and Taylor, 2018). As such, materiality inevitably provides companies with administrative discretion for expectation management and favorable self-display (Edgley, 2014; Stubbs and Higgins, 2018). Hence, higher quality of materiality disclosure provides greater transparency for report users and thus limits managerial leeway in the exploitation of the materiality concept.

Using a unique hand-collected dataset of 359 firm-year observations between 2013 and 2016 to investigate specific integrated report-, corporate governance- and financial reporting determinants of materiality disclosure quality (MDQ), we contribute to the contemporary empirical literature in several important ways. First, to evaluate MDQ, we propose the implementation of a clearly and restrictedly defined MDQ score in alignment with the guidelines put forward by the IIRC (IIRC, 2013a, 2013b). We thereby refine the approach by Fasan and Mio (2017) who evaluate materiality disclosure either based on the word count of the terms ‘materiality’ and ‘material’ relative to the length of the integrated report, or on the relevance of the materiality concept in the report. Our MDQ score is composed of seven major elements of IR materiality disclosure, which should provide more detailed insights into the disclosure behavior of IR reporters. Second, we uncover relevant determinants that have a significant impact on MDQ. These are derived from related literature on both IR and CSR disclosure, as well as from broader studies on corporate governance and financial accounting. Specifically, the results provide evidence for increasing MDQ over time due to significant learning effects. Moreover, we find a positive association between board gender diversity and MDQ. Furthermore, we find that the MDQ is greater for firms that have the nonfinancial information in their integrated report externally assured. Against our expectations, we find no significant association between MDQ and the readability of IR, a firm’s listing in the Dow Jones Sustainability Index (DJSI), or the degree of earnings quality. Third, we employed different random intercept and three-level variance components models

to identify the sources of explanatory power on the firm-, industry- and country-level of analysis. The results are robust to different model specifications. Lastly, we address the demand for research on IR materiality from both scholars and standard setters (e.g. de Villiers, Rinaldi and Unerman, 2014; Steyn, 2014; CDP et al., 2016; Stubbs and Higgins, 2018), which also highlights the relevance of the topic.

The paper is structured as follows: in Section 2, we outline the theoretic foundation and derive our hypotheses. In the following part, we describe our methodology, which comprises the sample selection, variable definition and model specification. In Section 4, we provide descriptive and different multivariate statistics and discuss them. Section 5 gives concluding remarks.

2. Theory and Hypotheses Development

In line with the purpose of IR to provide transparent and decision-useful information not only to providers of financial capital but also to a broad range of other stakeholders (IIRC, 2013a; Flower, 2015), we apply stakeholder theory (Freeman, 1984), which is frequently used in an IR context (e.g. García-Sánchez, Rodríguez-Ariza and Frías-Aceituno, 2013; Frias-Aceituno, Rodríguez-Ariza and Garcia-Sánchez, 2014; Vaz, Fernandez-Feijoo and Ruiz, 2016). Stakeholder theory states that managers need to engage with “those groups who can affect or are affected by the achievement of an organisation’s purpose” (Freeman, 1984, p.49). This entails that managers need to balance and mitigate conflicts of interest between shareholders and other stakeholders, which results in the necessity to extend financial disclosure with material nonfinancial information. In the context of IR, “an organization’s ability to create value over time depends on (...) the quality of its relationships with, and assessments by, its stakeholders” (IIRC, 2013b, p.1). Insofar, the objective of IR is to satisfy the information needs of various internal and external stakeholder groups (Jensen and Berg, 2012; Steyn, 2014; Romero, Ruiz and Fernandez-Feijoo, 2018). This can only be achieved if the organization discloses “its unique value creation story in a meaningful and transparent way“ (IIRC, 2013b, p.1), as determined by materiality considerations. These considerations need to be comprehensively

presented in the materiality section of the integrated report and account for a trade-off between conflicting stakeholder interests. Such a trade-off requires ongoing stakeholder interaction to identify which issues are material to the heterogeneous group of report addressees (Stubbs and Higgins, 2018). The integrated nature of IR (financial, nonfinancial and corporate governance information) requires a transdisciplinary perspective rather than an isolated analysis within the confines of any subdiscipline (“integrated thinking”). Accordingly, by means of an extensive literature review, we selected a set of determinants that are assumed to be positively related to reporting transparency and MDQ. As depicted in Figure 1, we include a broad set of variables to stress the interconnection of information in IR. H1 and H2 are specific to the integrated report; H3, H4 and H5 analyze corporate governance determinants; and H6 is derived from the financial accounting literature.

[insert figure 1 here]

2.1 Determinants of MDQ: Integrated Report Characteristics

2.1.1 Learning Effects

Although several empirical studies describe an increasing trend of IR implementation (e.g. de Villiers, Rinaldi and Unerman, 2014; Eccles and Krzus, 2015), there is a lack of research regarding the shift in (materiality) quality over time. We propose that learning effects due to reporting experience increase MDQ in subsequent reporting periods. We assume that firms build upon an established IR infrastructure, iteratively refine their materiality disclosure (section), and show continuity with regard to structural reporting elements. Feng, Cummings and Tweedie (2017) argue that in the case of IR “organizations intend to improve the reporting process year by year by learning from prior year experiences (...), especially in the absence of clear guidelines or directions” (p.347). In the light of the IR’s value relevance (Lee and Yeo, 2016; Barth et al., 2017), stakeholder pressure for reporting continuity can be assumed to prevent the withholding of information in future periods, which had previously been disclosed (Darrell and Schwartz, 1997; Roome and Wijen, 2006, Gallego-Alvarez et al., 2017). In that regard, superior stakeholder interaction as part of materiality disclosure plays a

critical role, and, more generally, “one might suggest that learning how to balance different interests, making choices and implementing and explaining them in a transparent manner is the very nature of sustainability (corporate responsibility) and corporate governance” (Kolk, 2008, p.12). Insofar, constructive stakeholder feedback should improve MDQ over time. Our assumptions are supported by Fasan and Mio (2017), who show that (a) materiality disclosure increases over time and (b) that IIRC Pilot Program companies – those which have more IR experience – disclose more materiality-related information. Similarly, Pistoni, Songini and Bavagnoli (2018) show that firms listed on the Getting Started section of the IIRC database exhibit a significant increase in their IR content area score, that includes materiality, over time.

H1: Learning effects are positively associated with MDQ.

2.1.2 Readability

The value that stakeholders derive from the integrated report is affected by its readability (du Toit, 2017). Whereas readability has been shown to affect users of financial and nonfinancial reporting (Abu Bakar and Ameer, 2011; Lehavy, Li and Merkley, 2011; Loughran and McDonald, 2016), this effect should be especially strong for IR, given its narrative character, which facilitates the dialogue with different stakeholder groups (Higgins, Stubbs and Love, 2014; Lai, Melloni and Stacchezzini, 2018). Hence, the <IR> Framework explicitly stresses the importance of “plain language over the use of jargon or highly technical terminology” (IIRC, 2013a, p.21). In line with the opinion introduced by Smith and Smith (1971) that report readability constitutes a major quality determinant, Barth et al. (2017) use readability as a proxy for disclosure quality in an IR setting. Presumably, better report readability increases the decision-usefulness and transparency of the disclosed information and mitigates the risk of information overload, greenwashing, and impression management (IIRC, 2013b; Melloni, Stacchezzini and Lai, 2016). In terms of stakeholder theory, greater IR readability can be regarded as a bonding tool used by the management to signal stakeholders to act in their best interest (Wang, Hsieh and Sarkis, 2018). It further prevents managers to “strategically hide adverse information through

less transparent disclosures” (Li, 2008, p.228), and in the case of materiality disclosure, to obfuscate important information for stakeholders (Abu Bakar and Ameer, 2011; Mio, 2013; Nazari, Hrazdil and Mahmoudian, 2017), such as details regarding the materiality determination process or material risks and opportunities (‘managerial obfuscation hypothesis’; Courtis, 1998). Insofar, we hypothesize that firms that emphasize IR readability are more likely to disclose higher quality materiality information (Melloni, Caglio and Perego, 2017).

H2: IR readability is positively associated with MDQ

2.2 Determinants of MDQ: Corporate Governance Characteristics

2.2.1 Gender Diversity

The board of directors is responsible for representing and defending different stakeholders’ interests, has the fiduciary to oversee materiality identification (Ben-Amar and McIlkenny, 2015), and thus has a central role in IR (Frias-Aceituno, Rodriguez-Ariza, Garcia-Sanchez, 2013). Building on stakeholder theory, greater diversity of the board of directors can be associated with better stakeholder interaction and greater reporting transparency (Burgess and Tharenou, 2002; Francoeur, Labelle and Sinclair-Desgagné, 2008). Gender diversity represents one of the key board composition variables in empirical research. The degree of gender diversity affects the decisions of the board of directors (Fernandez-Feijoo, Romero and Ruiz-Blanco, 2014), which in turn determines the extent of nonfinancial reporting (Rao and Tilt, 2016). In particular, female representation enriches corporate board decisions by contributing different perspectives, skills, values, and beliefs (Williams, 2003; Ruigrok, Peck and Tacheva, 2007; Nielsen and Huse, 2010), and thus potentially improves MDQ. Previous research has shown that the representation of women on the board positively affects CSR performance (Bear, Rahman and Post, 2010; Boulouta, 2013; Li et al., 2017; McGuinness, Vieito and Wang, 2017) and environmental disclosure quality (Rupley, Brown and Marshall, 2012). In an IR context, Fasan and Mio (2017) argue that gender diversity positively impacts MDQ, but against their expectation, find the opposite association, which is “apparently counter-intuitive” (p.302). Hence, we reexamine this association.

H3: Gender diversity is positively associated with MDQ.

2.2.2 Assurance of Nonfinancial Information

The association between external assurance of nonfinancial information in IR and MDQ is still unexplored in the empirical literature. Whereas the assurance of financial information in IR is mandatory, nonfinancial information is regularly only ‘self-assured’ (Eccles and Krzus, 2015), which results in high uncertainty for stakeholders given that especially the concept of materiality permits a large degree of freedom in the preparation of the report (Mio, 2013; Simnett and Huggins, 2015). Through an independent external assurance of the nonfinancial disclosure, management can signal quality and transparency to the stakeholders of the firm (Mio, 2013; Reimsbach, Hahn and Gürtürk, 2018). Accordingly, research in the nonfinancial reporting literature considers assurance to be a quality criterion of CSR disclosures (Clarkson et al., 2008; O’Dwyer, Owen and Unerman, 2011). In support of this notion, Moroney, Windsor and Aw (2012) find that an assurance is positively associated with environmental reporting quality, and Braam and Peeters (2017) show that firms with a superior CSR performance use an assurance as a signaling device. Consistent with stakeholder theory, an external assessor in its gatekeeper function increases reporting quality and reduces conflicts of interests between management and its stakeholders (Clarkson et al., 2008; O’Dwyer, Owen and Unerman, 2011). Because the two most commonly used IR assurance frameworks, namely, AA1000AS and ISAE 3000 (Simnett, Vanstraelen and Chua, 2009; Mio, 2013), apply the reporting principle of materiality, an external verification can be assumed to safeguard the quality of the materiality disclosure (Maroun, 2017; Rivera-Arrubla, Zorio-Grima and García-Benau, 2017). *Mutatis mutandis*, the decision to include certain nonfinancial items based on materiality considerations is difficult, and “assurance practitioners are required to assess these decisions, in particular so as to provide assurance that all material disclosures have been canvassed” (Simnett and Huggins, 2015, p. 46). Building on these considerations, the IIRC explicitly recommends an external verification of the nonfinancial information to increase report reliability (IIRC, 2013a; 2015). Due to the lack of research on the relation between IR assurance and MDQ, and to address the call for studies on this topic

(Mio, 2013; Simnett and Huggins, 2015; Simnett, Zhou and Hoang, 2016), we formulate the following hypothesis.

H4: An external assurance of the nonfinancial information in the integrated report is positively associated with MDQ.

2.2.3 Dow Jones Sustainability Index (DJSI) Listing

Founded in 1999, the DJSI is widely regarded as one of the most prominent sustainability indexes (Charlo, Moya and Muñoz, 2015; Hawn, Chatterji and Mitchell, 2018). A major determinant of the DJSI's sustainability assessment is the financial materiality assessment based on critical sustainability factors for each industry (RobecoSam, 2018). If companies omit certain material issues in their integrated report that are found to be relevant for other companies in the same industry, this can lead to worse sustainability ratings and thus potentially prevent inclusion in the DJSI (Chiu and Wang, 2015). In addition, we assume that members of the DJSI have a greater number of socially responsible investors (SRI) and other stakeholders, who are concerned about the CSR performance of the firm (Serafeim, 2015; Kim, Li and Liu, 2018). Sustainability-oriented internal and external stakeholder pressure may lead to greater quality and transparency of (non)financial disclosure (Mallin, Michelon and Raggi, 2013; Oh, Park and Ghauri, 2013; Chiu and Wang, 2015). In that sense, the increasing importance of SRI in accessing financial and social resources could also have an impact on the materiality disclosure in IR (Majoch, Hoepner and Hebb, 2017). Previously, Cho et al. (2012) found a positive association between environmental disclosure and DJSI membership. They also found the same relation with respect to environmental reputation. Similarly, DJSI membership is also reflective of sustainability leadership (Robinson, Kleffner and Bertels, 2011; Miralles-Quiros, Miralles-Quiros and Arraiano, 2017), which should lead to superior sustainability and materiality disclosure (Al-Tuwaijri, Christensen and Hughes, 2004; Clarkson et al., 2008). Altogether, we expect DJSI members to have a higher MDQ.

H5: Dow Jones Sustainability Index (DJSI) listing is positively associated with MDQ.

2.3 Determinants of MDQ: Financial Reporting Characteristics

2.3.1 Earnings Management

The reliability of accounting earnings is bounded by the exploitation of managerial discretion in financial reporting (Sankar and Subramanyam, 2001; Hodge, Hopkins and Pratt, 2006). In particular, managers may engage in earnings management to mislead stakeholders about the firm's true financial performance and to influence capital decision-making (Healy and Wahlen, 1999). The concept of materiality in financial reporting can be regarded as a major source of discretion, and its exploitation can lead to greater discretionary accruals (Grant, Depree and Grant, 2000; Messier, Martinov-Bennie and Eilifsen, 2005). Despite the relevance of the materiality concept for various stakeholders, so far, nothing is known about the association between earnings quality and materiality disclosure in IR (Unerman and Zappettini, 2014). The only study addressing earnings management in an IR context shows that the exploitation of managerial discretion in financial accounting is negatively related to the disclosure of voluntary information through an IR (García-Sánchez, Martínez-Ferreó and García-Benau, 2018). From an ethical perspective, a company should strive for superior reliability and transparency of its corporate disclosure to meet the expectations that society has of organizations at a given point in time (Carroll, 1979; Suchman, 1995). Companies with better earnings quality are more prone to improving reporting transparency and thus provide more decision-useful nonfinancial disclosures (Francis, Nanda and Olsson, 2008; Mouselli, Jaafar and Hussainey, 2012; Cassell, Myers and Seidel, 2015). Applying the transparent financial reporting hypothesis (Kim, Park and Wier, 2012) on IR suggests that firms with better MDQ effectively reduce information asymmetries between stakeholders and are less likely to engage in earnings management (Richardson, 2000). Demanding comprehensive materiality disclosure can be regarded as a monitoring tool utilized by stakeholders to limit opportunistic management behavior. This implies that firms that are actively engaging with their stakeholders to identify material matters are expected to make more responsible decisions and to provide a 'true and fair view' of their earnings in the integrated report. Similar in vein, empirical research provides support for an intuitive negative relationship between earnings management and CSR reporting (Hong

and Andersen, 2011; Kim, Park and Wier, 2012; Scholtens and Kang, 2013; Martínez-Ferrero, Gallego-Álvarez and García-Sánchez, 2015). Taken together, we expect that companies with greater earnings management provide less detailed information as regards their materiality disclosure.

H6: Earnings management is negatively associated with MDQ.

3. Methodology

3.1 Sample Selection

We are jointly analyzing European and South African firms for several reasons. First and foremost, there is a strong emphasis on nonfinancial reporting (Dawkins and Ngunjiri, 2008; Kolk, 2008; Mitchell and Hill, 2009) and an especially high relevance of IR in Europe and South Africa (Sierra-García, Zorio-Grima and García-Benau, 2015). This relevance is substantiated by the regulatory requirements. Whereas IR is *de facto* mandatory ('apply or explain') for South African firms listed on the Johannesburg Stock Exchange (Steyn, 2014; Ackers and Eccles, 2015; Dumay et al., 2016), European countries have a long tradition of management reports with nonfinancial issues, and the recent EU directive (2014/95/EU) obliges large capital market-oriented corporations to provide an additional nonfinancial declaration, resulting in a potential of 6,000 new IR preparers (Howitt, 2018). Second, the business environments are similar with respect to country-specific determinants, such as investor protection (Jensen and Berg, 2012; Frias-Aceituno, Rodriguez-Ariza and García-Sánchez, 2013) and the cultural system (Hofstede, 1983; García-Sánchez, Rodríguez-Ariza and Frías-Aceituno, 2013; Vaz, Fernandez-Feijoo and Ruiz, 2016), which have been shown to affect IR.¹⁶

Our initial sample comprised 1,408 firm-year observations of 352 firms listed in the Integrated Reporting Examples Database between 2013 and 2016. Reflective

¹⁶ For this purpose, we compared the shareholder rights score ('protecting minority shareholders') provided by the Worldbank among Europe and South Africa. A country-weighted index led to a value of 6.47 for Europe and 7.00 for South Africa. With respect to the cultural system, the country-weighted score of individualism (Hofstede) equals 68.05 for Europe and 65.00 for South Africa.

of the leading role of Europe and South Africa in the application of IR, this data accounts for about two thirds of all firms listed on the database. Sample selection began with removing 11 firms that are double-listed. Next, we excluded 94 nonpublicly listed firms that lack Datastream coverage and 53 firms that belong to the financial services industry (SIC 6000-6999). We excluded financial services firms because they have been shown to differ significantly with respect to (a) their asset structure and financial leverage (Fama and French, 1992; Francis, Reichelt and Wang, 2005, Viale, Kolari and Fraser, 2009), (b) their accounting standards and practice (Frias-Aceituno, Rodriguez-Ariza, Garcia-Sanchez, 2013), and (c) are generally subject to stronger sector-specific disclosure regulation and supervision (Barth, Caprio and Levine, 2004). We defined a reference to the IIRC's <IR> Framework (IIRC, 2013a) as a constitutive requirement for inclusion in the sample. There were two reasons for this: first, the standardized framework provides clear guidelines and thus ensures report comparability between different regulatory environments. Second, the framework defines, institutionalizes and standardizes applicable requirements for materiality disclosure in integrated reports, which IR reporting firms should apply. Accordingly, after manually reviewing the remaining 773 integrated reports, we excluded 284 reports, which lack an explicit alignment to the IIRC. Finally, after excluding 130 firm-year observations due to missing values, our final sample consisted of 359 firm-year observations from 117 firms between 2013 and 2016 (see Table 1).

[insert table 1 here]

3.2 Dependent Variable

Despite its relevance, the application of the abstract and barely quantifiable concept of materiality varies across practitioners due to its inherent vagueness in accounting standards (Hsu, Lee and Chao, 2013; Edgley, 2014). The assessment of MDQ is especially challenging because the concept of materiality is continuous, depends on the decision context and, in practice, is inherently operationalized as a discrete categorization (Lo, 2010). Thus, the relevant material issues are not generalizable to the heterogeneous population of report

addressees (Freeman, 1984; Edgley, 2014; Eccles and Krzus, 2015). Therefore, an effective MDQ score should not assess a firm’s material aspects per se, but its application of the materiality concept (Fasan and Mio, 2017).

Building on previous research on IR quality (Lee and Yeo, 2016; Fasan and Mio, 2017), we apply content analysis to construct an original, hand-collected MDQ score, which is intended to (a) capture and operationalize all major characteristics that determine the quality of IR materiality disclosure and (b) provide distinct and clear guidelines for MDQ assessment. Our approach to utilizing a scoring scheme to quantify abstract quality dimensions follows earlier research (e.g. Cormier, Magnan and van Velthoven, 2005; Clarkson et al., 2008). In line with the approach introduced by Wallace and Naser (1995) to quantify barely measurable concepts by proxies based on the concepts’ intended properties, our MDQ score systematically aligns with the core properties of materiality put forward by the <IR> Framework (IIRC, 2013a, 2013b). On the basis of a systematic analysis of the IIRC’s materiality principle, previous literature (Eccles and Krzus, 2015; Lai, Melloni and Stacchezzini, 2017), and its application in practice, we identified seven scoring components, namely, (1) materiality section, (2) identification process, (3) description of material aspects, (4) time horizon, (5) materiality matrix, (6) risks and opportunities, and (7) mitigation actions. Figure 2 illustrates how the scoring components shape the materiality disclosure of IR firms as a management cycle. These are also depicted in Table 2 in conjunction with the respective IIRC references. The score ranges from a minimum of 0 to a maximum of 12.

[insert figure 2 here]

[insert table 2 here]

The inclusion of a separate *materiality section* (1) emphasizes the importance of the materiality concept in IR and offers a concise and unambiguous presentation (0: no materiality section, 1: materiality section included, 2: high importance of concept of materiality with the materiality section being listed in the table of

contents). The *identification process* (2) constitutes a central element of the materiality principle and requires senior management to evaluate the impact of potential issues on the value creation of the company (Steyn, 2014; Simnett and Huggins, 2015). This should include active and ongoing stakeholder interaction in order to address both internal and external value factors (0: no information disclosed, 1: identification process mentioned, 2: identification process described in detail with stakeholder interaction). We score the *description of the material issues* (3) between 0 and 2, with respect to the level of detail, conciseness, and usefulness of the information. Furthermore, we evaluate the focus on the *time horizon of material issues* (4) because this information is required for the assessment of strategic decisions and future prospects (0: no time reference, 1: aggregated or boilerplate information, 2: material matters are categorized and described according to their short-, medium-, and long-term impact). The inclusion of a *materiality matrix* (5) is intended to serve as a means to transparently prioritize issues according to relevant dimensions such as the likelihood of impact or the relevance for internal (external) stakeholders (0: no materiality matrix, 1: materiality matrix present) (Bertinetti and Gardenal, 2016). We adopt the definition of materiality matrix proposed by Eccles and Krzus (2015). Despite of the explicit formulation of the IIRC that both positive and negative issues are to be included in the report (IIRC, 2013a: 3.19), many reports omit material opportunities (see Table 5). Thus, we define a binary criterion, where one additional point is awarded if a company specifically connects both *risks and opportunities* (6) to its material matters (Bertinetti and Gardenal, 2016). Finally, our scoring model also includes the evaluation of specific *mitigation actions* (7), which are evaluated according to their degree of detail (0: no information, 1: superficial, nondifferentiated description of actions, 2: detailed description).

To address the criticism of subjectivity (e.g. Milne and Adler, 1999), we strictly refer to the clearly and restrictedly defined criteria as guidance for the scoring procedure. Furthermore, for each integrated report, two separate and independent scorings were conducted by the researchers. Subsequently, deviations were discussed and agreed on. Further, to prove the robustness of our

findings, all the components of the score were transformed to a dichotomous MDQ score, where only the presence or absence of information is evaluated. The results of this study remain robust (not tabulated).

3.3 Explanatory Variables

We measure learning effects (*LEARNING*) by the firm's number of previously disclosed integrated reports that are in alignment with the <IR> Framework in prior periods. Because the IIRC issued the first conceptual <IR> discussion paper in 2011 (IIRC, 2011), the discrete variable varies between 0 and 5.¹⁷ To measure readability (*READ*), we calculated the commonly applied (e.g. Barth et al., 2017) Gunning Fox Index (GFI) as follows:

$$GFI = 0.4 * [(Words/Sentences) + 100 * (Complex Words/Words)]$$

For the derivation of the GFI, we analyzed the chairmen's letters because (a) they are the most read section of the report (Courtis, 1998), and (b) have superior relevance with respect to IR quality and materiality (Eccles and Krzus, 2015). Building on Laksmana, Tietz and Yang (2012), for this purpose, we used the complete letters instead of a single passage to account for potential differences in the beginning, middle, and end of the report.

We measure gender diversity (*GENDER_DIV*) by applying the Blau (1977) index of diversity. This commonly used index for categorical variables (Campbell and Mínguez-Vera, 2008; Joecks, Pull and Vetter, 2013; Pucheta-Martínez and Bel-Oms, 2018) specifies gender diversity of a group by

$$1 - \sum_c^k s_c^2,$$

¹⁷ The operationalization of learning effects is consistent with research in related accounting disciplines, for example, regarding auditor tenure (Stanley and DeZoort, 2007). The results of this study are robust to defining the variable as (i) the natural logarithm of *LEARNING* (Geiger and Raghunandan, 2002), (ii) high experience or low experience based on a median split of *LEARNING*, or (iii) regressing *LEARNING* on an industry-adjusted MDQ (untabulated).

where k is the number of categories ($k=2$, female and male), and s_c represents the fraction of board members of with characteristic c , ergo the fraction of female/male board members. *ASSURANCE* is an indicator variable that takes the value of 1 when nonfinancial information provided in the integrated report is assured by an external third party (either a professional accountant or a specialized consultant; either with a positive or negative assurance), and 0 otherwise. Our measure for a firm's listing in a sustainability index refers to DJSI membership. We include a hand-collected indicator variable (*DJSI*), which equals 1 if the firm is listed in the DJSI in each year of interest, and 0 otherwise. To measure earnings quality (*AACC*) we used the absolute value of industry-division (see Table 6, Panel B) and performance-adjusted abnormal accruals equal to the absolute residuals from the Kothari, Leone and Wasley (2005) modification of the Jones (1991) model estimated by industry-year for those industries with at least 10 observations:

$$ACC_{jt}/TA_{jt-1} = \beta_1[1/TA_{jt-1}] + \beta_2[(\Delta REV_{jt} - \Delta REC)/TA_{jt-1}] + \beta_3[PPE_{jt}/TA_{jt-1}] + \beta_4[ROA_{jt}/TA_{jt-1}] + \varepsilon_{jt}$$

where, for firm j and year t (or $t-1$), *ACC* is the total accruals equal to income from continuing operations less operating cash flows from continuing operations, *TA* is total assets, ΔREV is changes in net sales, ΔREC is changes in receivables, *PPE* is gross property, plant and equipment, and *ROA* is return on assets. Abnormal accruals are equal to the difference between total accruals and the estimated (fitted) normal accruals. The higher the absolute value of abnormal accruals denoted as the explanatory variable *AACC*, the lower the earnings quality.

3.4 Control Variables

As controls in our research design, we included a number of *integrated report*-, *firm*-, and *corporate governance-specific* variables that extant literature has shown to be associated with disclosure quality. All variables are presented in Table 3. For control variables specific to the *integrated report*, we analyzed

whether the report is more shareholder or stakeholder oriented (Flower, 2015). We proxied the report's orientation by means of a word count of 'shareholder' and 'stakeholder' in the chairmen's letters, where the indicator variable *SHAREH_ORIENT* takes the value 1 in case of a shareholder orientation, and 0 otherwise. Word count analysis is a popular choice of textual analysis in accounting and finance (Loughran and McDonald, 2016). Moreover, we controlled whether a reference to the materiality concept in the chairmen's letters (*CM_MAT*) is associated with better MDQ (Eccles and Krzus, 2015). Regarding *firm-level controls*, we included the firm size (*SIZE*) as the natural logarithm of total assets at the end of the financial year. We proxied a firm's profitability by its return on equity (*ROE*), and its investment growth opportunities by year-end Tobin's Q (*TOBIN'S_Q*), which is commonly applied in related studies (Adam and Goyal, 2008). Regarding *corporate governance* factors, we included an equally weighted *ESG* score (Datastream) to control for the association between a firm's CSR performance and MDQ (Patten, 2002; Al-Tuwaijri, Christensen and Hughes, 2004; Hummel and Schlick, 2016). We further included board size (*BOARD_SIZE*) because the number of board members can have either a positive (due to greater expertise and better supervision of management) or negative (due to increased organizational inertia) impact on MDQ (Amran, Lee and Devi, 2014; Fasan and Mio, 2017). The variable *FREE_FLOAT* captures the firm's ownership dispersion (Eng and Mak, 2003; Khan, Muttakin and Siddiqui, 2013). To capture the explanatory power of industry affiliation on disclosure quality (Cormier, Magnan and van Velthoven, 2005; Holder-Webb et al., 2009; Fasan and Mio, 2017), we added the indicator variable *ENV_SEN*, which takes the value 1 if the firm belongs to an environmentally sensitive industry (two-digit SIC codes 08, 10-14, 26, 28, 33-34, 49), and 0 otherwise (Reverte, 2009). Finally, the influence of the institutional setting (Einhorn, 2005; Jackson and Apostolakou, 2010; Jensen and Berg, 2012) is captured by the variable *INST_SET*, which takes the value 0 if IR is mandatory and 1 if not.

[insert table 3 here]

3.5 Model specification

3.5.1 Generalized least squares (GLS) random effects estimator

In order to estimate the effect of firm-specific characteristics on MDQ, we estimated the following linear regression model:

$$\begin{aligned} \text{MDQ}_{i,t} = & \beta_0 + \beta_1 \text{LEARNING}_{i,t} + \beta_2 \text{READ}_{i,t} + \beta_3 \text{GENDER_DIV}_{i,t} + \beta_4 \text{ASSURANCE}_{i,t} \\ & + \beta_5 \text{DJSI}_{i,t} + \beta_6 \text{AACC}_{i,t} + \beta_7 \text{SHAREH_ORIENT}_{i,t} + \beta_8 \text{CM_MAT}_{i,t} + \\ & \beta_9 \text{SIZE}_{i,t} + \beta_{10} \text{ROE}_{i,t} + \beta_{11} \text{TOBIN'S_Q}_{i,t} + \beta_{12} \text{ESG}_{i,t} + \beta_{13} \text{BOARD_SIZE}_{i,t} + \\ & \beta_{14} \text{FREE_FLOAT}_{i,t} + \beta_{15} \text{INST_SET}_{i,t} + \beta_{16} \text{ENV_SEN}_{i,t} + u_i + e_{i,t} \end{aligned}$$

Depending on model specification, time, industry, and country fixed effects are included in the model. The underlying panel data structure captures effects that are not detectable in pure cross-sectional and time series designs (Evans and Schwartz, 2014). To deal with the issue of possible within-cluster correlation, we applied a GLS random effects (RE) estimator with firm-clustered standard errors (Huber-White sandwich estimator; Rogers, 1993; Williams, 2000) in line with earlier research (Hoechle, 2007; Peterson, 2009; Bell and Jones, 2015). The model applies autocorrelation and heteroscedasticity robust standard errors. Collinearity diagnostics based on variance inflation factors do not provide any evidence of multicollinearity (mean VIF = 1.55; highest VIF = 3.18). We employed a random intercept model because we are interested in higher-level processes in our data, which are not captured by removing higher-level variance through within transformation (Bell and Jones, 2015). Also, entity fixed effects are not applicable due to limited variance of our independent variables (i.e. *ASSURANCE*, *DJSI*).¹⁸ The application of random effects is further validated based on the Hausman (1978) test (p-value = 0.2403). Instead of explicitly modeling the impact of environmentally sensitive industries (*ENV_SEN*) on MDQ, Model 2 includes industry division-level fixed effects, which capture the time-invariant impact of industry affiliation on our MDQ score (Cormier, Magnan and van Velthoven, 2005; Holder-Webb et al., 2009). Model 3 is further

¹⁸ The reason for little variance in the variables is that firms that opt for an assurance very seldom reverse this decision in future periods, and firms listed in the DJSI are usually not delisted in the following period (Searcy and Elkhawas, 2012; Hawn, Chatterji and Mitchell, 2018).

extended to also include time fixed effects in lieu of explicitly modeling learning effects (*LEARNING*). Our full model (4) then also includes country fixed effects to account for the impact of different legal and socioeconomic environments on MDQ in our sample (Ioannou and Serafeim, 2012; Frías-Aceituno, Rodríguez-Ariza and García-Sánchez, 2013; El Ghoul, Guedhami and Kim, 2017).

3.5.2 Three-level variance component maximum likelihood estimator

[insert figure 3 here]

For the random effects GLS estimation, the only random part is the random intercept. To account for the hierarchically structured nature of our data and provide further robustness for our findings, we opted to use a multilevel mixed-effects regression. Specifically, we defined a three-level variance component model (see Figure 3), where occasions (Level 1) are nested in firms (Level 2), which are nested in different industries (Level 3).¹⁹ We defined industries as two-digit SIC codes to ensure a greater number of highest-level units (34) in our model. We thereby account for the high explanatory power of a firm's industry affiliation on MDQ (Fasan and Mio, 2017). Due to similar stakeholder pressure (Freeman, 1984) and mimetic isomorphism (Zeng et al., 2012), we assume that firms in the same industry are more comparable to one another than firms from different industries, which suggests a multilevel data structure (Vaz, Fernandez-Feijoo and Ruiz, 2016). Accounting for differences between industries further considers the proposal for sector-specific standards for materiality disclosure as material matters may vary systematically between industry sectors (Eccles et al., 2012). From a methodological perspective, modeling higher-level effects via hierarchical linear models (HLM) overcomes the weaknesses of other disaggregated and aggregated approaches (Hofmann, 1997). It allows simultaneous modeling of variance within and between hierarchal levels in

¹⁹ We subsequently tested an additional model with countries as the highest-level units (untabulated), which is supported by some earlier studies (van der Laan Smith et al., 2010; Vaz, Fernandez-Feijoo and Ruiz, 2016). However, the number of groups (14) is very small, and the results indicate that different countries do not explain any variance in our data. This is in line with the results of Fasan and Mio (2017) who show that country-level differences have no impact on MDQ, whereas the industry in which the company operates is much more important.

longitudinal data, making it more efficient than other research designs commonly used in accounting literature (Chang et al., 2018). Compared with fixed parameter simple linear regression models, higher-level modeling measures shared variance in the data by estimating lower-level slopes and implementing them in higher-level outcomes (Woltman et al., 2012). By explicitly modeling both individual and group level residuals, HLM recognizes the partial interdependence of entities within the same group (Hofmann, 1997). The three-level variance component model is specified as follows:

$$\begin{aligned}
 MDQ_{ijk} = & \beta_0 + \beta_1 LEARNING_{ijk} + \beta_2 READ_{ijk} + \beta_3 GENDER_DIV_{ijk} + \\
 & \beta_4 ASSURANCE_{ijk} + \beta_5 DJSI_{ijk} + \beta_6 AACC_{ijk} + \beta_7 SHAREH_ORIENT_{ijk} + \\
 & \beta_8 CM_MAT_{ijk} + \beta_9 SIZE_{ijk} + \beta_{10} ROE_{ijk} + \beta_{11} TOBIN'S_Q_{ijk} + \beta_{12} ESG_{ijk} + \\
 & \beta_{13} BOARD_SIZE_{ijk} + \beta_{14} FREE_FLOAT_{ijk} + \beta_{15} INST_SET_{ijk} + u_{industry\ i} + \\
 & u_{firm\ ij} + e_{ijk}
 \end{aligned}$$

Where $i=1,2,3, \dots, N_1$ refers to industry 1 to industry N_1 , $j=1, 2, 3, \dots, N_2$ indicates firm 1 to firm N_2 , $k=1,2,3, \dots, N_3$ indicates occasion (repeated MDQ measurement) 1 to occasion N_3 , the deviation of k from its firm mean is denoted as e_{ijk} , the deviation of k 's firm mean to its industry mean is denoted as $u_{firm\ ij}$, the deviation of k 's industry mean to the fixed part of the model is denoted as $u_{industry\ i}$, and each variance component $u_{industry\ i}, u_{firm\ ij}, e_{ijk} \sim N(0, \sigma^2)$. The variance components measure variance at different hierarchical levels in our data. They can also be divided into random parts ($u_{industry\ i}, u_{firm\ ij}$) and residuals (e_{ijk}) and represent the variance that is not explained in the fixed part of the model.

4. Empirical Results

4.1 Descriptive Statistics and Correlation Analysis

[insert table 4 here]

Table 4 presents descriptive statistics for the variables included in our study. Our dependent variable *MDQ* has an average of 6.061 with a standard deviation of 3.331, meaning that the average integrated report only reaches about half of

the maximum MDQ. More than half of the reports include assured nonfinancial information (0.596), and about one third of the IR-disclosing firms are listed in the *DJSI* (0.312). Average gender diversity is 0.318 and average abnormal accruals is 4.7% of total assets. With an average GFI of 17.2, most integrated reports require a high (college/university) level of education to understand them at first reading (Loughran and McDonald, 2016). About 19% of the reports refer to the concept of materiality in the chairman's letter (*CM_MAT*), and about 42% of the reports have a distinct shareholder orientation (*SHAREH_ORIENT*). In Table 5, we further disaggregate our MDQ into its separate components.

[insert table 5 here]

[insert table 6 here]

Table 6 differentiates MDQ over time (Panel A), among industries (Panel B), and among the institutional setting (Panel C). Panel A depicts the increasing disclosure quality over time with a diminishing growth rate. As presented in Panel B, the differentiation of MDQ among industry divisions shows highest means in the mining and construction industry. Nevertheless, in univariate analysis, we do not find a significant difference between industry divisions with respect to MDQ. Discriminating between the voluntary and mandatory setting (Panel C) shows a significant higher quality in materiality disclosure in the mandatory regulatory environment (p-value = 0.004).

Correlation analysis delivers preliminary results of possible relationships between our MDQ score and the variables of interest (see Table 7). In line with our prediction, MDQ is positively and significantly correlated with *LEARNING* (0.195), *READ* (0.118), *GENDER_DIV* (0.130), and *ASSURANCE* (0.322), indicating a possible positive association. Against our expectations, *DJSI* and *AACC* are not significantly correlated with MDQ.

[insert table 7 here]

4.2 Multivariate results and discussion

4.2.1 Generalized least squares (GLS) random effects estimator

In line with our expectation and earlier literature, our Models 1 and 2 reveal a positive association between *LEARNING* and MDQ (Fasan and Mio, 2017; Pistoni, Songini and Bavagnoli, 2018). As depicted in Table 8, both models show that each additional year of reporting experience increases MDQ by about 0.37. The findings are reflective of a learning effect, as firms tend to build upon previous reports, benefit from an established IR infrastructure, and iteratively improve their MDQ through stakeholder feedback. Further research should investigate how far outside pressure by investors and other stakeholders drives the development of MDQ (Darrell and Schwartz, 1997; Gallego-Alvarez et al., 2017). Learning effects in a firm's IR materiality disclosure are relevant for regulators and standard setters when taking actions to increase the quality of IR and addressing the prevailing reporting heterogeneity.

[insert table 8 here]

Against our conjecture, the results show that firms with better IR readability (*READ*) do not significantly differ in their MDQ, despite the intention of IR to provide concise and decision-useful information. Although we find that better readability is associated with higher MDQ, the results are not statistically significant. We find that the integrated reports are on average difficult to read and that many of the reports in our sample can be classified as unreadable (GFI > 18). Our descriptive results, in combination with the multivariate analysis, suggest that the “plain language” preference of the IIRC (2013a) is not implemented in IR, and that there are no significant differences between firms with varying degrees of MDQ. Whereas companies are learning to improve MDQ over time (F-test, p-value = 0.049, Table 6), this is not the case for IR readability (F-test, p-value = 0.755, untabulated). This could be due to (a) an initial focus to improve the main guiding principles of IR and (b) generally insufficient review mechanisms regarding IR format prior to publication (Atkins and Maroun, 2015). Furthermore, MDQ can negatively correlate with readability when simple sentences that convey few information are used, as for example “material issues

are identified by the board” (Ernst & Young South Africa, 2013, p.10). This provides an avenue for future research, which could take a closer look at the correlation between boilerplate information and IR readability. Finally, despite its common application in related literature (e.g. Barth et al., 2017), the analysis of multisyllabic words as measured by the GFI may not be the best indicator for the quality in business writing applications such as IR (Loughran and McDonald, 2014). This is due to the domination of “complex” but common business words that are easily understood by the addressees of IR.

As expected and previously investigated (Bear, Rahman and Post, 2010; McGuinness, Vieito and Wang, 2017), the significant regression coefficients between 2.349 and 3.134 show the positive impact of gender diversity (*GENDER_DIV*) on a firm’s MDQ. *Inter alia*, this can be attributable to better stakeholder interaction and higher reporting transparency arising from a broader perspective and greater expertise associated with female representation on the board (e.g. Burgess and Tharenou, 2002; Ruigrok, Peck and Tacheva, 2007; Francoeur, Labelle and Sinclair-Desgagné, 2008). Our findings are in contrast to Fasan and Mio (2017), who find a negative impact of female representation on the board on materiality disclosure.

Furthermore, in line with earlier research, the assurance of the nonfinancial information in the integrated report (*ASSURANCE*) significantly affects our MDQ (Moroney, Windsor and Aw, 2012). The appointment of an assessor leads to an increase in MDQ by 1.244 to 1.406, depending on the model specification. The results confirm the assumption that an external assurance decreases uncertainty of stakeholders with regard to the exploitation of managerial discretion concerning the definition and disclosure of material issues (Simnett and Huggins, 2015). Our findings support the recommendations of the IIRC to have the integrated report assured (IIRC, 2015) and contribute to a broad research stream, which attributes different benefits to an external verification of CSR reporting (Simnett, Vanstraelen and Chua, 2009; Casey and Grenier, 2015; Velte and Stawinoga, 2017).

Moreover, the results indicate that firms listed in a sustainability index (*DJSI*) do not provide higher MDQ. This might be because (materiality) information requirements of SRI do not differ from those of other investors, that is, their monitoring function does not affect a firm's materiality disclosure. Furthermore, investors in the DJSI might not account for the heterogeneity of MDQ between the listed firms because its assessment requires extensive resources, expertise, and general awareness of the materiality concept. DJSI listing might also not be associated with MDQ due to the DJSI's primary focus on financial information (Fowler and Hope, 2007) and the generally low validity of CSR ratings (Cho et al., 2012; Chatterji et al., 2016). In the case of IR, sustainability leadership does not indicate better MDQ, and investors should be concerned about the transparency of material risks even if a company is listed in the DJSI.

The results regarding earnings management (*AACC*) indicate that the exploitation of financial reporting discretion is not associated with MDQ. This suggests that firms do not strategically misuse the materiality concept in order to maintain information asymmetries, which would foment opportunistic management behavior and earnings management (Dye, 1988; Richardson, 2000). Although these results do not meet our initial expectations, possible explanations can be derived from the related topic on the association between CSR and earnings management. Contradictory to the transparent financial reporting hypothesis (Kim, Park and Wier, 2012), some studies find no relation (e.g. Sun et al., 2010) or a positive relation between CSR and earnings management (Prior, Surroca and Tribó, 2008; Grougiou et al., 2014; Martínez-Ferrero and García-Sánchez, 2015; Martínez-Ferrero, Banerjee and García-Sánchez, 2016). This can be explained from several perspectives, which can also be applied to the IR context. Superior MDQ practices could be strategically abused to mask opportunistic behavior (Martínez-Ferrero, Banerjee and García-Sánchez, 2016), or used as an entrenchment strategy to compensate stakeholders for management's engagement in earnings management (Prior, Surroca and Tribó, 2008; Martínez-Ferrero and García-Sánchez, 2015). In addressing the diverging objectives of various stakeholder groups (Freeman, 1984; IIRC, 2013a), IR might also intensify agency conflicts, and, in line with the multiple objectives

hypothesis, motive managers to conduct earnings management (Chih, Shen and Kang, 2008; Martínez-Ferrero, Gallego-Álvarez and García-Sánchez, 2015). This explains the insignificant results for H6 based on competing influencing factors in the IR setting.

4.2.2 Three-level variance component maximum likelihood estimator

The last column in Table 8 represents the results of Model 5 with 34 groups among the industry level (Level 3) and 117 groups on the firm level (Level 2). The estimated residual standard deviation of the MDQ between industries ($\sqrt{\psi^2}$) and between firms ($\sqrt{\psi^3}$) is 0.919 and 2.306, respectively. The remaining residual standard deviation ($\sqrt{\theta}$) is estimated as 1.572. To quantify the relative magnitude of the variance components caused by the corresponding random effect (Anderson, Dekker and Sedatole, 2010), we calculate the variance partition coefficients (VPC), which take the values $VPC_{(\text{industry})} = 0.098$, $VPC_{(\text{firm})} = 0.616$, and $VPC_{(\text{occasion})} = 0.286$. This means that about 10% of the total variance lies between industries (i.e., between-industry differences), 61.6% lies within industries between firms (i.e., between-firm differences), and 28.5% lies within firms between occasions (i.e., within-firm differences). Furthermore, we calculate the intra-class correlation coefficients (ICC), where the $ICC_{(\text{industry})} = VPC_{(\text{industry})} = 0.098$. The $ICC_{(\text{firm})} = 0.714$ represents the correlation between two occasions in the same firm. The effect sizes of both the VPCs and ICCs reinforce the application of HLM.²⁰ Consistent with the results derived from the GLS estimation, the maximum likelihood estimation confirms H1, H3 and H4, as *LEARNING* and *ASSURANCE* are significant on the 1% level of significance, and *GENDER_DIV* is positively associated with MDQ on the 5% level of significance. We find no supporting evidence for the remaining explanatory variables *READ*, *DJSI*, and *AACC*.

²⁰ The values are calculated as follows: $VPC_{(\text{industry})} = \psi^2/(\psi^2 + \psi^3 + \theta)$, $VPC_{(\text{firm})} = \psi^3/(\psi^2 + \psi^3 + \theta)$, $VPC_{(\text{occasion})} = \theta/(\psi^2 + \psi^3 + \theta)$; $ICC_{(\text{industry})} = \psi^2/(\psi^2 + \psi^3 + \theta)$, $ICC_{(\text{firm})} = (\psi^2 + \psi^3)/(\psi^2 + \psi^3 + \theta)$.

5. Conclusion and Outlook

Intended to provide more concise, aggregated, and decision-useful information to addressees, and thus overcome the prevailing information disconnectedness, greenwashing, and information overload (Eccles and Krzus, 2010), IR is increasingly gaining momentum. These goals can only be accomplished if all material matters are determined and communicated in a concise and transparent manner. The underlying concept of ‘integrated thinking’ is derived by a firm’s materiality assessment and reporting (IIRC, 2013a, 2013b). Hence, the main objective of MDQ is to mitigate conflicts of interest and increase transparency to report users, entirely in line with the intention of IR. Due to the broad focus of materiality considerations, MDQ affects the decision-making of various stakeholder groups. On the basis of stakeholder theory (Freeman, 1984), our study analyzes relevant determinants of MDQ in a cross-national setting from a broader perspective (integrated report-, corporate governance-, and financial accounting-specific factors). For this purpose, we constructed a novel MDQ in alignment with the <IR> Framework, which can be applied in future research. By breaking down materiality disclosure to its individual components, we show that in practice, firms should put more emphasis on the disclosure of a materiality matrix, give more detailed information on time horizons, and include not only opportunities but also critically evaluate material risks. Utilizing a multiple regression research design with 359 firm-year observations between 2013 and 2016, we find that learning effects, gender diversity, and assurance positively impact MDQ, whereas readability, DJSI membership, and earnings quality play no significant role.

The results regarding learning effects indicate that stakeholders should closely monitor the initial implementation of IR and pressure managers to provide high MDQ. Inadequate determination and disclosure of material risks during the initial preparation of IR poses the thread of substantial information asymmetries that can lead to adverse capital market reactions. Standard setters need to consider the learning effects and IR preparers’ “different stages in their reporting journey” (Beck, Dumay and Frost, 2017, p. 202) while drafting regulatory frameworks or amendments thereof. On the basis of our results, we recommend

the issuance of a “best practice guide” for materiality disclosure, specifically for first-year applicers. For example, this could complement the existing background paper on materiality (IIRC, 2013b) with practical examples. A clear guidance might increase reporting homogeneity, convince contemplating managers to adopt IR, increase the diffusion of IR, and leverage the acceptance of the new reporting medium among investors and other stakeholders.

Moreover, we reveal that the assurance of nonfinancial information in IR is positively associated with MDQ. This finding emphasizes the IIRC’s recommendation of an external verification and is in line with the value-enhancing properties of an assurance in nonfinancial reporting (Mercer, 2004; Moroney, Windsor and Aw, 2012; IIRC, 2015; Shen, Wu and Chand, 2017; Velte and Stawinoga, 2017). Our results provide instance for the consideration of nonfinancial assurance as a requirement for stock exchange listing of large capital market-oriented companies. Stakeholders should also hold managers accountable for a lack of assurance and appropriately adjust their provision of financial and social capital to the firm. In the light of the relevance of an assurance for MDQ and IR in general, our results contribute to the ongoing debate about the necessity for a specific assurance standard for IR (Maroun, 2017).

Furthermore, we provide instance for a positive association between gender diversity and MDQ. This result is relevant for the ongoing debate about female representation on the board of directors as put forth by the European Commission (2012/0299/COD) and the JSE (Form B-BBEE 1). We show that gender diversity is not only a signaling tool for good CSR (Fasan and Mio, 2017), but is also associated with significant disclosure improvements.

This paper combines different research streams for the purpose of furthering our understanding of materiality disclosure in IR and provides various avenues for future research. Regarding IR assurance of nonfinancial information, researchers can take a closer look at the levels of assurance, assurance provider characteristics, and audit committee composition (Simnett, Vanstraelen and

Chua, 2009; Casey and Grenier, 2015; Haji and Anifowose, 2016), and how these determinants affect IR disclosure. Although we find no significant association between DJSI membership and MDQ, subsequent studies can examine the delisting or threat of expulsion from sustainability indexes as a surrogate for a lack of transparency or responsibility in the context of IR (Mackenzie, Rees and Rodionova, 2013). Another interesting prospect for further studies is sentiment analysis of the language used in integrated reports and how this affects MDQ (Melloni, Stacchezzini, Lai, 2016). This study is the first to examine the association between earnings management and MDQ and provides preliminary evidence against such an association, despite contrary findings of some CSR studies. On that basis, future studies can take a more differentiated perspective and examine real earnings manipulation and earnings smoothing (Roychowdhury, 2006; Chih, Shen and Kang, 2008) in the context of IR. Future studies could also explore whether a firm's disclosure of material issues is truly geared to provide valuable information according to the 'integrated thinking' approach (IIRC, 2013a), or to which extent it is used for impression management (Pope and Wæraas, 2016). In that sense, more academic debate and insights into how far companies use the disclosure of material issues as a constitutive signaling tool to communicate their business strategy would be beneficial (Mahoney et al., 2013). Additionally, the value relevance of IR MDQ, as well as its impact on financial capital providers, is still uninvestigated. From a macro-economic perspective, materiality disclosure, and IR more generally, should contribute to more efficient and productive capital allocation and thus should have a positive impact on an economy's financial stability and sustainability (IIRC, 2011; de Villiers, Rinaldi and Unerman, 2014). This study supports earlier findings (Fasan and Mio, 2017) that MDQ varies across industries rather than across countries. Yet, there is a lack of research regarding differences between regulated industries (such as financial and utilities) and how they differ in reporting material matters. Lastly, because materiality decisions are made by top managers, future research could analyze the impact of senior management characteristics on materiality disclosure. For example, earlier research has shown a firm's (voluntary) disclosure to be associated with management's decision horizon (Trotman and Bradley, 1981), the executives' education and

professional background (Lewis, Walls and Dowell, 2014), the CEO's personality and preferences (Gibbins, Richardson and Waterhouse, 1990), as well as the sustainability-related attitude (Helfaya and Moussa, 2017).

Like all empirical investigations, the results of our study should be considered in light of its limitations. First, as is common for scores based on content analysis, our MDQ score might suffer from subjectivity, although we defined clear operationalized criteria and double-checked the scores. Second, the results might be only applicable to integrated reports, which were prepared in accordance with the <IR> Framework. Future research should investigate and compare whether alignment to different frameworks delivers comparable results. As a final caveat, our results might not be generalizable to firms operating in the financial sector due to sample restrictions.

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Panel A: Sample Selection	Firms	Firm-years
Firms listed on the IIRC Examples Database	352	1408
Double-listed firms	(11)	(44)
No Datastream coverage	(94)	(376)
Financial services firms (SIC 6000-6999)	(53)	(215)
No IIRC reference	(40)	(284)
Missing data items	(37)	(130)
Sample	117	359

Panel B: Countries			
Belgium	Germany	Poland	Switzerland
Denmark	Greek	Russia	United Kingdom
Finland	Italy	Spain	
France	Netherlands	South Africa	

Table 1: Sample selection and composition

Panel A describes our samples selection process. As only one firm belonged to the public administration industry (SIC 9000-9999), four observations were not included in the sample because our industry division-adjusted accruals model by Kothari, Leone and Wasley (2005) is restricted to a minimum observation size of ten per industry. Our results are robust to rerunning the regression without the exclusion of the four observations. Panel B depicts the countries included in our dataset.

MDQ Composition		
Scoring Element	Point range	Reference
Materiality Section	0-2	IIRC 2013b: 8, 35
Identification Process	0-2	IIRC 2013a: 3.18, 3.21-30; IIRC 2013b: 10-34, 39-40; Eccles and Krzus (2015)
Description of Material Aspects	0-2	IIRC 2013a: 3.17, 3.28, 3.30-32; IIRC 2013b: 36; Eccles and Krzus (2015)
Time Horizon	0-2	IIRC 2013a: 3.17, 3.23; IIRC 2013b: 8
Materiality Matrix	0-1	Eccles and Krzus (2015)
Risks and Opportunities	0-1	IIRC 2013a: 3.19, 3.30, 3.34-35, 3.39, 4.23-26; Eccles and Krzus (2015)
Mitigation Actions	0-2	IIRC 2013a: 2.27, 3.23, 4.25; Eccles and Krzus (2015)
Σ	0-12	

Table 2: Composition of the MDQ score

The table depicts the seven scoring elements of our MDQ score, the corresponding point range, and the reference from which the score element is derived. Both the scoring elements' materiality matrix (#4) as well as risks and opportunities (#7) are scored with 0 or 1, according to whether they are included or not, whereas the remaining five scores rely on a more differentiated basis (0-2).

VARIABLES	Variable definition
<i>Dependent variable</i>	
MDQ	Materiality disclosure quality score composed of the seven scoring components: (1) materiality section, (2) identification process, (3) description of material aspects, (4) materiality matrix, (5) time horizon, (6) mitigation actions and (7) risks and opportunities
<i>Explanatory variables</i>	
LEARNING	Number of previously disclosed integrated reports in alignment with the <IR> Framework
READ	Readability of the integrated report's chairman's letter calculated as the Gunning Fog Score
GENDER_DIV	Blau index of board gender diversity
ASSURANCE	Indicator variable taking the value 1 if the nonfinancial information in the integrated report is assured by an independent external party, and 0 otherwise
DJSI	Indicator variable taking the value 1 if the firm is listed in the Dow Jones Sustainability Index in the corresponding year, and 0 otherwise
AACC	Absolute value of industry division and performance-adjusted abnormal accruals equal to the absolute residuals from the Kothari, Leone and Wasley (2005) modification of the Jones (1991) model estimated by industry-year for those industries with at least 10 observations
<i>Control variables</i>	
SHAREH_ORIENT	Indicator variable taking the value 1 if the word count of 'shareholder' in the chairman's letter exceeds the word count of 'stakeholder', and 0 otherwise
CM_MAT	Indicator variable taking the value 1 if there is a reference to the materiality concept in the chairman's letter, and 0 otherwise
SIZE	Natural logarithm of total assets
ROE	Return on equity
TOBIN'S_Q	Measure for a firm's investment growth opportunities by year-end
ESG	Equally weighted environmental, social, and governance score
BOARD_SIZE	Total number of board members
FREE_FLOAT	Proportion of shares in the hands of public investors
INST_SET	Indicator variable taking the value 1 if the disclosure of an integrated report is voluntary in the corresponding setting (Europe), and 0 otherwise (South Africa)
ENV_SEN	Indicator variable taking the value 1 if the firm is operating in an environmentally sensitive industry (SIC codes: 08, 10-14, 26, 28, 33-34, 49), and 0 otherwise

Table 3: Variable definition and description

VARIABLES	N	Mean	Std. Dev.	Min	Median	Max
MDQ	359	6.061	3.331	0	7	12
LEARNING	359	2.003	1.498	0	2	5
READ	359	17.2	1.906	12.1	12.7	23
GENDER_DIV	359	0.318	0.137	0	0.346	0.5
ASSURANCE	359	0.596	0.491	0	1	1
DJSI	359	0.312	0.464	0	0	1
AACC	359	0.047	0.087	0	0.252	1.319
SHAREH_ORIENT	359	0.423	0.495	0	0	1
CM_MAT	359	0.192	0.395	0	0	1
SIZE	359	14.926	1.695	10.824	14.792	19.055
ROE	359	13.026	23.064	-160.99	12.53	124.7
TOBIN'S_Q	359	1.338	1.396	0.029	0.893	11.991
ESG	359	80.032	17.319	12.19	86.7	95.98
BOARD_SIZE	359	11.287	3.079	5	11	24
FREE_FLOAT	359	69.674	24.011	0	73	100
INST_SET	359	0.365	0.482	0	0	1
ENV_SEN	359	0.412	0.493	0	0	1

Table 4: Summary statistics

Variable definitions and descriptions are provided in Table 3. The table above represents corresponding means and standard deviations of our variables, as well as median, minimum and maximum values.

MDS COMPONENTS	N	Mean	Std. Dev.	Min	Median	Max
MATERIALITY SECTION	359	1.253	0.855	0	2	2
IDENTIFICATION PROCESS	359	1.228	0.715	0	1	2
DESCRIPTION	359	1.351	0.805	0	2	2
MATERIALITY MATRIX	359	0.315	0.465	0	0	1
TIME HORIZON	359	0.423	0.563	0	0	2
MITIGATION ACTIONS	359	1.170	0.898	0	2	2
RISKS & OPPORTUNITIES	359	0.320	0.467	0	0	1

Table 5: Summary statistics of MDS components

The table breaks down the MDS to its seven components, where materiality section, identification process, description of material issues, time horizon, and mitigation actions are measured on a scale ranging from 0 to 2, whereas materiality matrix and risks and opportunities are coded as 0 or 1, dependent on whether the information is provided in the materiality section of the integrated report or not.

MDS SCORE	N	Mean	σ		
Panel A: Time					
2013	64	5.141	3.514		
2014	93	5.882	3.355		
2015	105	6.353	3.225		
2016	97	6.526	3.212		
Total	359	6.061	3.331		
<i>F-test</i>		F-ratio = 2.65		p-value = 0.0486**	
MDS SCORE	N	Mean	Mean Rest	Δ	p-value
Panel B: Industry-divisions					
MINING (1000-1499)	63	6.556	5.956	0.600	0.1950
CONSTRUCTION (1500-1799)	17	6.588	6.035	0.553	0.5047
MANUFACTURING (2000-3999)	114	5.754	6.204	-0.450	0.2343
TRANSPORTATION, COMMUNICATIONS, ELECTRIC, GAS AND SANITARY SERVICES (4000-4999)	65	6.062	6.061	0.001	0.9995
TRADE (5000-5999)	45	5.578	6.131	-0.553	0.2985
SERVICE PROVIDERS (7000-8999)	55	6.364	6.007	0.357	0.4652
Total	359	6.061	3.331		
<i>F-test</i>		F-ratio = 0.83		p-value = 0.5260	
MDS SCORE	N	Mean	σ	Δ	p-value
Panel C: Institutional Setting					
MANDATORY	228	6.443	3.256		
VOLUNTARY	131	5.397	3.369	1.046	0.0040***
Total	359	6.061	3.331		

Table 6: MDS over time, industries and institutional setting.

Panel A represents the distribution of MDS over time. Panel B shows average MDS among industry divisions. Due to the low number of observations, we consolidated wholesale trade and retail trade industry divisions to TRADE (SIC 5000-5999). Mean represents the average MDQ in the corresponding industry, and mean rest refers to the average MDQ score in the remaining sample. The p-values correspond to t-tests for differences in mean. We further tested the industry division ‘construction’ with a two-sample Wilcoxon rank-sum Mann-Whitney test due to the small sample size. The results remain the same (p-value= 0.9395). Panel C differentiates between the mandatory (South Africa) and the voluntary setting (Europe). The p-values correspond to t-tests for differences in mean.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) MDS	1.000							
(2) LEARNING	0.195***	1.000						
(3) ASSURANCE	0.322***	0.127*	1.000					
(4) GENDER_DIV	0.130**	-0.022	0.132**	1.000				
(5) DJSI	0.042	0.035	0.125*	0.177***	1.000			
(6) AACC	0.022	0.027	-0.068	-0.198***	-0.049	1.000		
(7) READ	0.118*	0.120*	0.108*	0.028	-0.023	-0.056	1.000	
(8) SHAREH_ORIENT	-0.145**	-0.126*	-0.168**	-0.064	0.044	0.110*	-0.146**	1.000
(9) C_MAT	0.159**	0.009	0.056	0.123**	-0.237***	-0.000	0.118*	-0.118*
(10) ESG	0.092	0.063	0.113*	0.381***	0.399***	-0.299***	-0.065	-0.011
(11) BOARD_SIZE	0.082	-0.049	0.127*	0.035	0.193***	-0.099	0.162**	-0.043
(12) ROE	-0.009	-0.007	-0.053	0.182***	0.000	0.008	-0.127*	-0.038
(13) TOBIN'S_Q	-0.083	0.061	-0.020	0.102*	0.117*	0.180***	-0.134*	0.014
(14) SIZE	-0.123*	-0.044	0.115*	0.161***	0.592***	-0.182***	0.060	0.161*
(15) FREE_FLOAT	-0.173**	-0.096	-0.007	0.155***	0.100	-0.036	-0.127*	0.075
(16) INST_SET	-0.151**	-0.106*	0.011	0.188***	0.564***	-0.127*	-0.099	0.240***
(17) ENV_SEN	0.034	0.051	0.044	-0.018	0.108*	-0.047	0.074	0.095

VARIABLES	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(9) C_MAT	1.000								
(10) ESG	-0.093	1.000							
(11) BOARD_SIZE	0.069	0.223***	1.000						
(12) ROE	0.047	0.121*	-0.010	1.000					
(13) TOBIN'S_Q	-0.014	0.082	-0.039	0.593***	1.000				
(14) SIZE	-0.215***	0.498***	0.318***	-0.065	-0.046	1.000			
(15) FREE_FLOAT	-0.039	0.043	-0.142**	0.082	0.044	-0.068	1.000		
(16) INST_SET	-0.267***	0.436***	0.038	-0.067	0.002	0.725***	0.053	1.000	
(17) ENV_SEN	-0.093	-0.017	-0.045	-0.220***	-0.128*	0.148**	-0.044	0.035	1.000

Table 7: Correlation Matrix

The table displays Pearson correlations of the variables. *, ** and *** denote significance at the 10%, 5% and 1% level.

VARIABLES	(1)	(2)	(3)	(4)	(5)
LEARNING	0.376*** (0.110)	0.369*** (0.114)	--	--	0.377*** (0.0899)
READ	-0.0729 (0.0705)	-0.0772 (0.0730)	-0.0702 (0.0726)	-0.0927 (0.0726)	-0.0636 (0.0704)
GENDER_DIV	3.073** (1.330)	3.134** (1.361)	2.724** (1.373)	2.349* (1.331)	2.801** (1.322)
ASSURANCE	1.315*** (0.419)	1.352*** (0.432)	1.406*** (0.444)	1.244*** (0.450)	1.286*** (0.346)
DJSI	0.418 (0.849)	0.437 (0.876)	0.496 (0.875)	0.263 (0.939)	0.485 (0.475)
AACC	1.065 (1.020)	0.968 (1.036)	0.598 (1.068)	0.835 (1.046)	1.094 (1.338)
SHAREH_ORIENT	0.301 (0.190)	0.312 (0.193)	0.353* (0.194)	0.376* (0.198)	0.333 (0.245)
CM_MAT	0.607* (0.361)	0.634* (0.361)	0.654* (0.367)	0.669* (0.376)	0.651** (0.294)
SIZE	-0.337 (0.260)	-0.334 (0.260)	-0.333 (0.254)	-0.317 (0.275)	-0.318 (0.223)
ROE	0.0115* (0.00685)	0.0117* (0.00708)	0.0124* (0.00744)	0.0137* (0.00734)	0.0122* (0.00640)
TOBIN'S_Q	-0.294* (0.163)	-0.245 (0.165)	-0.228 (0.160)	-0.148 (0.164)	-0.305* (0.161)
ESG	0.000663 (0.0112)	0.00576 (0.0114)	0.00551 (0.0119)	-0.000357 (0.0120)	0.00283 (0.0116)
BOARD_SIZE	0.124 (0.0790)	0.129 (0.0796)	0.123 (0.0806)	0.0945 (0.0869)	0.128* (0.0682)
FREE_FLOAT	-0.0261*** (0.00698)	-0.0245*** (0.00706)	-0.0240*** (0.00730)	-0.0263*** (0.00728)	-0.0250*** (0.00722)
INST_SET	-0.306 (0.795)	-0.389 (0.796)	-0.587 (0.782)	--	-0.237 (0.762)
ENV_SEN	0.244 (0.552)	--	--	--	--
Constant	10.16*** (3.319)	10.24*** (3.458)	10.13*** (3.387)	15.29*** (4.322)	9.459*** (3.204)
Industry-fixed	No	Yes	Yes	Yes	
Time-fixed	No	No	Yes	Yes	
Country-fixed	No	No	No	Yes	
$\sqrt{\psi^2}$					0.919
$\sqrt{\psi^3}$					2.306
$\sqrt{\theta}$					1.572
Observations	359	359	359	359	359
Number of companies	117	117	117	117	117
R ²	22.40%	24.70%	23.52%	30.38%	
Log likelihood					-793.042
Wald χ^2 (p-value)	99.91 (0.00)	121.38 (0.00)	123.91 (0.00)	3930.28 (0.00)	84.54 (0.00)

Table 8: Empirical results for determinants of materiality disclosure quality (MDQ)

Models 1 to 4 are based on generalized least squares (GLS) random effects estimation, and Model 5 is based on three-level variance component maximum likelihood estimation. The results are robust to controlling for AR(1) disturbances when re-specifying Models 1 and 2 according to the approach introduced by Baltagi and Wu (1999). Since this model specification is not defined for time-fixed variables, Model 3 and Model 4 are not rerun. The results of Model 5 are robust to using a restricted maximum likelihood estimator, which corrects for downward-biased variance estimates when the number of highest-level units is small. *, ** and *** denote significance at the 10%, 5% and 1% level.

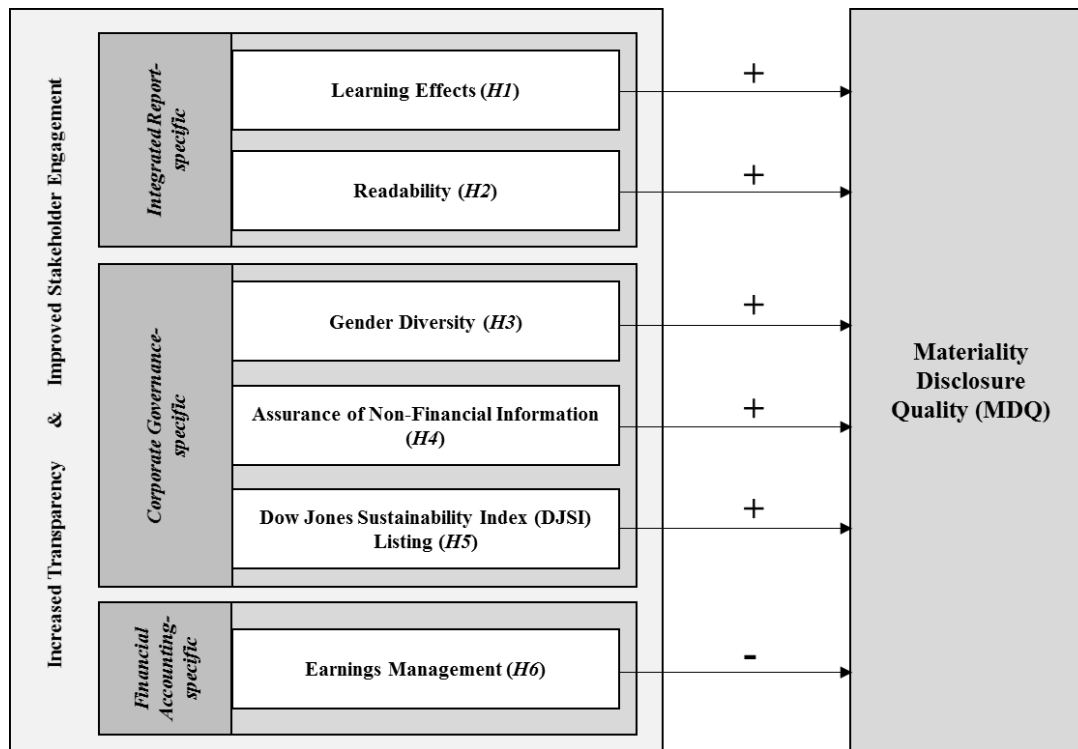


Figure 1: Research framework

Figure 1 depicts H1 to H6 within our research framework in conjunction with their expected association with materiality disclosure quality. As shown, all hypotheses commonly target to increase transparency and improve stakeholder engagement and have been selected from the integrated reporting, corporate governance, and financial accounting dimensions.

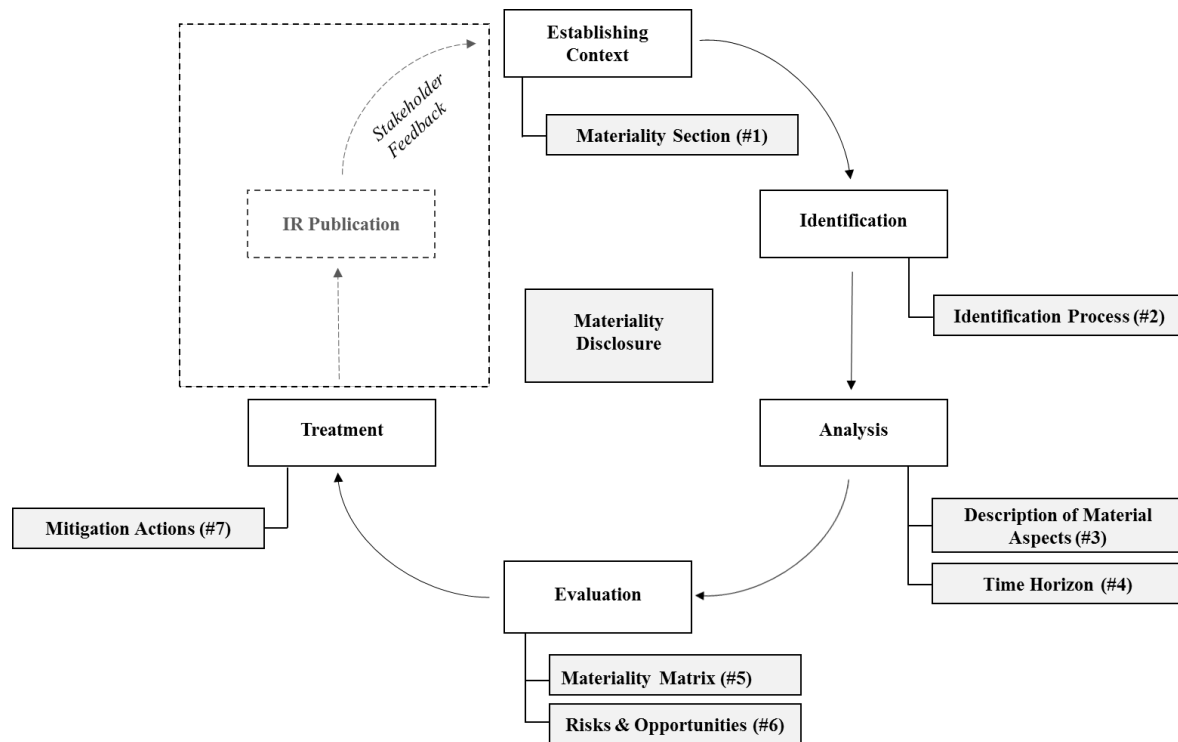


Figure 2: Materiality disclosure

Figure 2 depicts major elements of materiality disclosure in relation to the components of the materiality disclosure score, which need to be reassessed on a regular basis. This reassessment is influenced by stakeholder feedback (unobservable) after publication of the integrated report.

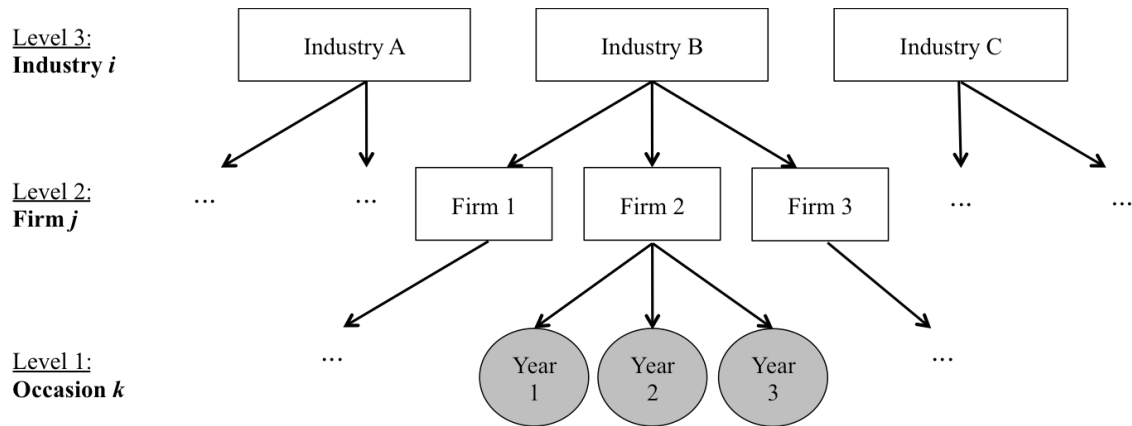


Figure 3: Hierarchically nested data structure

Figure 3 presents the underlying hierarchical structure in our data, where occasions (Level 1) are nested in firms (Level 2), and firms are nested in different industries (Level 3).

Annex 2: Managers' Incentives and Disincentives to Engage with Integrated Reporting, or Why Managers Might Not Adopt Integrated Reporting: An Exploratory Study in a Nascent Setting (article 2)

Abstract²¹

Purpose – Despite its envisaged benefits, integrated reporting (IR) has yet to achieve its 'breakthrough', especially among small- and medium-sized enterprises (SMEs). This study aims to discern SME leaders' attitudes towards IR, and thereby to reveal managerial perceptions of both the potential benefits and the challenges that actually prevent them from embarking on IR.

Design/methodology/approach – This explorative study is grounded on semi-structured interviews with 16 managers of large German SMEs which yet do not apply IR but are potential candidates to implement it in the future. The engagement with *non-preparers* is expected to paint a more representative picture of actual reasons for IR (dis-)engagement compared to prior studies that address the few firms that have adopted IR and overcome its challenges. Applying Brown and Fraser's (2006) conceptual landscape, results are presented analogous to a business case-, stakeholder accountability- and critical theory dimension.

Findings – Contrary to prior studies which identified social welfare and shared values in particular as kindling SME managers' interest in voluntary reporting initiatives, stakeholder accountability endeavors play only a subordinate role. The results show that managers regard IR primarily as a business case, serving to achieve legitimacy, improve corporate image, reach out to professional investors and assist in employee recruitment. However, they refrained from actually adopting the novel reporting medium which suggests that decision-

²¹ The style, form and citation style are in accordance with the individual journal guidelines and hence may differ from the other parts of this dissertation.

makers might not believe the business case to be as unproblematic as claimed by the proponents of IR. In particular, managers believed that, in its current form, IR was unable to achieve the stated business case goals. This was traced back to three major impediments that currently inhibit SMEs from reporting in an integrated way: a perceived lack of interest by the relevant publics, infeasibility of the IR concept to meet user needs, and preparation costs. These drawbacks resemble those of earlier voluntary reporting experiments, calling into question the ‘revolutionary’ character of IR. The paper critically concludes that the future development of IR depends on addressing these barriers.

Originality/value – To the best of the author’s knowledge, this is the first explorative study to deliberately engage with IR non-preparers to draw conclusions on impediments to IR, and the first to apply a pure interview approach to gain in-depth insights into the under-researched attitudes of SME managers. Both the identification of relevant incentives and disincentives for IR at first hand as well as the subsequent discussion of its implications add to the small extant research body and provide valuable insights for research, practice and standard setting. Moreover, the study’s findings provide relevant insights to the contemporary debate about dominant legitimacy-based explanations in the broader domain of social and environmental accounting and reporting (SEAR).

Keywords

Integrated Reporting, Motives and Challenges, Legitimacy, Managers, Small- and Medium-sized Enterprises (SME), Social and Environmental Accounting and Reporting (SEAR)

1. Introduction

Integrated reporting (IR) has recently appeared on the scene as the latest incarnation in the continuous evolution of corporate reporting (de Villiers et al., 2014). By connecting a firm's discrete financial and non-financial reporting into one cohesive business report, IR is intended to reveal corporate value creation over time in an increasingly complex and kaleidoscopic world (IIRC, 2013a; King and Atkins, 2016). Its proponents daringly proclaim that IR has overcome the fragmented and disconnected nature of sustainability reporting while simultaneously providing value to a broad range of corporate stakeholders and society (Eccles and Krzus, 2010). Among other benefits, IR is envisaged as delivering more decision-useful information to investors and employees, benefiting applying firms in a competitive sense and enhancing corporate image (IIRC, 2013a; Steyn, 2014; Robertson and Samy, 2015). Alongside this neoclassical lens, in these times of global warming, biodiversity loss and poverty, its advocates take the view that IR provides firms with a powerful mechanism to "take on a more educational role about their place in broader society" (IIRC, 2012, p.19). However, despite its extolled benefits, IR remains in its infancy with many businesses choosing not to adopt it (Burke and Clark, 2016; Adhariani and de Villiers, 2019), thus leading many to argue that IR is in a 'dormant stage' (Hahn et al., 2018). The increasing skepticism leads to the question: why, despite its envisaged benefits, have so few firms implemented IR as yet?

Since the voluntary preparation of an integrated report is particularly incumbent upon management who set the agenda for corporate reporting (Beck et al., 2017), executives are a relevant piece of the jigsaw in the adoption of IR and therefore should be the subject of specific research (Abeysekera, 2013; Eccles and Krzus, 2015). Investigating the perceptions of those who are at the heart of decision-making should help to illuminate this puzzling discrepancy further. While the prominent academic discourse in the related discipline of social and environmental accounting and reporting (SEAR) has led to widespread recognition that managers' engagement with voluntary reporting initiatives is particularly rooted in legitimacy-based explanations (Deegan, 2002; 2014), little is known about decision-makers' attitudes towards and the motives behind IR.

Arguably, currently, there is a “gap in the literature on managerial perceptions concerning IR” (Perego et al., 2016, p.53), especially when it comes to exploring the reasons why firms do *not* engage in IR. While corresponding non-disclosure studies exist in the related discipline of SEAR (e.g., de Villiers, 2003; Martin and Hadley, 2008; Stubbs et al., 2013), extant IR scholars either retrospectively investigate firms’ successful transitions to IR or contrast its benefits and challenges, but do not conclusively answer the question of why firms do *not* embark on IR.

Another major research gap in present IR literature centers around small and medium-sized enterprises (SMEs), which have hitherto not received much academic attention from IR scholars although the <IR> Framework issued by the International Integrated Reporting Council (IIRC) explicitly states that IR is suitable for companies of any size (IIRC, 2013a). Moreover, albeit voluntary reporting initiatives often are considered as a prerogative of large firms (Perrini et al., 2007), academic scholars have recorded a recent surge in interest in IR among SMEs (Del Baldo, 2015; Dumay et al., 2016; Girella et al., 2019). Given that, in 2017, SMEs accounted for 99.8% of all European firms (European Commission, 2018), they are the backbone of the economy and thus arguably will play a pivotal role in the further development of IR. Against this backdrop, Reuter and Messner (2015, p.302) note “it would seem critical to involve such firms [SMEs] in the development of integrated reporting”.

In order to address these gaps in the literature, this study uses an explorative approach consisting of 16 in-depth interviews with top and middle managers of large German SMEs (i.e. firms with a minimum annual revenue of €15m, while trade companies – due to higher sales volumes – need to exceed a threshold of €30m), which have not yet prepared an integrated report, but are potential candidates to implement IR in the future. The methodological rationale here is as follows: we expect that exploring the views of non-preparers at first hand will paint a more representative picture of *actual* reasons for IR (dis-)engagement compared to earlier studies that unilaterally engaged with (the few) highly committed IR preparers. This approach corresponds to O’Donovan’s (2002)

recommendation that engagement with managers from an *ex ante* perspective allows the discovery of more explicit reasons for managerial reasons behind voluntary reporting decisions. In doing so, the current study, *inter alia*, critically assesses whether the envisaged benefits of IR coincide with the expectations of practitioners or whether managers' inertia in implementing the novel reporting medium is commensurate with the numerous critical scholars who admonish that IR is no panacea for corporate reporting (e.g., Milne and Gray, 2013; Flower, 2015; Thomson, 2015).

The results of this study suggest that the majority of managers considered IR to be a business case, a strategic communication tool deemed potentially valuable, particularly in addressing concerns regarding legitimacy, fostering corporate image, improving investor dialogue and recruiting employees. At odds with earlier explorative evidence, stakeholder accountability transpired to be of only minor importance to our managers. Taking the standpoint that the idea of IR was valid in principle, a few managers had already aligned financial and non-financial information in practice ('IR walk'). However, despite their acknowledgement that it may be a useful tool for legitimacy and the conceivable business case property of IR, they refrained from reporting in an integrated way ('IR talk'), as they believed that, in its current form, the novel reporting medium was unable to actually achieve these business case goals. The interviews reveal three major impediments to IR adoption: first, drawing upon their experiences, managers expressed a perceived lack of interest by the relevant publics. Second, IR was regarded as infeasible to actually address user needs, primarily due to the drawbacks of its present configuration, i.e. lack of guidance, complexity and rigidity of the reporting framework, non-decision-useful report appearance (lengthy, barely readable) as well as managerial capture of the IR agenda. Third, given the scarce financial and human resources of SMEs, the fear of disproportionately high costs and the administrative burden as well as insufficient expertise led to the view that the transition to IR was for large firms first, and this shaped a watch and wait brief among SMEs.

This study contributes to the emerging debate on IR, and SEAR more generally, in the following ways: first, to the best of the author’s knowledge, this is the first study that deliberately engages with IR *non-preparers* to elucidate incentives and disincentives for IR. In doing so, this study responds to Adhariani and de Villiers’ (2019) call for research on the reasons for corporate disengagement with IR and delivers valuable first-hand insights on factors that *actually* prevent SME managers from embarking on IR. Taking into account that in the past reporting theories were often developed without engaging with organizations (‘desk-based research’, Adams, 2002; Deegan, 2002; Owen, 2008), this study gathers valuable practical implications outside a “cloisonné fashion” (Fassin, 2008, p.368). This critical assessment of IR’s current embodiment adds to extant literature that critically reflects on current IR practice (Brown et al., 2020) and has valuable practical implications for standard setters, regulators and firms, and might help to overcome and alleviate its barriers in future, thereby providing additional momentum to the IR journey. Second, this study contributes to and refines the contemporary SEAR literature that has explored why managers elect to adopt voluntary reporting initiatives (Deegan, 2002). Extant research has elucidated that, contrary to the initial (cynics would say ‘ideological’) purpose of SEAR to provide stakeholder accountability and benefit broader society, in practice, managers purposefully engage in SEAR to deflect criticism and repair legitimacy (O’Donovan, 2002; O’Dwyer, 2002). However, this study’s findings qualify the present dominance of legitimacy-based theoretical explanations for SEAR adoption as they show that decision-makers do not see the business case being as unproblematic as envisioned by the proponents of IR. Although managers alluded to legitimacy, they did not believe that IR was actually capable of achieving this goal. Third, given Brown and Dillard’s (2014, p.1139) notion that “key in the sustainability context are efforts to foster institutional learning [which] may be well-known to some groups and academics but not to decision makers or incumbent elites”, the results of this study might be the starting point for future IR preparers. In practical terms, the insights derived may provide an impetus for any *decision-makers and incumbent elites* who are considering the idea of IR for reasons of genuine stakeholder accountability and transparency, but are not convinced of its business case logic. Finally, this study replies to various

academic and institutional calls for research on IR (e.g., de Villiers et al., 2014; Velte and Stawinoga, 2017) and identifies various opportunities to broaden the understanding of IR in future research.

This paper is structured as follows: section 2 summarizes related literature on IR, while section 3 provides the theoretical background, followed by the presentation of the underlying methodological approach in section 4. In section 5, the research findings are presented and contextualized before the final section reflects on and discusses the results and suggests opportunities for further research.

2. Literature Review

2.1 Evolution, Institutional Background, Purported Benefits and Critical Voices on IR

In response to stakeholders' increasing information requirements, over the last decades corporate reporting has experienced a substantial shift from traditional financial reporting to more encompassing reporting formats, such as triple bottom line and sustainability reporting (Elkington, 1994). In tandem with the increasing interest in non-financial information, the Global Reporting Initiative (GRI) has developed the standardized and well-established GRI reporting guidelines that have institutionalized the present social, environmental and governance reporting (Burritt and Schaltegger, 2010). However, critical voices from academia and civil society groups are being raised which point out the complexity and the fragmented, disconnected strands of stand-alone sustainability reporting that lead to a lack of coherence between financial and non-financial information (de Villiers et al., 2014). Other scholars go even further and argue that sustainability reporting in its current form is actually detrimental as it is abused for legitimacy purposes (Deegan, 2002), sidelines ecological concerns and leads to "greater levels of *un*-sustainability" (Milne and Gray, 2013, p.13, emphasis in original).

In an attempt to provide remedy, two pioneering initiatives promoted the idea of a more 'integrated' approach to corporate reporting, namely the Danish healthcare company Novo Nordisk and the South African King Commission (de Villiers et al., 2014). Driven by the idea that financial aspects are inextricably entwined with non-financial ones and the desire to better embed sustainability topics within business strategy, in 2003, Novo Nordisk was the first company to report on social, environmental and financial aspects within one single document (Dey and Burns, 2010). With the issuance of the King Report on Governance for South Africa (King III) in 2009, the Institute of Directors in South Africa set the agenda for the national application of IR. Under King III, firms listed on the Johannesburg Stock Exchange now had to report on a 'comply or explain basis' in an integrated way on information "that has positively and negatively impacted on the economic life of the community [...], often categorised as environmental, social and governance issues" (King III, 2009, p.14). One year after the issuance of King III, a coalition of the GRI and the Prince's Accounting for Sustainability Project (A4S) established the International Integrated Reporting Council as a quasi-regulatory body with the objective of developing a globally accepted IR framework to promote its international diffusion (de Villiers et al., 2014). Considering itself a global coalition of regulators, investors, companies, standard setters, the accounting profession and NGOs (IIRC, 2013a), in 2013, the IIRC developed the principles-based <IR> Framework that aims to coalesce a firm's different reporting formats into one holistic and succinct report and thereby intends to achieve supremacy as the future corporate reporting norm. Attracted by the idea of incorporating and interconnecting all capitals (financial, manufactured, intellectual, human, social and natural) that affect a firm's strategy and its value creation, by the end of 2013, more than 100 firms had joined the IIRC Pilot Program Business Network and had their first experience with IR (IIRC, 2013b).

Proponents of IR argue that the novel reporting medium entails a variety of envisaged internal and external benefits, such as improved internal decision-making, better dialogue with stakeholders, higher stakeholder accountability, increased reporting quality and better decision-usefulness for investors (IIRC,

2013a), which together would stimulate positive capital market reactions (e.g., Lee and Yeo, 2016; Barth et al., 2017; Zhou et al., 2017). Examining the experiences of the first IR adopters in South Africa, King and Atkins (2016, p.x) conclude that IR has “altered the way in which companies in South Africa report on social, ethical and environmental issues”. Although the aforementioned appraisal emphasizes the ability of IR to provide accountability to various stakeholders and the <IR> Framework notes that an integrated report benefits all stakeholders, the primary purpose of IR is to explain corporate value creation to providers of financial capital (IIRC, 2013a). Despite the claims of virtue, the distinct investor focus in the <IR> Framework has received considerable attention from a large strand of critical theorists who question the worth of the IR agenda and challenge its ‘evolutionary’ character. Reuter and Messner (2015), for instance, condemn the ambiguity of ‘user needs’ in the <IR> Framework. They conclude that the user perspective is not properly reflected, but instead, there is “more rhetoric than substance in standard-setters’ references to ‘user needs’” (p.392). Milne and Gray (2013) denounce the IIRC’s discussion paper with its exclusive investor focus as “remarkably regressive” (p.25) and “a masterpiece of obfuscation and avoidance of any recognition of the prior 40 years of research and experimentation” (p.20) that disregards any ambition to include stakeholder accountability and sustainability in the reporting agenda. Brown and Dillard (2014), seemingly disenchanted, criticize the IIRC’s “aggressive business case framing” (p.1124) and its “ideologically closed approach” (p.1124) that oversimplifies sustainability challenges and fails to learn from past experience. Flower (2015, p.1) designates the IIRC “a story of failure” that has abandoned sustainability accounting and places “value for investors” above “value for society”. He concludes that the IIRC, as the extended arm of the accounting profession, has become a victim of regulatory capture. Tapping into Flower’s work, Thomson (2015, p.21) advises the IIRC to reframe the “business case for sustainability” to a “sustainability case for business” in order to establish a timelier and more judicious reporting format.

Notwithstanding its purported deficiencies, there has been a steady upsurge in voluntary IR adoption (Eccles and Krzus, 2015). According to the <IR> Examples

Database, more than 500 firms worldwide, predominantly large corporations and a few SMEs, nowadays disclose integrated reports with reference to the <IR> Framework. This steadily growing number of applicers is remarkably high when taking into consideration that IR is a relatively new, upcoming phenomenon, but coincidentally relatively low compared to the number of CSR reporters (KPMG, 2017). To shed light on different incentives and disincentives to (not) engage with IR, the following review highlights the attitudes of managers as key players in the process of IR.

2.2 Managerial Perceptions of IR

A growing, albeit relatively small, stream of engagement-based academic scholars have explored managerial motivations behind, and problems with, the voluntary adoption of IR. Six explorative studies have investigated managerial perspectives of IR among large corporations (Higgins et al., 2014; Steyn, 2014; Robertson and Samy, 2015; Chaidali and Jones, 2017; Lai et al., 2018; Adhariani and de Villiers, 2019) while a further six have shed preliminary light on managerial views in a SME setting (Del Baldo, 2015, 2017, 2019; Lodhia, 2015; Vesty et al., 2018; Girella et al., 2019). Given that firm size has been found to be a major contextual factor in explaining corporations' engagement or disengagement with voluntary reporting initiatives (e.g., Adams, 2002; Baumann-Pauly et al., 2013), the following review contrasts extant empirical findings while discussing and elaborating on the unique setting SMEs operate in. In practical terms, different SME-specific peculiarities may concomitantly serve as a curse and a savior when it comes to IR. While lower formalization and bureaucracy, faster decision-making abilities, a strong embeddedness of value-based management and a culture of shared values might promote IR engagement, low degrees of management control and documentation as well as limited resources could curtail SMEs' room for maneuver (e.g., Perrini et al., 2007; Fassin, 2008). Given the close content (de Villiers et al., 2014; Stubbs and Higgins, 2014) and institutional (Brown and Dillard, 2014) links between the concepts of IR and sustainability reporting, related studies of other experiments with SEAR are deemed helpful to contextualize and explain findings on

managerial perceptions of IR. In this way, the following review intends to condense extant knowledge, thereby addressing questions such as: do managers of large corporations and those of SMEs share the same views or do they systematically differ? Are there similarities to and differences in related SEAR experiences that IR might learn from in future?

2.2.1 Managerial Views of Benefits and Drivers of IR

The overview of prior studies suggests that, among managers of large corporations, interest in IR is primarily driven by business case concerns that coalesce around the principal objective of managing shareholder expectations rather than considerations of transparency and stakeholder accountability. In exploring the sense-making process of Australian IR early adopters, Higgins et al. (2014) find that managers regard IR as a vehicle for ‘story-telling’ and ‘meeting expectations’, thereby resolving communication challenges and protecting the interests of shareholders. In a similar vein, Lai et al. (2018) reveal that an Italian insurance company uses narratives in IR as a carrier of a ‘socializing form of accountability’, which helps to reduce tensions of traditional financial reporting and facilitates dialogue with investors. However, aspects related to sustainability are often marginalized in IR practice. In surveys of South African managers and Indonesian corporate report preparers, respectively, Steyn (2014) and Adhariani and de Villiers (2019) confirm that the interest in IR particularly centers around corporate legitimacy and image as well as satisfying shareholder and stakeholder needs. Likewise, Robertson and Samy (2015) examine the perceptions of UK managers of FTSE 100 corporations and espouse the latter in pointing out that corporate legitimacy and image are primary objectives when thinking of IR. Alongside the discernible and over-arching tendency towards legitimacy and managing investor expectations, executives expected peer pressure and competitive advantages to determine the diffusion of IR and alluded to a plurality of further anticipated internal benefits such as better interaction with non-financial stakeholders, improved integrated thinking, breaking down silos and better internal decision-making (e.g., Robertson and Samy, 2015; Lai et al., 2018; Adhariani and de Villiers, 2019).

A brief juxtaposition of leading academic scholars in the related SEAR discipline mirrors prior findings. Representative of a variety of studies, Spence (2007, p.85) concludes that voluntary SEAR is “driven by numerous motivations, although these motivations essentially form part of a business case”. As promulgated by O’Dwyer (2002), Irish managers’ engagement in corporate social disclosure is characterized by a ‘symbolic self-interested nature’. At the same time, Livesey (2002) proclaims that SEAR practice is self-serving and only accidentally fosters corporate greening. O’Dwyer (2003) describes a process of managerial capture of the CSR agenda through an interpretation in a way that facilitates shareholder wealth maximization – a process that owes more to ‘enlightened self-interest’ than an altruistic desire to ‘do good’. In a case study of an overseas aid agency, O’Dwyer (2005) even identifies tendencies towards stakeholder silencing, which negate any attempts to improve stakeholder accountability and aligns with Adams’ (2004) discovery that sustainability reporting does not necessarily translate into improved stakeholder accountability (the ‘reporting-performance betrayal gap’). According to Larrinaga-Gonzales et al. (2001), Spanish managers opportunistically introduce environmental reporting in order to control the environmental agenda. In a similar vein, O’Donovan (1999) reveals that managers of firms operating in environmentally sensitive industries consciously increase their environmental disclosures in order to allay the effect of negative activities of either their company or the industry. In subsequent work, O’Donovan (2002) refines prior findings on the legitimacy-based explanations of voluntary disclosures, revealing that managers’ legitimizing strategies depend on the significance of the incident, as well as the question as to whether they are looking to gain, maintain or repair legitimacy.

In sum, results align with the widespread recognition that managers’ primary motivation for embarking on voluntary reporting initiatives, such as SEAR in general and IR in particular, is deeply rooted in business case reasoning; this is not surprising when taking into consideration how tightly the concept of IR is geared to business logics. When driven by the desire to deflect criticism and repair legitimacy, managers seem to purposefully exploit voluntary disclosures as a protective shield that maintains corporate legitimacy in case of events that are

detrimental to the organization's reputation. Prior studies, however, not only give the impression that managers tend to ubiquitously, strategically and consciously (ab)use voluntary reporting initiatives to increase business wealth at the expense of more virtuous and altruistic intentions such as increasing transparency and embracing stakeholder accountability, but also suggest that these business case features are regarded as unproblematic in organizational contexts. At the same time the question arises as to whether the vast majority of managers that have deliberately not (or not yet) implemented IR actually believe in the business case claims as put forward by prior literature and SEAR proponents, such as the IIRC. In this context, there is merit in thoroughly investigating this question as well as exploring the consequences if beliefs were fragile; a general disbelief in the business case properties of IR could explain its relative inertia.

Contrary to this strong business case logic, research shows that managers of SMEs tend to have a more stakeholder accountability-centered perspective that puts transparency and social welfare at the core of engagement with voluntary reporting initiatives. In line with upper echelons theory (Hambrick and Mason, 1984) and Gomez-Mejia et al.'s (2007) socioeconomic wealth model, extant studies indicate that this fact is primarily due to a distinctive and intrinsic managerial commitment to ethical values that encourages the adoption of voluntary reporting concepts, particularly as a means to provide stakeholder accountability. However, prior literature shows that business case considerations also prevail among SMEs, which suggests that stakeholder accountability and business case motivations may not be mutually exclusive. Investigating the transition to IR by an Australian customer-owned bank, Lodhia (2015) and Vesty et al. (2018) stress that managers' core motivation for embarking on IR was rooted in a distinct commitment to transparency, accountability and ethical values. Along these same lines, in case studies with Italian SMEs, Del Baldo (2015, 2017, 2019) and Girella et al. (2019) reinforce that the choice of adopting IR was primarily driven by entrepreneurial passion for transparency and stakeholder accountability and, as a side benefit, has ameliorated reputation, credibility and stakeholder commitment. Girella et al. (2019) add that it was likewise a quest for image and reputation that has kindled managers' interest in IR. Similar results can be

derived from related studies in the SEAR discipline (e.g., Spence et al., 2003; Nielsen and Thomsen, 2009; Jakobsen, 2017). For example, Murillo and Lozano (2006) point out the central role of managers' personal values in the implementation of CSR strategies, but also stress the relevance of non-ideological drivers, such as competitive advantage. Aside from the focus on content-related reasons, prior studies suggest that IR adoption is also promoted by SME-specific organizational peculiarities, such as vigor, flexibility and less formality that encourage integrated thinking. Lodhia (2015, p.595), for instance, concludes that the organizational environment of a customer-owned Australian bank favored its successful transition to IR as it helped to "break down silos quite easily and avoid various layers of bureaucracy associated with larger enterprises". The positioned viewpoint is shared by Vesty et al. (2018), who paint a picture of an agile and curious organization that experimented with various reporting formats that, as antecedents of IR, have stimulated integrated thinking.

In sum, prior studies suggest that SME managers' primary motivation for engaging in voluntary reporting initiatives is deeply rooted in the culture of ethics and stakeholder accountability, and thus differs from that of decision-makers of large corporations. At the same time, earlier evidence reveals that SME managers adopt a weak business case reasoning. This suggests that the perspectives of stakeholder accountability and business case might not be mutually exclusive and hence not necessarily translate into a dichotomy of personal values and business considerations. Assuming that these mutually beneficial relations exist and are legitimate, managers seem to reach out to participate in business case advantages that (regardless) emanate from their engagement in these voluntary reporting initiatives. In other words, drawing upon the adage 'doing good while doing well', managers seem to be encouraged by a will for 'doing good' (stakeholder accountability) but are not deterred from 'doing well' (business case). In principal, this point of view is legitimate, although, in the eyes of ideologists/critics, by far not very selfless (some might say, even opportunistic). Coincidentally, this bears the risk that users surreptitiously pursue economic benefits in the guise of shared values. This association is, as yet, not adequately addressed in literature and should be

critically scrutinized. What actually kindles SME managers' interest in voluntary reporting initiatives (if at all) – 'doing good' ('altruistic/pure' stakeholder accountability), 'doing good while/by doing well' ('economic' stakeholder accountability) or 'doing good *for* doing well' ('enlightened self-interest', business case)?

2.2.2 Managerial Views of Challenges and Disincentives of IR

The search for answers as to why firms do not engage in IR leads to scholars that allude to different barriers and challenges surrounding it, although these studies do not conclusively answer this question. Overwhelmingly, there is a broad consensus that the most pertinent barrier to IR is the lack of definite guidance and absence of practical reporting guidelines (e.g., Steyn, 2014; Robertson and Samy, 2015; Chaidali and Jones, 2017; Adhariani and de Villiers, 2019). Against this backdrop, Higgins et al. (2014, p.1110) claim that there is a need for an IR standard that "provide[s] guidance for preparers about what should be reported and how", while Chaidali and Jones (2017) reveal that managers were unsure about the role of IR compared to the existing annual report; they report that, generally, managers were suspicious of the motives behind IR and uncertain of its benefits and beneficiaries. In particular, managers insinuated that the IIRC was captured by accounting firms and criticized the current report appearance as being characterized through largely complex and barely readable reports rather than concise information memoranda. According to Robertson and Samy (2015), the voluntary character of IR also disincentivizes managers from engaging with the novel reporting instrument and instead nourishes a wait-and-see attitude. Steyn (2014) and Adhariani and de Villiers (2019) add that managers complain about internal deficits, such as a lack of necessary organizational information system infrastructure to gather all the relevant data and fear incurring preparation costs.

A juxtaposition of managers' perceptions of challenges that surround(ed) SEAR yields surprisingly similar results. Common reasons identified for corporate non-disclosure of CSR reports have been the managerial perception of a lack of interest by many stakeholders (Adams, 2002; Martin and Hadley, 2008; Belal,

2011) and reports “rarely [being] read by the various ‘relevant’ publics” (O’Dwyer, 2002, p.423). Further, as in the IR context, the absence of legal requirements disincentivizes managers from engaging in CSR reporting and this is reinforced by the lack of specific and user-friendly reporting guidelines and measures leading to confusion about what to report and how (Stubbs et al., 2013; Belal, 2011). Moreover, equivalent to the arduousness voiced by IR-preparing managers, firms’ inadequate information systems and the non-availability of data prevent them from engaging in corporate sustainability reporting (de Villiers, 2003; Martin and Hadley, 2008). Finally, high preparation costs discourage managers from voluntarily reporting on their sustainability-related issues (e.g., de Villiers, 2003; Martin and Hadley, 2008; Belal, 2011).

Although Lodhia’s (2015) interviewees, in retrospect, assumed that they had encountered similar challenges to any other firm that has embarked on the IR journey, a large strand of the related SEAR literature suggests that SMEs face noteworthy initial barriers in the implementation of new reporting formats. According to the widespread view in literature, most voluntary reporting initiatives, such IR or related CSR reporting, have been primarily developed for and are tailored to large corporations that possess a strong financial background, ample resources and specific expertise (Arena and Azzone, 2012; Thomson, 2015). Thus, it is questionable whether these concepts are equally transposable to SMEs that usually have less resource slack and little time compared to larger firms (Hewitt-Dundas, 2006; Fassin, 2008; Schreck and Raithel, 2015). The complexity of the voluntary reporting guidelines often imposes high administrative burdens, and, in consequence, incurs disproportionately high costs, which render these concepts infeasible and often dissuade SMEs from adopting them (Castka et al., 2004; Fassin, 2008; Arena and Azzone, 2012). Moreover, the scarcity of adequate expertise among SMEs often leads to an insufficient understanding of voluntary reporting concepts, which particularly stifles their application (Fassin et al., 2015; Burke and Clark, 2016).

In that sense, Del Baldo (2017, 2019) alludes to problems in interpreting, operationalizing and refining the abstract and principles-based IR guidelines

that were attenuated by engagement in specific working groups and external consultancy. Given the high complexity of the <IR> Framework, the Italian Network for Business Reporting (2018) recently published IR implementation guidance for SMEs that claims to translate the <IR> Framework into a language comprehensible by small businesses. Further, the weak culture of non-financial information in SMEs, as well as the absence of detailed management control systems, exacerbated the problems in identifying and monitoring the relevant corporate value drivers in IR (Lodhia, 2015; Del Baldo, 2017, 2019). Having in mind the administrative burden, Vesty et al. (2018) state that the process of IR was considered mechanistic and more compliance-oriented than expected and incurred high costs and time allocation. They point out that SMEs often do not think in terms of capitals and input and output factors as prescribed by the <IR> Framework, but instead require more flexible reporting guidelines that allow a higher emphasis on stakeholder accountability and mutual prosperity.

2.2.3 Lessons Learnt and Open Questions

The comparison and contextualization of IR with studies of the related SEAR discipline shows a clear alignment between the motives and challenges surrounding the two reporting concepts and suggests that IR evolved alongside earlier reporting initiatives. The apparent congruency of the two reporting concepts' pitfalls gives the impression that IR and its underlying institution have not learnt from past experience. Taken at face value, extant literature suggests two different perspectives that kindle managers' interest in voluntary reporting initiatives such as IR and SEAR: business case and stakeholder accountability. At first glance, results indicate that managers of large firms are more likely to take the view of the business case perspective, whereas executives of SMEs tend to put stakeholder accountability at the core. On closer inspection, however, the review of the extant literature raises several conflicts of opinion and leaves essential questions (fundamentally) unanswered, questions that are considered relevant for imbuing the understanding of IR's 'dormant stage' (Hahn et al., 2018).

For instance, there is the need for a more fine-grained exploration and critical analysis of SME managers' actual motives for their engagement in voluntary reporting initiatives; prior scholars did not reach a clear consensus here. While there is mounting evidence that SME managers' interest in IR is driven by an inherent desire for genuine stakeholder accountability, business case endeavors also seem to prevail among SMEs and this suggests that the two perspectives are not mutually exclusive. The question also arises as to whether managers (in particular, the vast amount of those who have not yet adopted IR) actually believe the IR business case claims. This is particularly relevant since fragile beliefs might provide answers to the limited uptake of IR in reporting practice and contribute to answering the question of why managers actually refrain from embarking on IR – another major gap in literature.

From a methodological standpoint, we suggest that the majority of extant studies with IR preparers, that all exclusively build upon highly recognized reports and explore only the views of managers that are highly committed to ethical values ('selection bias', Eisenhardt, 1989), are a limited method for producing convincing data about managers' actual motivators for IR (dis-)engagement. Simply put, results are likely to be biased toward the small group of IR-preparing firms. Moreover, studies referring to firms that are committed to IR might be less likely to produce unadorned insights on rather 'delicate' issues – for example, whether a SME's actual motivation for IR disclosure was rooted in a business imperative in disguise rather than genuine stakeholder accountability. Likewise, the focus on current IR preparers that, in retrospective, reminisce about challenges that were successfully overcome, captures neither the views of potential ex-ante IR preparers nor the positions of those who deliberately chose *not* to engage in IR. Consequently, prior scholars allude to various challenges that might overwhelm managerial curiosity about IR but do not provide conclusive answers as to why managers refrain from engaging with IR, thereby missing the opportunity to provide a more holistic and integral view. We thus propose the application of a pure explorative interview approach that deliberately engages with non-preparers in order to understand prior puzzling findings further and to provide answers to the following questions:

- What potential benefits do managers of SMEs see in IR and which beneficiaries do they relate to? (RQ1)
- What kindles SME managers' *actual* interest in IR (if any): stakeholder accountability, as suggested by extant literature, or business case motivations? (RQ2)
- What are the reasons/challenges that prevent managers of SMEs from implementing IR? (RQ3)

3. Theory and Research Framework

The review of extant studies illustrated a string of overlapping layers of managerial perspectives surrounding IR. To develop a framework that conceptualizes and delineates the present landscape of IR and structures the following study, we apply the approach introduced by Brown and Fraser (2006) to differentiate between a business case, stakeholder accountability and critical theory dimension reason for (not) adopting IR.

3.1 Theoretical Background

Business Case Approach

Business case proponents take the view that voluntary reporting engagements such as IR are always rooted in a commercial imperative, which, as long as valuable (or at least not detrimental) to shareholders, might be married to responsibility and stakeholder accountability. Against this backdrop, Spence (2007, p.865) emphasizes a “dominance *per se* of a business case” in voluntary reporting initiatives that is composed of multifarious advantages which include, according to Brown and Fraser (2006), reputation and legitimacy, attracting staff, and financial value, to name but a few. Based on the underlying economic rationale of ‘what’s in it for business?’, business case advocates infer that managers’ primary motivation to engage in IR lies in an opportunistic desire to create and extend shareholder value rather than embracing genuine stakeholder accountability. In that sense, the strong investor logic in the <IR> Framework paves the way for its application as a shareholder instrument that only

peripherally cares for non-shareholder interests (e.g., Brown and Dillard, 2014; Flower, 2015; Thomson, 2015).

Among various theoretical explanations, legitimacy theory (Suchman, 1995) might be regarded as the most established approach in explaining firms' engagement in voluntary reporting initiatives (Deegan, 2002; 2014). In line with the basic assumption that organizations are influenced by, and have an influence upon, the society they operate in, firms do not have the inherent right to exist. Rather, they need to abide by a dynamic 'social contract' which determines their right to be. Given that legitimacy can be considered vital to organizational survival (Dowling and Pfeffer, 1975), it needs to be actively managed by firms (Woodward et al., 2001), for example by implementing remedial strategies in case their adherence to the 'social contract' is at stake (Deegan, 2002). Given that legitimacy is conferred by actors outside the firm (Pfeffer and Salancik, 1978), different landmark studies emphasize that strategies are only helpful for achieving or maintaining legitimacy if they are properly communicated (Dowling and Pfeffer, 1975; Cormier and Gordon, 2001). In this light, embarking on voluntary reporting initiatives helps to control and change perceptions of the firm in the eyes of the relevant publics (Mitchell et al., 1997; O'Dwyer, 2002) and thereby allows active management of organizational legitimacy (Patten, 1992; Deegan, 2002; Deegan et al., 2000; 2002). This active management of public perceptions to achieve legitimacy is closely related to impression management assumptions (Schlenker, 1980). It is not surprising, therefore, that Ogden and Clarke (2005) point out that firms purposefully use impression management techniques for legitimacy-based reasons. Against this backdrop, Haji and Hossain (2016) conclude that IR in its current practice is of a rather symbolic nature, implying that achieving organizational legitimacy via IR is closely related to managerial desires to control projected images outside the firm. Hence, from a legitimacy theoretical standpoint, corporate engagement in IR helps to signal a firm's effort to fulfill the social contract. Driven by managerial self-interest, in the guise of presumed win-win relationships between business and society, IR can be strategically used as a means to address the relevant publics, manage threats to organizational legitimacy and foster corporate image (Maroun, 2018).

In the light of the disproportionately high number of applying firms that operate in environmentally or socially sensitive industries (e.g., Stacchezzini et al., 2016; Rivera-Arrubla et al., 2017; Gerwanski et al., 2019), it seems reasonable to conclude that firms engage in IR in anticipation of pressure from outside interest groups.

Reasoning from the perspective of the resource-based view (Barney, 1991), managers' decision to issue an integrated report can be regarded as an expression of idiosyncratic strength which facilitates the generation of competitive advantages within the market. In practical terms, the adoption of IR possesses a valuable signaling function that ensures and facilitates the firm's future access to relevant resources (legitimacy being just one, albeit a central one) alongside the value chain (e.g., access to low-priced financial capital, highly skilled employees, scarce resources and raw materials), and differentiates it from competitors and thereby safeguards or improves its competitive position (Brown and Fraser, 2006). Along these lines, the inherent process of systemizing, interconnecting and aligning corporate actions to the firm's capitals arguably leads to valuable internal organizational benefits, such as better integrated thinking, breaking down inter-organizational silos, an enhanced understanding of previously unrealized interconnections between corporate value drivers and an increased efficiency of corporate processes.

Stakeholder Accountability Approach

As Deegan (2000) writes, classical stakeholder theory (Freeman, 1984) can be divided into ethical-normative and managerial strands. While business case sympathizers share the idea that powerful, salient stakeholder groups – foremost financial stakeholders – need to be managed (Ullman, 1985; Mitchell et al., 1997; Neu et al., 1998), stakeholder accountability theorists follow the ethical-normative strand. Following stakeholder accountability theorists, corporate disclosures such as IR (should) have as their primary objective providing transparency and accountability vis-à-vis stakeholders who have the right to know and reward/sanction corporate behavior within the realms of the accountability process (Swift, 2001; Gray, 2002; Laczniak and Murphy, 2012;

Hossain et al., 2015). Voluntary disclosure decisions should not be taken for business case reasons, but should be based on managerial beliefs about their obligations regarding stakeholder accountability (Deegan, 2002). Based on the underlying idea that different stakeholder groups obtain intrinsic value beyond profits, but also have different interest and accountability needs, this should be taken into account by management (Kuhn and Deetz, 2008; Brown, 2009). In this sense, stakeholder management and stakeholder discussion need to be replaced by a transition to stakeholder accountability and stakeholder dialogue (Roberts, 1996; Rasche and Esser, 2006). Although stakeholder accountability advocates criticize the dominant business case perspective in current reporting practice for overriding any spheres of corporate citizenship (e.g., Cooper and Owen, 2007), they also acknowledge that mutually beneficial stakeholder-business relations exist and are legitimate (Brown and Fraser, 2006).

In that sense, although the distinct neoclassical economic paradigm of the <IR> Framework is rejected by traditional stakeholder accountability proponents, its purported emphasis on transparency renders IR a potential mechanism for social control. In line with stakeholder theory (Freeman, 1984) and based on the stance that management's primary stewardship responsibility is to society and *all* stakeholders (Hillman and Keim, 2001), the IIRC proclaims that it not only focuses on "all stakeholders interested in an organization's ability to create value over time" (IIRC, 2013a, p.4) but also responds to their needs and interests. Integral to this ambitious goal is ongoing stakeholder engagement which is considered a prerequisite of stakeholder accountability (Rasche and Esser, 2006) and, at least in parts, is embedded in the IR concept, for example, when it comes to the determination of materiality (IIRC, 2015). Stakeholder engagement will likewise help managers to identify salient stakeholders (Mitchell et al., 1997; Kamal et al., 2015; Gianfelici et al., 2018) as firms do not possess indefinite resources and different stakeholders impose different information requirements and have different levels of interest in initiatives such as IR. However, this does not necessarily translate into mutually exclusive stakeholder accountabilities since benefits to one stakeholder do not always occur at the expense of others (Collier, 2008). Lueg et al. (2016, p.30), for instance, note that IR improves the

“understanding of the needs and realities of stakeholders”. Hence, embracing balanced stakeholder accountability in IR might be mutually beneficial to all stakeholders. As an example, the disclosure of *real* societal involvement might lead to higher awareness among employees, higher loyalty among customers and higher profits for investors.

The bottom line is that, from a stakeholder accountability perspective, IR possesses solid fundamentals for ascending to a reporting instrument that might follow an accountability-centered trajectory. However, both stakeholder accountability and critical theorists would interject that, in practice, things look different, as the strong investor focus dictated by the <IR> Framework curtails *real* stakeholder accountability.

Critical Theory Approach

The critical theory approach is the antagonist of the stakeholder accountability approach and its advocates are deeply skeptical about the underlying motivations of corporate actions. Consequently, they generally question the potential of voluntary reporting initiatives to provide *real* accountability in a capitalist society where imbalances of power and capital-oriented values prevail and voluntary disclosures suffer from business capture (O’Dwyer, 2003; Brown and Fraser, 2006). Critical theorists believe that profit-oriented corporations are the wrong boundary for accountability (Gray and Milne, 2002) since, instead of bringing forth radical change, they tend to hegemonically and conspiratorially appropriate the sustainability (reporting) agenda in a way that they can easily accommodate (Larrinaga-Gonzales et al., 2001; Springett, 2003). Considering the environment as a controllable entity, managers, as a reification of dominance and stewards of shareholders (Kuhn and Deetz, 2008; Alchian and Demsetz, 1972), establish portrayals of common welfare to favor particular (shareholder) interests (Dillard and Vinnari, 2019).

A critical theory lens on IR suggests that managements’ voluntary engagement in IR, being firmly rooted in the capitalist system, is driven by the opportunistic desire to control the IR agenda and to appease shareholders. Indeed, critical

scholars condemn the business case framing in IR with its strong investor logic as being self-serving and having succumbed to managerial and regulatory capture (Milne and Gray, 2013; Brown and Dillard, 2014; Flower, 2015). In these circumstances, critical theory advocates believe that ‘integrated reporting’ is applied as a mere buzzword (Gray, 2002; Burritt and Schaltegger, 2010) with the underlying intention to opportunistically abuse its true purpose, thereby “supporting the firm’s ‘business-case’ rather than general accountability, social justice or ecological sustainability” (van Bommel, 2014, p.1179). This conjuncture is favored by the vague nature of the <IR> reporting guidelines that provide high degrees of managerial leeway, especially in the absence of assertive mechanisms for oversight (Tinker and Gray, 2003; Kuhn and Deetz, 2008). In recent work, Brown et al. (2020) argue that the ‘monologic’ business case framing in IR needs to be challenged through more pluralist approaches to sustainability. In providing a critical dialogic perspective on IR, they condemn the narrowly conceived investor-centered definition of (financial) ‘value’, the institutional discrimination of stakeholder groups in favor of investors and the systematic neglect of sustainability that set stakeholder accountability *ad absurdum* (Brown and Dillard, 2014; Brown et al., 2020). Moreover, the one-dimensional, but prescribed philosophy that ‘*financial* value for businesses is value for society’ leads to a reductionist, financial-value centered definition of the IR principle that misses the opportunity to account for the fact that different constituencies have different accountability needs and specifications for ‘value’ (Dillard and Vinnari, 2019; Brown et al., 2020). This exclusive focus on financial value also in materiality considerations paves the way for opportunistic disclosure selectivity in the report preparation and allows the emphasis of positive and obfuscation of negative information to create an overall positive framing of the firm – also referred to as greenwashing or window dressing (Delmas and Burbano, 2011; Abdalla and Siti-Nabiha, 2015; Maroun et al., 2018).

Since ‘radical’ (ideologist) critical theorists take on a nihilistic and cynical “utopian vision of a post-capitalist world”, they are reputed to “rarely offer plausible alternatives” (Kuhn and Deetz, 2008, p.183) that go beyond the stance that imperfect and unstable reporting formats such as IR will disappear in time

(Burritt and Schaltegger, 2010). Thus, Kuhn and Deetz (2008) advocate taking into account alternative critical perspectives that paint a less bleak picture and offer the opportunity to overcome ideology. In that regard, although at best regarding IR as an ideological weapon, less ‘radical’ and more pragmatic critical theorists take the view that engaging with it is a first attempt to achieve change (Brown and Fraser, 2006). Given that, according to Gray (2002), capture is an immanent phenomenon in innovations, it should not be accepted as a reason for disengagement in IR. Also, with increasing involvement in IR, some managers might arguably begin to reflect on current reporting practice and realize a need for substantial change (Bebbington, 1997; Brown and Fraser, 2006), for example, to better incorporate a firm’s capitals *while* at the same time increasing stakeholder accountability. An example of a pragmatic critical theory lens on IR is provided by Brown et al. (2020) who propose a critical dialogic accounting and accountability approach to IR in order to democratize the new reporting initiative and thereby to take it to a higher level of stakeholder accountability and future viability. Their recommendations include broadening the definitions of ‘value’ and ‘materiality’, engaging with non-investor constituencies to weaken unequal investor-centered power relations, abandoning the exclusive reliance on financially quantified values and establishing a dialogue between the IIRC, practitioners and preparers. In addition, Burke and Clark’s (2016, p.275) view that “many firms still do not know what integrated reporting is” suggests further that IR is as yet not sufficiently understood, which might explain its flawed application (Burritt and Schaltegger, 2010; Aras and Crowther, 2009). Given that learning is important to new reporting formats (Alvesson and Deetz, 1996), the IR concept might need to pass through a learning process and thereby to evolve over time (Gerwanski et al., 2019).

4. Methodology

4.1 Selection of Participants

To reiterate, this study’s objective was to canvass managers’ opinions on the drivers and challenges of voluntary IR adoption. Hence, an explorative qualitative inquiry was deemed appropriate (Blaikie, 2000), which is also

reflective of the increasing relevance of qualitative methods in sustainability research (Eugénio et al., 2010). In pursuit of a research approach that delivers a grounded understanding and simultaneously allows a calm elaboration on interesting answers (Qu and Dumay, 2011), semi-structured interviews were carried out with 16 top and middle corporate managers of German SMEs which do not yet prepare an integrated report, but are potential candidates to do so in the future. The German setting was chosen as an empirical example for a reporting regime where IR is voluntary. IR also remains voluntary practice in Germany despite the recent EU directive (2014/95/EU): while this compels large capital market-oriented firms with more than 500 employees to provide non-financial information, they remain free to choose whether they do so in their management or a separate report. Given that IR-specific expertise and decision-making authority usually rests with either the management board (CEO, CFO) or the finance, investor relations or sustainability manager (Higgins et al., 2014; Steyn, 2014), interlocutors were carefully selected with regard to their position and role within the firm to ensure both decision-making power and involvement in reporting/sustainability initiatives. Both top and middle managers should possess sufficient knowledge of the firm's strategic objectives (Belal and Owen, 2007) and should understand IR in the wider context of corporate reporting. The purposive selection of participants (e.g., Blackburn et al., 2018) was deliberately restricted to firms with a minimum annual revenue of €15m (trade €30m) for two reasons: first, although IR is already applied by a few SMEs, the importance of both IR and non-financial reporting should be higher for firms of a certain size (Lepoutre and Heene, 2006; Nielsen and Thomsen, 2009; Fassin et al., 2011). Second, in light of limited managerial knowledge about IR (Adhariani and de Villiers, 2019), increasing firm size can be assumed to be concomitant with higher managerial experience and knowledge (Brenner and Schwalbach, 2003; Bloom and van Reenen, 2010); this ensures reasonable responses even if the participant is not (or is only a little) familiar with the concept of IR.

The sampling strategy was designed to cover a broad range of participants with respect to their industry affiliation, firm size, experience with non-financial reporting and hierarchical position in order to decrease the likelihood of selection

bias and to increase the validity of the in-depth exploration (Öberseder et al., 2011). In pursuit of this objective, the participants were selected via corporate customer advisers of a major German bank; the advisers were requested to randomly choose firms within their portfolio and ask the responsible managers for their voluntary participation. All 16 managers contacted agreed to participate. As depicted in *Table 1*, the sample encompasses a diverse spectrum of managers with respect to the firm's industry (trade, financial services, service providers, logistics, manufacturing, pharmaceuticals), size (€15m to > €1bn) and capital market orientation as well as each manager's hierarchical level. The sample is composed of two CEOs, two CFOs, ten heads of finance/commercial directors, one head of investor relations and one head of innovation and business development. All participants have dispositive power regarding their firm's corporate reporting. Nevertheless, in spite of the sampling strategy, the author is aware that it cannot be claimed that the participants are representative of large SMEs in a statistical sense (Belal and Owen, 2007).

[insert Table 1 here]

4.2 Interview Procedure and Data Collection

After the managers agreed to participate in the interview, they were contacted by telephone to arrange an appointment. The interviews were conducted face-to-face in their offices between January 2018 and March 2018. In order to foster an open-minded atmosphere, participants were informed before the interview started that all data would be anonymized. Further, to limit the risk of social desirability bias (Fisher, 1993; Öberseder et al., 2011), they were informed that the aim of the interview was to ascertain their personal attitudes and that there were no right or wrong answers. The interview questions were carefully designed in an open fashion to avoid suggestive and biased answers; for example, the managers were not asked whether they see acquiring employees as a potential motive for preparing an integrated report but for motives to potentially engage in IR in general. Following a few introductory questions, the subsequent conversation focused on the following areas:

- Managers' knowledge of IR;
- Managerial assessment of potential motives for engaging in IR as well as potential beneficiaries should firms decide to do so;
- Managers' view on barriers to implementing IR; and
- Managers' assessment of how IR will develop in the future.

The 16 interviews were conducted until repetitive arguments and viewpoints indicated saturation of findings. With the permission of the managers, all interviews were recorded and transcribed. As the analysis of interviews should not only focus on what is said, but also on *how* things are said, and what is *not* said (Poland and Pederson, 1998), the transcript also covers contextual information (such as pauses for reflection) recorded during the interview. The interview durations ranged from 14 to 51 minutes with an average of 25 minutes, leading to a total of 400 minutes of interviews.

4.3 Data Analysis

Following an interpretive-epistemological research philosophy (Crane, 1999; Stubbs and Higgins, 2018), the interviews were analyzed in a systematic four-stage process in order to deal with the complex nature of the data and to distill an accumulated essence. Given that scholars from the related SEAR literature in particular have provided adequate theoretical references as basis for subsequent reasoning, this process was guided by an underlying deductive research approach. In the first stage, an initial reading of all interviews was conducted to get an overall impression of the managers' utterances and to get a feel for the data (Higgins et al., 2014). In the second step, after carefully re-reading the interviews, the author assigned codes (open coding) to the data. Subsequently, in the third step, the codes were aggregated into broader categories (axial coding) that largely corresponded to the study's research framework (Strauss and Corbin, 1998): incentives relating to either a business case or a stakeholder accountability perspective, disincentives that prevent engagement with IR and the assessment of future prospects of IR. In line with Glaser and Strauss' (1976) recommendation to apply iterative processes to increase the thoroughness of data

analysis, in the final step, the transcripts were re-read and the assignment of codes and categories re-validated in consideration of the over-arching research objective (Öberseder et al., 2011).

5. Research Findings

Based on the research objectives and in line with the theoretical framework, we present the research findings in two main subsections covering the business case and stakeholder accountability perspective, respectively. The sections elucidate managers' incentives and disincentives to engage with IR and provide answers as to why they might not engage with IR. In anticipation of the main discussion of the findings, managers largely adopt the rhetoric of business case reasoning, with only a few alluding to a stakeholder accountability perspective. This runs counter to the predominant belief in altruistic and shared values-based motivations of SMEs when (contemplating) implementing voluntary reporting initiatives such as SEAR or IR. However, in spite of the fundamental business case logic, managers believe that IR would not achieve these goals. In order to provide a consistent and encompassing view on managers' perspectives on IR, this section is preceded by a short section that briefly provides a general account of managerial knowledge of and experience with IR. Subsequently, the results are discussed within the realms of a critical theory lens that serves as the basis for a critical reflection on IR and its future.

5.1 Managers' Knowledge of and Experience with IR

In line with the underlying research objective to explore the views and attitudes of managers who have either deliberately not, or not yet, adopted IR, the average participant had little or no prior *practical* experience with IR; the interlocutor did, however, have a sufficient understanding and *theoretical* knowledge of IR (or SEAR concepts more generally) and was aware of the new reporting instrument (several interviewees stated that they had additionally enquired about IR after the interview invitation). This suggests that IR is enjoying an increasing awareness among SMEs, but concomitantly is still in its infancy in reporting practice. Although none of the participants had practical experience with the

adoption of integrated reporting *per se*, a few managers had already acquired a first taste for the idea to integrate and amalgamate financial and non-financial information. Convinced of the benefits of interconnecting the different corporate value drivers, a few stated that they had already implemented first concepts in parallel to the basic idea of IR: “We previously already tried to evaluate different interdependencies between soft and hard facts in order to figure out how the one relates to the other” [M7]. Interestingly, a handful of managers at first gave the impression that they found it difficult to differentiate between the two concepts of CSR reporting and IR; they occasionally referred to related SEAR concepts, thereby undermining IR’s proponents’ claims of its disruptive and revolutionary character. In reporting practice, five executives stated that they disclosed their non-financial information in a separate CSR report.

5.2 What’s in It for Business? The Business Case Perspective

Managers’ Perceptions of Motives for IR

The interviews reveal that managers’ theoretical interest in IR was repeatedly driven by the perception that “soft facts are gradually becoming more important in public” [M5; M16] and are “taking on more and more prominence for the people” [M9]. In line with the prominent discussion around legitimacy-based explanations of SEAR (e.g., O’Dwyer, 2002; O’Donovan, 2002), IR was prominently regarded as a potential medium to respond to corporate demands for legitimacy by enabling firms to disclose their non-financial impact in a more media-effective way. In that sense, overwhelmingly, the views expressed by the managers suggest that IR was predominantly seen as a strategic “marketing tool” [M7] to foster “image effects” [M10] among corporate stakeholders and to “represent [the firm] in a very positive way (...) to society” [M9]. Against this backdrop, one manager even admitted that, driven by a quest for image, his firm had simply appropriated the concept of IR by reclassifying their annual report as an integrated report: “We also use the catchphrase ‘integrated report’ – although, I now understand it is not a real integrated report” [M8]. There was general agreement among the interviewees that an integrated report not only signals to “different stakeholders that issues are targeted” [M10], but also possesses the

potential to support a “change of image” [M12] or even “repair the corporate image [if needed]” [M4] in society. In line with Godfrey et al.’s (2009) ‘insurance-like’ property of CSR information, one manager stated: “I believe that it is possible to cultivate and foster one’s image by means of sustainability reports or even integrated reporting. And to decrease the correlation with the stock price, if something [a public relations disaster] happens” [M12].

Along these lines, several interviewees expected the issuance of an integrated report to decrease stakeholder and outside pressure. For this reason, the majority of the managers believed that IR was especially relevant for firms operating in polluting or ecologically/socially ‘sensitive’ industries such as chemicals [M8; M15; M16], automobile [M6; M14], textile and apparel [M4; M14; M16], heavy industry [M4; M9; M12], energy suppliers [M8; M12; M14] and banks [M16].

It depends on whether you are operating in a ‘suspicious’ industry. If I were to manage an energy supplier, obtaining eighty percent of my energy from nuclear power, or a waste or chemical company that had had their name dragged through the mud by the press just a few years ago, obviously I would have a strong interest in IR. [M8]

Echoing one manager’s comment that “the worse the image of the industry, the more likely I would do it [prepare an integrated report]” [M16], another stated: “It is presumably useful for industries which, to a certain degree, want to turn their image around and are operating in areas which are not regarded as being particularly kind to the environment” [M12]. This potential image-repairing property of IR was also expressed by another manager, who recommended IR especially to those firms that earlier had been “covered in the press due to accidents or serious misconduct” [M8]. This belief is commensurate with O’Donovan (2002), who reveals that managers’ likelihood to engage in legitimizing strategies depends upon the significance of an incident (which is likely to be higher among ‘sinful’ firms) as well as the question as to whether legitimacy is being gained, repaired or maintained. Yet another, however, suggested that this circumstance would not make IR more or less important for

particular industries, as every sector had “weaknesses” and “black sheep” [M4] and thus “each industry can derive significant benefits from IR” [M11].

Aside from the dominant legitimacy perspective, managers shared the view that (professional) investors and employees were the most relevant beneficiaries of IR. In that sense, most managers considered the concept of IR as potentially relevant for their dialogue with professional investors, such as financial analysts [M1], or bankers [M7; M16]. One, for example, expected that “professional investors are [...] likely to get something out of it [IR]” [M11], while another thought that an integrated report will “increase the rationality of investment decisions” [M10] since it would allow professional investors to “holistically gather all the information” [M10]. Another commonly welcomed feature of IR was the shift in reporting from a backward to a “future-oriented focus” [M9; M10], which allows investors to better assess the “future viability of business models” [M10]. It is worth mentioning that interviewees also expected IR to potentially be of use when dealing with socially responsible investors. Alluding to the increasing relevance of sustainable investors these days, several managers considered IR relevant to fund managers of “sustainability-managed green bonds” [M8] and to broadening the investor base to include more sustainable investors.

With regard to employees, a relatively clear picture emerges as a noteworthy proportion of managers attributed a high theoretical relevance to the IR concept with respect to employee matters. In times when the “war for talents” [M5] and “skills shortage” [M2; M5; M9] play a “major role in the German economy” [M2], IR was regarded as a potentially important and strategic signaling tool in employee recruitment.

To my mind, there is another very important challenge for our economy, namely the skills shortage. If I, as an employee, were to apply for a job, this [integrated] report could have an immense impact since it signals that they care more about their employees than others. At least, as a university graduate, I would have a closer look at it. To my mind, the relevance [of IR] is higher for recruiting than for investors. [M2]

More specifically, several managers expected that IR could contribute to a firm's "employer image" [M16] and its "appearance as an attractive employer" [M6], helping "to represent [itself] in a positive way to potential candidates" [M9], as otherwise "the good [potential] employees might not apply" [M5]. For this reason, one manager concretely saw the integrated report as a "job advertisement" [M5] to attract highly qualified employees, while another considered it a competitive advantage in recruiting [M2], potentially tipping the scales when a firm's corporate responsibility is a relevant factor.

The interviewees occasionally also brought up other external stakeholder groups, such as customers, suppliers and competitors. With respect to a firm's customers, several managers believed that its sustainability-related content in particular, qualified the integrated report as an important selling device: "In practice, it is most important to analyze what our customers want. Sustainability-related topics – this is both morally good but also relevant sales-wise; it certainly is a mix of both honesty and sales" [M16]. In line with the adage 'it pays to be green', one manager considered the reporting of sustainability-related themes vital nowadays because consumers are 'sensitive' and their desire "to know (...), understand, trace" [M4] the whole value chain created outside pressure. Another elaborated on this by specifying that a firm's customer segment, specifically its orientation towards either the "general public or only B2B customers" [M14], would determine the number of potential addressees and in turn IR's attractiveness to a firm. In particular, firms with a wide audience of customers were expected to extract greater benefits from IR compared to those with only a few key clients.

With a more upstream focus in the value chain, two managers thought that related disclosures might be also a relevant factor in procurements, especially when applying for "public tenders" [M9], because big contractors in this days and age usually want their "[sustainability] service chain examined to the end" [M7]. Furthermore, several managers regarded IR as potentially important in a competitive sense. Specifically, the issuance of an integrated report was expected to lead to competitive advantages for 'early adopters', and might force 'laggards'

to adapt their reporting strategy for fear of “competitive disadvantages” [M4] or because they did not want “to lose compared to other firms, which apply it [IR]” [M15]. This mimetic behavior was expressed by one manager as: “It is like what happens with parrots. One of them says something and all the others repeat it” [M6].

While the majority of the rhetorical business case benefits addressed by the managers were of an externally-oriented nature, several managers alluded to benefits that were expected to arise from an internal re-organization. One prominent driver was the desire to implement sustainability efforts and their value creation more effectively into corporate reporting, as it is especially the “soft facts and soft skills [that] lead to steady progress” [M7]. Against this backdrop, one expected that “ascertaining the [internal] figures might or will lead to an increased company value” [14] *per se*. Predominantly driven by the underlying idea of linking a firm’s financial and non-financial dimensions, several managers expected that introducing internal structures in parallel with the idea of integrated thinking within the firm would lead to a better understanding of the interdependencies of capitals. Also, amalgamating the firm’s dimensions and value drivers was likely to help verify and improve existing processes [M13], lead to “higher efficiency” [M11] and constitute a valuable controlling instrument [M14]. However, apparently, internal benefits seem to play only a minor role in informants’ rhetorical interest in IR compared to external benefits.

Managers’ Perceptions of Challenges of IR: IR? Sure, But Not for Us

Results reveal that, even though the managers are favorably inclined to the alleged business case properties of IR and several considered it “interesting for the future” [M11], decision-makers do not strive for an early mover position, but take a ‘watch and wait brief’: “To my mind, we have to wait and see” [M1]. Although a few managers have already acquired a taste for IR and have begun the ‘IR walk’, they still refrain from reporting in an integrated manner (‘IR talk’). However paradoxical this may seem at first glance, upon closer inspection it is purely the result of a concatenation of IR-specific drawbacks particular relevant

to SMEs. Broadly speaking, managers indeed see the business case for IR, especially to address demands for legitimacy, but believe that IR is not capable as an instrument of actually achieving these business case goals. Interestingly, this suggests that SME managers do not take the business case as unproblematic as is envisioned by the proponents of IR. The interviews revealed three major categories of inhibitors which, in the eyes of potential ex-ante IR preparers, put firms off adopting IR: (i) a perceived lack of interest by the relevant publics; (ii) infeasibility of the IR concept to actually meet user needs; and, (iii) preparation costs.

Although numerous managers endorsed the basic idea of condensing the prevailing reporting environment into one report, several were convinced that, in light of the “incredible mass of reports” [M1], IR was ‘just another reporting medium’ that no one would really care about. Referring to earlier experience with (voluntary) corporate disclosures, the majority of managers believed that most stakeholders were not willing to read yet another (integrated) report to engage with the firm. In consequence, the idea of IR was seen as valid in principle, but unsuitable for actual engagement with the relevant publics (which were considered to be primarily investors and employees).

How many private investors read our annual reports? Our annual reports are requested primarily by school classes or university groups, who analyze them. Of course, there are some fund managers, who indeed explicitly read those reports, but in my opinion, most investors, including those invested in our stock, do not read the annual reports, because they are way too extensive. [...] How many trainees actually read annual reports? How many trainees read these [integrated] reports? [M1]

To my mind, the amount of stakeholders that read these reports is overestimated. We severely thinned our annual report, since our experience tells us that, apart from a few exceptions, it is very unlikely that these reports are read. [M16]

Another manager likewise doubted the effectiveness of IR in addressing their stakeholders: “I believe that, to divulge information, there are other channels which are significantly more effective than such a report” [M7], while another commented:

Since we have been listed on the stock exchange, at least for the last five to six years, I do not remember any shareholder requests worth mentioning regarding sustainability, except a question on a local topic and the percentage of women in management positions. [M8]

The second nuisance of IR, which might likewise cause and aggravate the perceived disinterest of the relevant publics, was believed by the managers to be rooted in the infeasibility of the IR concept, i.e. deficiencies in the recent application and applicability. Broadly speaking, managers believe that, in its current shape, IR would not meet user needs. This aligns with the academic discussion on the notion of ‘user needs’ and the criticism that the <IR> Framework is designed according to preparer needs, while largely disregarding those of its ‘users’ (Reuter and Messner, 2015). In line with the ‘explosion’ of integrated reports [M5], several managers criticized the reports in current practice as being too extensive (literally “burying” [M15]) and barely readable. Given that most readers lack both “the time” [M16] and the “deep economic background” [M11] necessary for extracting value from current integrated reports, present reporting practice does not respond, or even runs counter, to the demands of IR’s publics. In the eyes of the managers, this particularly applies to less experienced or nonprofessional investors, who probably would not read “hundreds of reports” [M16], especially if one only “invests smaller amounts” [M14]. Interestingly, this suggests that decision-makers believe that IR is unable to properly address investor needs (with the exception of skilled professional investors/analysts), although the <IR> Framework particularly focuses on this user group. Drilling into this notion, one manager proposed publicizing integrated reports as a brief “summary” [M2] instead, complementing other reports. This corresponds with the opinion of several others that an integrated report could complement but not substitute for other information media [M2]

such as, for example, the annual report [M1; M8]. Hence, practitioners seem to call into question the declared aim of the <IR> Framework to achieve supremacy as *the* future, all-encompassing corporate reporting norm.

Along these lines, another frequently voiced preoccupation that is considered to render IR infeasible is the perceived absence, or at least vagueness, of present guidance (the <IR> Framework). Several participants questioned whether with the IR concept as it stands now, it was at all possible to adequately present the intertwined financial and non-financial information in “calculable” [M16] “systems, which can be operationalized and are scalable” [M7].

To my mind, it is very challenging to interrelate the non-financial with the financial dimension, and in consequence even to provide a range, brutally difficult. [M5]

In the light of these connectivity doubts, the veracity of the information was questioned (which impairs IR’s ability to cater to user needs even further), especially since it was subject to high managerial discretion [M10], “based on assumptions” [M7] and exhibited only a limited comparability [M4; M5; M7]. One manager also alluded to professional capture in IR by auditors and assurers who would lobby on the new reporting initiative in search of new business segments (advisory, consulting and assurance): “Who advises the legislators? Essentially the Big-4 auditors” [M1] while another asked: “Is there any proof that integrated reporting is beneficial and without any doubt as to its veracity?” [M10]

Several managers also criticized the ‘one size fits all approach’ in IR and proposed that the report should be “more targeted” [M4] and customized for different investor groups and industries [M9]. Two expressed doubts as to whether IR was equally applicable to all industries and business models.

Reflective of one manager’s statement that for SMEs, it was “actually not an issue yet” [M9], the majority believed that their firms were “too small” [M4], they operated only “in mid-sized business” [M7] and that it was more relevant for

larger firms which should undertake the transition to IR first. The underlying rationale is fear of the administrative burden and the costs incurred for IR preparation and the implementation of the corresponding infrastructure, which constitutes the third major inhibitor of IR adoption. Given that SMEs possess only limited financial resources and often lack specific expertise and necessary time, one manager exemplarily stated: “For us, as a relatively small corporation, preparing an IR would be a tremendous challenge. Where would we obtain the necessary resources for this?” [M10]. Similar opinions voiced by other interviewees – “If I think about a firm, especially a SME firm, how much effort is needed? How many employees would it take to write such a report?” [M15] and “To my mind, the added value will not cover the costs incurred” [M5] – substantiated that expense was a major driver of the underlying ‘good idea, but not for us’ attitude.

5.3 It’s Not All About Money - The Stakeholder Accountability Perspective

Contrary to initial expectations, social and stakeholder accountability played only a subordinate role in managers’ thoughts about IR (which explains the apparent yawning chasm between the length of the preceding business case and this stakeholder accountability section). Aside from the predominant business case focus prevailing among most executives, several managers deployed a somewhat less economic-driven logic and alluded to non-economic “moral aspects” [M16] as kindling their theoretical interest in IR. As is customary among SMEs, some interlocutors expected “the personal attitude” [M4] and the intrinsic ideology of managers or firm owners to contribute to the likelihood of IR adoption or, at least, to influence interest in the new reporting initiative. In this sense, a few managers took the view that corporate engagement in sustainable behavior (and subsequently reporting thereon) should not be commercially driven, but should be rooted in an ethical managerial belief in genuine stakeholder accountability. Reflecting upon his firm’s motives for the sustainability (reporting) strategy, one manager stated:

We never had the sense of outside pressure. No, we are just committed to it [sustainability], even without deriving any particular or at least any quantifiable benefit from it. [M8]

Against this backdrop, another manager contemplatively commented that, to him, the principle of IR was “not about cultivating investor relations in the broadest sense, but rather to live the idea that stakeholder value is more than just a share price or a dividend” [M13]. He conscientiously went on to say: “IR makes sense to me if I am committed to corporate values and want to be held accountable for these values by my stakeholders” [M13].

In sum, a few managers regarded IR as not (only) interesting as a business case, but alluded much more to its potential role as a multilayered reporting medium and part of their responsibility to society. Nevertheless, the results clearly demonstrate that economically driven desires and quests for legitimacy significantly overshadow any stakeholder accountability aspirations.

5.4 Neither Fish nor Fowl - A Critical Theory Reflection on the Results

Contrary to expectations, most managers adopted only weak accountability reasoning, while their theoretical interest in IR was deeply rooted in a business case imperative with a particular emphasis on legitimacy-based motivations. Instead of ‘doing good’ (‘altruistic/pure’ stakeholder accountability), most managers’ rhetorical interest in IR was triggered by either the intention of ‘doing good while/by doing well’ (‘economic’ stakeholder accountability) or the aim to purposefully exploit the voluntary reporting initiative *‘for doing well’* (‘enlightened self-interest’, business case). Although stakeholder accountability theorists believe in mutually beneficial stakeholder-business relationships that may translate into harmony between business motivations and stakeholder accountability, results reveal a distinct business case focus on IR, which might be married to stakeholder accountability (if not precluding economic benefits). The dichotomy of personal values and business motivations shows how little has changed over time throughout the development of novel SEAR innovations. While SEAR concepts were developed with the initial aim of increasing

transparency and stakeholder accountability, in practice, these initiatives seem to (still) fall victim to economic rationality, including among SMEs. This is akin to findings of prior critical landmark studies, such as O'Dwyer's (2003) notion of 'enlightened self-interest', Livesey's (2002) statement that SEAR practice is self-serving and only accidentally fosters corporate greening, as well as Spence's (2007, p.855) conclusion that business case considerations "shape and constrain the ideologies" of SEAR. Guided by Deegan's (2002) reflections on the discrepancy between what corporate reports are and what they claim/pretend to be, one may establish an almost philosophical debate on whether stakeholder accountability can exist when business imperatives prevail. It seems that, at present, IR is captured somewhere between economically motivated opportunism (business case) and idealism (stakeholder accountability). However, as the findings show, IR seems to be neither expedient from a business case (when it comes to realizing business case virtues, managers regard IR as an 'ideological weapon' that nobody cares about and is unable to match user needs), nor from an idealist perspective (managers' interest in IR for reasons of stakeholder accountability is minuscule). Literally speaking, currently IR is neither fish nor fowl.

According to critical theorists, unstable and imperfect reporting initiatives will either vanish into thin air or evolve over time (Burritt and Schaltegger, 2010). It may be noted at this juncture, that earlier SEAR initiatives have come a long way and have overcome many initial hurdles. In the light of this study's findings, critical theorists would insist on the necessity for IR and its standard-setting body, the IIRC, to induce a paradigm shift. A substantial reorientation towards stakeholder accountability and a renunciation of prevailing investor-centered power relations would allow the continuation of the journey towards more transparency and accountability that previous SEAR initiatives have begun to embark on over the last 40 years (Milne and Gray, 2013). This aligns with Brown et al. (2020) who claim that the business case framing in IR needs to be challenged through more pluralist approaches to sustainability and requires a re-definition of value (see also Flower's (2015) discussion on 'value for whom?'). A re-configuration of the <IR> Framework provides the opportunity to develop a reporting concept that is tailored to actual user needs, read by the relevant

publics and contains decision-useful information to establish itself as a relevant medium for investors.

The belief in the prospective potential of IR is apparently shared by SME leaders, who, in spite of the challenges presently surrounding IR, predict a rosy future for the upcoming reporting phenomenon. In particular, the majority of managers expected IR to have an increasing relevance for firms, investors, stakeholders and society in the future. For example, one thought that IR “will be *the* future” [M6] of corporate reporting, while another stated: “I am convinced that IR will gain greater importance, not at a gallop, but steadily” [M13]. In the eyes of the managers, however, this is not least also due to isomorphic processes (DiMaggio and Powell, 1983) that are assumed to encourage IR diffusion, such as legal regulation (coercive isomorphism) and peer pressure within industries (mimetic isomorphism). Against this backdrop, some managers expected a ‘de facto regulatory pressure’ as soon as either a critical mass or a “best practice” [M1] solution emerges that would impel other corporations to react in an isomorphic way to the “voluntary duty” [M2] of IR. Others even expected IR to become mandatory in the future for both large firms and SMEs as a result of legislative reform efforts. According to one interlocutor [M1], the first IR-spurring step has already been taken by the EU disclosure directive (2014/95/EU).

I am firmly convinced that integrated reporting will gain more prominence in future. One can see that through other regulations, that have not been obligatory before, but nowadays likewise apply to SMEs. [M9]

In sum, despite a variety of opinions held by a variety of managers that have gained a variety of practical experience over time, there seems to be one unanimous agreement: IR might morph into a real alternative to incumbent corporate reporting formats, but it will be an “arduous journey” [M14] as there is a long way to go and many challenges to overcome.

6. Discussion and Conclusion

This study explored managerial perspectives in order to understand why IR has yet not achieved momentum in practice, despite being extolled as *the* evolution in corporate reporting by its proponents. To this purpose, the study deliberately examined the views of managers of large non-IR preparing SMEs at first hand in order to contrast expected benefits with the challenges that *actually* prevent firms from embarking on IR. It intended to gather explorative insights on the status quo of IR that not only relate to the small number of current IR appliers, but might be regarded as conduits that apply to a plethora of firms that either have not yet engaged in or deliberately refrain from IR adoption. Further, it is of merit to thoroughly balance out rather etic theoretical explanations with a more emic perspective from practice given that, in the past, the development of reporting theories has often been ‘desk-based’, without engaging with organizations (Owen, 2008).

In contrast to the handful of extant studies, which reveal that SMEs’ IR adoption was driven by a genuine desire for stakeholder accountability, the findings indicate that managers’ rhetorical interest in IR strongly centers around business case endeavors. In particular, IR is regarded as a potentially valuable tool to improve corporate image and achieve legitimacy, especially when firms have been denounced for earlier misconduct. When it comes to identifying the beneficiaries of IR, managers place a particular emphasis on financial stakeholders and employees, which aligns with both the strong investor focus of the <IR> Framework (2013) and the ‘war for talents’ that renders employees a scarce resource, especially for SMEs (Krishnan and Scullion, 2017). However, despite the managers’ generally favorable opinion on the future of IR and the other incidental benefits they mentioned (e.g., competitive advantages, customer awareness and internal re-organization), they continue to take a ‘watch and wait brief’ and apparently refrain from applying the novel reporting medium.

However, results show that what may seem paradoxical at first glance tends to be, upon closer inspection, a rational management decision that balances expected benefits against more severe barriers. In practical terms, managers saw

the business case for IR, voiced demands for legitimacy and, very sporadically, pointed towards a moral obligation of stakeholder accountability, but shared the view that, in its current form, IR is not a suitable tool to achieve these goals. They gave three reasons: first, managers voiced a perceived *lack of interest by the relevant publics*, as they generally doubted the (considerably overestimated) relevance of corporate reports for their engagement with their stakeholders. Second, SME leaders expressed concerns that IR was *unable to meet user needs* and belabored the lack of guidance, complexity and rigidity of the reporting framework, the current report appearance (lengthy, barely readable) and managerial capture of the IR agenda. Finally, managers feared the administrative and financial burden would materialize in disproportionately high *reporting costs* for SMEs. The scarcity of resources might explain why, attracted by the idea of IR, a small handful of firms have begun to interconnect corporate value drivers ('IR walk'), but refrain from preparing an integrated report ('IR talk') and instead pursue a 'strategy of silence' (Nielsen and Thomsen, 2009; Baumann-Pauly et al., 2013).

A brief glance at the related SEAR literature suggests that the challenges voiced by the managers resemble those that firms encountered in the past with the emerging 'trend' of CSR reporting. Hence, one might infer that evolving reporting formats tend to follow similar paths and barriers throughout their development (Tschopp and Huefner, 2015). This implies that, from a meta perspective, the results of this study might not only apply to the timely phenomenon of IR, but may be seen as more widely applicable and potentially useful in the study of any past and any future voluntary reporting initiative. However, one should also note that, as yet, IR has not only failed to achieve supremacy as envisaged by its proponents, but that in the light of its drawbacks it is highly questionable whether IR in its current form can be considered an 'evolution' in reporting. Given that these challenges *actually* prevent firms from embarking on IR, they should not be considered simply as short-term 'teething problems': they need to be addressed by regulators and standard setters. Referring to Lodhia's (2015) view that the future of IR will be determined by solving its challenges, the IIRC should endeavor to take advantage of the lessons learnt from CSR practice,

especially since Brown and Dillard (2014, p.1135) state that, as yet, “the IIRC, ostensibly building on the GRI, makes no attempt to engage with critiques of GRI reports”. Hence, if the IIRC fails to learn from previous reporting regime successes and problems, then IR may be fated to become a historical academic curiosity rather than a vibrant and essential part of business reporting.

The results of this study point the way to several relevant implications and recommendations that could contribute to the future development of IR and might be carefully taken into consideration by the IIRC in its announced revision of the <IR> Framework by the end of 2020 (IIRC, 2020). The discussion of the results from a critical theory lens has led to the conclusion that, at present, IR is neither fish nor fowl: an ‘ideological weapon’ when it comes to realizing business case goals and ineffective as regards stakeholder accountability. This aligns with recent work by Dumay et al. (2017), who criticize the <IR> Framework in its current form as constituting a ‘double-edged sword’ as the guidance it provides seems insufficiently developed to actually benefit firms. Based on our findings, we suggest a two-stage revision process of the <IR> Framework, consisting of an overarching paradigm shift that puts stakeholder accountability at the core and an operational fine adjustment to increase the feasibility of the IR concept.

In the light of the dominant business case allegations voiced by the managers, the IIRC should be eager to publicize that IR is about more than just corporate image and shareholder wealth maximization. With the introduction of a paradigm shift that puts stakeholder accountability at the core, the IIRC can take the opportunity to carry forward the transition from shareholder orientation to stakeholder inclusion, and make every effort to raise the new reporting medium to a higher level of accountability for society. However, given that IR currently seems to be trapped between economically motivated opportunism and idealism, this will require a substantial, particularly ideological, rethinking. A successful rethinking process implies the necessity for the IIRC to demolish prevailing power imbalances and to refrain from professional capture, for instance, by enriching its board with more corporate representatives and managers that could contribute their perceptions of IR (Chaidali and Jones,

2017). This view is shared by Flower (2015), who suggests that the dominant business case framing of the <IR> Framework is due to a division in the IIRC where power imbalances prevail in favor of ‘realists’ (i.e. accounting professional, regulators, preparers), who overrule ‘idealists’ (i.e. advocates of SEAR). Hence, the future of <IR> might be at an important juncture. The long overdue paradigm shift might prevent IR from becoming just another (anachronistic and vanishing) ill-equipped mainstream accounting tool for corporate legitimacy that is captured by dominant elites (Brown et al., 2020) and fails to focus on the actual contemporary problems of modern society, such as global warming, biodiversity loss, waste of resources and poverty, thereby missing the opportunity to *really* make a difference.

With respect to an operational re-configuration, the IIRC should consider the development of a ‘light’ version of the <IR> Framework or revising it on a modular basis, which would offer various advantages. At this juncture, the IIRC might learn from the past experience of the GRI with the revision of their standards: firms can choose between a comprehensive (i.e. long form) and core (i.e. reduced form) form or a GRI-referenced claim (to report on specific information only, such as a specific capital in the IR context). A scaled-down or modular application of IR arguably alleviates a major entry barrier as it allows SMEs and first adopters to report in a more concise and less costly way. In particular, this attempt might coax especially those managers who showed strong interest in IR and/or even undertook first attempts to implement IR elements to transit from an ‘IR walk’ to an ‘IR talk’, which in turn would contribute to achieving a critical mass of IR reporters. Further, in the light of criticism of the ‘one size fits all approach’ and doubts that the <IR> Framework is not fit-for-purpose for SMEs, a revised framework would allow firms to prioritize those areas particular relevant to their specific milieu. Thinking one step further, in order to address the perceived lack of stakeholder interest in corporate (integrated) reports, the IIRC might not only propose ongoing stakeholder dialogue, but also foster stakeholder participation in the corporate IR process. This might result in a higher interest of the relevant publics.

There are several directions in which research could proceed. While managers predominantly believe that IR would neither meet user needs nor was suitable to address their relevant publics, it remains to be explored whether their opinions also coincide with those of IR addressees, which should be sought in future research. Future explorative studies should carefully identify user groups in IR and subsequently engage with their views and needs in order to prevent the revision of the <IR> Framework from being either desk-based or captured by preparer needs. Corresponding research might be guided by questions, such as: who are the users of integrated reports? What are the reasons for and the conditions that determine their potential engagement with/interest in reading integrated reports? What needs to be changed in current IR practice to achieve increasing popularity? Finally, future studies should spend further efforts on deepening this study's findings on the fragile managerial beliefs in the business case property of IR.

Like all empirical investigations, the results of this study should be considered in light of its limitations. First, as is common in qualitative inquiries, the research is limited by its sample size and selection. While this study purposefully focuses on managers of large SMEs that, as yet, do not compile integrated reports, it is unclear as to how far the findings are generalizable to managers of either smaller SMEs or those of large public interest enterprises. Second, noting that the managers inherently had different levels of knowledge of and excitement about IR, the interlocutors potentially have found themselves in divergent stages of mental 'IR acceptance' (e.g., denial/compliance according to Zadek (2004) or defensive/proactive according to Shabana et al. (2016)), which might have affected the results. Third, this study relies on interviews only, which might lead to a limited validity of results and should be extended by experiments or archival data in further research. Fourth, due to the study's specific focus on managers, it is acknowledged that their attitudes might not coincide with those of a firm's other stakeholders. Finally, the interviews were conducted in a specific time period; as such the results might be restricted to this.

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Interviewee code	Industry	Firm size (Revenue in €)	Capital market orientation		Manager's hierarchical level		Profession / Position within company
			yes	no	1st level	2nd level	
M1	Trade	> 1bn	✓			✓	Head of Investor Relations
M2	Financial Services	15m - 100m		✗	✓		CEO
M3	Service Provider	15m - 100m		✗	✓		CFO
M4	Trade	250m - 500m		✗		✓	Commercial Director
M5	Service Provider	100m - 250m	✓			✓	Vicepresident Accounting & Tax
M6	Logistics	15m - 100m		✗		✓	Director Finance; Deputy Managing Director
M7	Manufacturing	100m - 250m		✗		✓	Head of Finance & Controlling; Executive Director
M8	Logistics	> 1bn	✓			✓	Head of Finance
M9	Manufacturing/Logistics	250m - 500m		✗		✓	Commercial Director
M10	Financial Services	100m - 250m	✓			✓	Director Innovation & Business Development
M11	Service Provider	15m - 100m		✗	✓		CFO
M12	Pharmaceuticals	250m - 500m		✗		✓	Commercial Director
M13	Trade	500m - 1bn		✗		✓	Director Finance & Risk Management
M14	Manufacturing	250m - 500m		✗		✓	Commercial Director
M15	Manufacturing	250m - 500m		✗		✓	Commercial Director
M16	Financial Services	100m - 250m	✓		✓		CEO

Table 1: Description of Participants.

Table 1 presents the interviewee codes (M1-M16) as well as corresponding information relating to the interlocutors with respect to industry, firm size, capital market orientation of the firm, as well as the manager's hierarchical level and his/her profession within the corporation.

Annex 3: Does it pay off? Integrated Reporting and cost of debt: European Evidence (article 3)

Abstract²²

Although the <IR> (Integrated Reporting) Framework defines providers of financial capital as both equity and debt holders, there is a distinct lack of research on the association between IR and debt. This study is the first to examine the effect of the voluntary preparation of an integrated report on the marginal cost of public debt. From an agency theoretical standpoint, we assume that IR decreases information asymmetries, facilitates lenders' assessments of a firm's risk of default, and thus is negatively related to a firm's cost of public debt. On the basis of a European sample, consisting of 2,196 firm-year observations between 2015 and 2017, we find that IR significantly decreases a firm's cost of debt. In subsequent moderation analyses, the results reveal that this effect (a) is stronger for firms with lower ESG performance and (b) holds only for firms operating in environmentally sensitive industries. The results are robust to a battery of statistical models. We expand on earlier empirical literature on IR and provide valuable implications for research, practice, and standard setting.

Keywords

Integrated reporting, cost of debt, risk of default, corporate social responsibility, sustainability performance, environmental performance

JEL classification

G14, G32, M14, M41, Q51

²² The style, form and citation style are in accordance with the individual journal guidelines and hence may differ from the other parts of this dissertation.

1. Introduction

In line with traditional accounting literature, Mazumdar and Sengupta (2005, p.83) suggest that “companies that consistently make detailed, timely, and informative disclosures” face a lower cost of debt. In theory, these disclosures mitigate information asymmetries between management and creditors and thereby reduce lenders’ perception of default risk (Sengupta, 1998). In line with the growing relevance of nonfinancial information for investors (Wahba, 2008; Dhaliwal et al., 2011; El Ghouli et al., 2011; Berthelot et al., 2012; Ioannou and Serafeim, 2015; Miralles-Quiros et al., 2019; Aureli et al., 2020), debt providers are increasingly demanding ‘soft information’ in debt contracting (Grunert et al., 2005; Oikonomou et al., 2014) since it “can lead to more accurate predictions of corporate credit quality, compared with the sole use of purely financial factors” (Hoepner et al., 2016, p.162). However, critical scholars are increasingly calling into question the decision usefulness of present financial and nonfinancial reporting due to high degrees of heterogeneity, disconnectedness, and information overload (Miller, 2010; de Villiers et al., 2014).

In response to the shortcomings in present corporate reporting, an increasing number of European firms are voluntarily adopting IR (Eccles and Krzus, 2010; Dumay et al., 2016; Velte and Stawinoga, 2017), primarily in alignment with the principle-based <IR> Framework put forth by the standard-setting body International Integrated Reporting Council (IIRC). By connecting all material financial and nonfinancial information that determine a firm’s ability to create value over the short, medium and long term into one cohesive business report, IR intends to increase the decision usefulness and transparency of the information disclosed to investors (IIRC, 2013; Garcia-Sanchez et al., 2019a; Vitolla et al., 2019a). In accordance with IR’s primary focus on providers of financial capital and its aim to increase capital allocation efficiency (IIRC, 2013), the preparation of an integrated report has been shown to decrease information asymmetries (Frias-Aceituno et al., 2014; Lee and Yeo, 2016; Garcia-Sanchez and Noguera-Gamez, 2017) and to result in positive capital market reactions, such as increased firm value (Lee and Yeo, 2016; Barth et al., 2017; Gal and Akisik, 2020), higher stock liquidity (Barth et al., 2017), less transient investors

(Serafeim, 2015), higher analyst forecast accuracy, lower cost of equity (Zhou et al., 2017), and a lower weighted average cost of capital (Vena et al., 2020).

Nevertheless, although the IIRC in its <IR> Framework (2013) defines providers of financial capital as “equity and *debt holders* and others who provide financial capital, both existing and potential, including lenders and other creditors” (IIRC, 2013, p.33, emphasis added), there is a distinct lack of research on the association between IR and creditors. The only exceptions are Lai et al. (2018), who find in a qualitative inquiry that IR preparers intend to provide information that facilitates debt holders’ assessment of a firm’s default risk, and Grassmann et al. (2019), who explore that firms that rely on debt financing show greater degrees of information connectivity in integrated reports. This research scarcity is particularly surprising given the various IR-specific properties that assumedly help investors in their assessment of the investment opportunity. Specifically, the joint presentation of intertwined financial and nonfinancial information should deliver insights and metrics that are incremental to the disconnected strands of the annual and sustainability report. Moreover, it is reasonable to assume that the integrated thinking approach in IR leads to a better integration of information systems and governance within corporate strategy, which should materialize into higher levels of corporate control. Besides, the distinct risk management focus in IR can be assumed to help debt investors to better assess and evaluate material risks, while the forward-looking perspective “into the organization’s strategy and how it relates to the organization’s ability to create value” (IIRC, 2013, p.5) should allow for more precise estimates of the firm’s future performance and, in consequence, future cash flows.

Given the high relevance of the debt market for European firms (Pagano and von Thadden, 2004; Cascino et al., 2014), this study investigates the effect of voluntary IR engagement on a firm’s marginal cost of public debt in a European setting with a sample of 2,196 firm-year observations between 2015 and 2017. In line with our expectation, the results reveal that engaging in IR is associated with significantly lower cost of debt. This suggests that the preparation of an integrated report provides information incremental to traditional reporting,

which may lead to a better assessability of lenders' investment risk. Moreover, we find that this association (i) is stronger for firms with lower environmental, social and governance (ESG) performance scores and (ii) only applies to firms operating in environmentally sensitive industries, which can avail themselves of IR to offset the industry-specific borrowing risk premium. Our results are robust to a battery of different empirical models, such as hierarchical linear modeling, as well as the inclusion of additional variables and propensity score matching (PSM) to address potential concerns due to endogeneity bias.

This study contributes to the contemporary debate on IR in the following ways: first, this is the first empirical quantitative study investigating the effect of IR on a firm's cost of debt. In doing so, this study provides contemporary insights that contribute to extant debt financing literature and add to the small academic research body to investigate the implications of voluntary reporting initiatives for firms' cost of borrowing. In the light of the high relevance of debt markets for firms – financial leverage metrics (e.g. gearing ratio, debt-equity ratio) and capital structures corroborate that most firms are largely debt financed (Andrikopoulos and Kriklani, 2013; Harjoto, 2017; Garcia-Sanchez et al., 2019b) – the results may provide additional momentum to the IR journey. Second, this study refines extant research on the value relevance of IR by delivering implications derived from the explicit examination of the non-additivity between covariates. Specifically, the results suggest that the value relevance of IR depends on and is moderated by two context factors, namely ESG performance and industry affiliation. Accordingly, the results imply that the value function of IR is context-specific. Third, this study provides valuable implications for firms, investors, standard setters, and regulators, and responds to various academic and practice-oriented calls for research on IR (de Villiers et al., 2014).

The remainder of this study is structured as follows: in section 2, we briefly provide the theoretical background. In section 3, we discuss related literature and derive our hypotheses. In the following part, we describe our methodology, which comprises the sample selection, variable definitions and the specification of the empirical models. Subsequently, in section 5, we present our empirical

results and provide different robustness tests. In the final section, we discuss our results and give concluding remarks.

2. Theoretical Background

According to principal agency theory (Jensen and Meckling, 1976), lenders (principal) entrust their money to a firm (agent) in the expectation of receiving back the money as well as an interest payment that compensates for the risk of capital provision. In line with the classical agency-theoretical assumptions, the opportunistic agent has an information advantage over the principal, which results in information asymmetry between the parties. In order to reduce the resulting risk of moral hazard to a minimum, lenders, who are interested in both a timely repayment of the principal and a risk-adequate interest, base the likelihood and terms of lending on their assessment of potential financial distress, which determines the firm's future performance, its expected future cash flows, and its ability to repay the obligation (Wang and Li, 2015; Gong et al., 2018). Since creditors, as an outside party to the company, face high information asymmetries and have only limited access to a firm's private information, they build their estimate of potential financial distress on the publicly available information (Leftwich et al., 1981). Thus, if decision-useful information is either absent (higher risk of moral hazard) or difficult to access (higher agency costs), investors impose bonding arrangements or demand an interest premium (Cheng et al., 2014; Guidara et al., 2014). This is particularly the case for investors in the public bond market, who, compared to 'delegated' private lenders, such as banks and insurance companies, often incur high transaction costs in evaluating borrowers' default risk. These occur when relevant information is absent due to (a) missing access to nonpublic, proprietary information, (b) an inability to provide tailored debt obligations, or (c) a lack of economies of scale in screening information-problematic firms (Diamond, 1984; Ramakrishnan and Thakor, 1984; Dhaliwal et al., 2011; Ge and Liu, 2015). Hence follows that, from an agency theoretical lens, firms should make detailed and informative disclosures (Mazumdar and Sengupta, 2005) to decrease costly information asymmetries between management and creditors, reduce agency costs, increase transparency, and prevent adverse selection (Verrecchia, 1983; Dye, 1985).

Aside from the restricted access to information, voluntary disclosures have an additional effect that can be derived from agency theory. Due to structural differences between equity and debt holders, lenders are particularly exposed to the risk that the agent opportunistically redistributes wealth at the expense of creditors (hidden intention), for instance through underinvestment, asset substitution, overinvestment, or wealth expropriation (Gelb and Strawser, 2001; Armstrong et al., 2010; Benlemlih, 2017). While equity investors have residual claims on a firm's net assets resulting in an unlimited upside potential of their investment, debt providers' returns are limited on both the upside and downside, resulting in an asymmetric payoff function and a higher sensitivity to downside risk (Dhaliwal et al., 2011; Ge et al., 2012; Cascino et al., 2014; Benlemlih, 2017). Against this backdrop, voluntary disclosures and reporting transparency serve as a bonding mechanism that reduces creditors' monitoring costs, mitigates conflicts of interest arising from structural differences, and may lead management to eschew actions that are detrimental to creditors. By means of voluntary disclosures, management can signal the will for transparency and overcome information asymmetry (Spence, 1973; Morris, 1987). Against this backdrop, Gong et al. (2018) reveal that, for bondholders, the signaling effect of voluntarily reported items is particularly strong compared to mandatory disclosures. Given that corporate disclosure is positively associated with both a firm's financial/nonfinancial performance and managements' confidence in future prospects (Gelb and Strawser, 2001; Malik, 2015), voluntary disclosures may signal to bond investors the advantageousness of the investment opportunity.

3. Related Literature and Hypotheses Development

In line with the overarching argument of this study, the specific properties of IR are assumed to qualify the novel reporting medium as a more efficient valuation instrument for investment opportunities compared to present isolated and disconnected financial and corporate social responsibility (CSR) reports (de Villiers et al., 2014). Through the disclosure of an integrated report, management can provide information that is particularly relevant to creditors (e.g., risk management focus, future orientation) and decreases costly information asymmetries that otherwise would result in a risk premium.

By its very nature, an integrated report intends to serve as an information memorandum that provides all information that is material for debt investors' assessment of a firm's success in a transparent, condensed and decision-useful manner within a single (and ideally succinct) document. Given that debt investors, due to the asymmetric payoff function, are particularly interested in limiting the downside risk of their investment (Dhaliwal et al., 2011; Ge et al., 2012), IR may contribute to better identifying factors that impair the firm's debt repayment capacity. While the <IR> Framework stresses that firms need to clearly set out both expected risks and mitigation strategies in their integrated report (IIRC, 2013), several studies emphasize that IR significantly enhances corporate risk management (e.g., de Villiers et al., 2014; Adams, 2015; Lee and Yeo, 2016). Hence, with its risk management focus, IR should provide additional information that is particularly relevant to debt investors. Moreover, while the backward orientation in present financial and nonfinancial reporting adds little value for predicting the firm's prospective success, the future-oriented focus in IR should allow for a more precise estimate of future cash flows and a better assessment of the future viability of the business model. Aside from a better assessability of material risks and future opportunities, by interconnecting the firm's capitals (financial, manufactured, intellectual, human, social and relational, natural), the integrated report discloses associations between corporate value drivers that previously have been unrecognized and thereby provides information incremental to traditional reporting (IIRC, 2013).

An avalanche of academic studies has reported this incremental value of IR. Garcia-Sanchez and Noguera-Gamez (2017), for instance, find a negative association between voluntary IR and the degree of information asymmetry. They argue that IR mitigates agency costs and leads to a better information environment for investors. Likewise, Cortesi and Vena (2019) confirm that the voluntary adoption of IR decreases information asymmetries and is rewarded by shareholders, who trade shares of IR-compiling firms at a premium. In a similar vein, Lee and Yeo (2016) reveal that IR and firm value are positively associated, especially among firms with high organizational complexity and external financing needs, indicating that IR leads to lower information processing costs for

investors. Barth et al. (2017) point out that firms with higher IR quality enjoy lower information asymmetry and have greater investment efficiency. Flores et al. (2019) find that IR leads to more accurate earnings forecasts by analysts. Similarly, Zhou et al. (2017) show that a firm's level of alignment to the <IR> Framework is negatively related to analyst forecast errors and forecast dispersion, and leads to lower cost of equity. While Vena et al. (2020) point out that IR adopters face a significantly lower weighted average cost of capital, Akisik and Gal (2019) provide evidence that IR adopters show a higher financial performance as focal firms enjoy significantly higher stock price growths.

However, none of these studies has engaged with either debt providers or corporate borrowing costs, respectively. The integrated thinking approach in IR as well as corresponding decreases in information asymmetry led Carvalho and Murcia (2016) to postulate that IR adoption should lower the cost of a company's debt. Following the qualitative inquiry by Lai et al. (2018), IR preparers perceive an integrated report to particularly provide "information about business models and strategy [that] would not appear in traditional reports" and reveal that "debt investors, who tend to be the most sophisticated, interested, and technically prepared recipients, need insights into the possibility of a 'loss default', so they seek to know (by reading the IR) what the corporate strategy is, where corporate investments are going, and whether any interruption in going concerns is possible" (p.1394). Grassmann et al. (2019) show that firms with higher leverage are more likely to disclose integrated reports with high connectivity of information, which, according to the authors, facilitates credit risk analyses and decreases information-processing costs. As additional indicative evidence, two related studies found that conatural reporting concepts, such as CSR disclosure quality (Gong et al., 2018) and corporate governance disclosure (Guidara et al., 2014), are negatively associated with corporate cost of debt. However, in sum, the findings lend support for the view that IR decreases information asymmetries and thereby adds incremental information that leads to a better assessability of the investment risk and diminishes the risk premium demanded by debt providers (Merton, 1987; Dhaliwal et al., 2011; Gong et al., 2018).

H1: There is a negative relationship between IR and cost of debt.

In line with the insurance-like property of a firm's CSR (Godfrey, 2005; Godfrey et al., 2009) leading to a moral goodwill in case of sanctions and scandals, prior literature suggests a negative association between a firm's CSR performance and its cost of debt (El Ghoul et al., 2011; Jo and Na 2012; Cai et al., 2012). In this sense, prior studies reveal that good CSR performance decreases the (actual and perceived) firm risk due to (a) a lower likelihood of lawsuits and penalizing regulations (Orlitzky and Benjamin, 2001), (b) decreased operations-, product- and technology-related risks (Starks, 2009; Malik, 2015), and (c) lower levels of financial risk (Oikonomou et al., 2012). Moreover, CSR has been shown to result in better long-run growth perspectives and higher firm stability (Gregory et al., 2014; Benlemlih, 2017), which lead to positive future cash flows and, in turn, a higher likelihood of repaying the obligation. For this reason, in line with agency theory, the disclosure of CSR information should lead to lower information asymmetry, a better assessability of the firm's CSR performance, and, in consequence, lower cost of lending. Confirmatory, Attig et al. (2013) and Jiraporn et al. (2014) reveal that firms with higher CSR performance are rewarded with better credit ratings. Agreeing, Ge and Liu (2015), Hsu and Chen (2015) and La Rosa et al. (2018) show that socially responsible firms enjoy lower interest rates and (marginal) bond spreads. Ye and Zhang (2011) find that firms with either extremely low or extremely high CSR scores incur higher debt financing costs, which aligns with Cho et al. (2013) who argue that particularly positive and negative CSR information reduces information asymmetry.

As yet, the relation between a firm's sustainability performance and its cost of debt is still uninvestigated in an IR context, although CSR performance and IR are closely related. For example, Lai et al. (2016) show that IR adopters have significantly higher ESG disclosure ratings compared to non-adopters, which helps to signal commitment to sustainability and to address the increasing demand for sustainability (Burke and Clark, 2016). In line with the risk management property of IR, Churet and Eccles (2014, p.60-61) conclude that "companies that proactively manage the risks and opportunities arising from

social and environmental issues are also more likely to communicate on sustainability issues in an integrated way”. Relating to the disclosure efficiency of ESG performance, Maniora (2017) finds that IR is a superior mechanism for integrating ESG issues into the core business model when ESG reporting is either absent or is included in the annual report. Arnold et al. (2012) reveal that IR leads to a stronger valuation of the ESG performance by professional investors. Similarly, Mervelskemper and Streit (2017, p.546) find that IR amplifies the “market valuation of a firm’s composite ESG and corporate governance performance to an economically and statistically significant extent at no additional costs”.

Given the ability of IR to strengthen the valuation of corporate sustainability performance, we assume that a firm’s ESG performance moderates the association between IR and a firm’s cost of debt. In particular, we expect the effect of IR on a firm’s cost of debt to be stronger for firms with lower ESG ratings compared to those with a good sustainability performance. Hence follows that the marginal utility of the information derived from the integrated report should be larger (and should have a stronger signaling function) for firms with lower sustainability performance. The underlying rationale is as follows: as previously described, bond investors impose an interest premium for firms with lower (or unknown) sustainability performance (higher information asymmetry), as this implies additional risk to the firm’s ability to repay future obligations. If firms with a low (expected) sustainability performance provide detailed information about their sustainability contribution, their assessment of ESG-related risks and mitigation strategies in their integrated report, this leads to a disproportionately high reduction in both information asymmetry and agency costs, which should decrease debt investors’ downside risk and the interest premium demanded. Accordingly, we pose the following hypothesis:

H2a: The negative association between IR and cost of debt is stronger for firms with lower ESG performance.

Comparable to the relevance of a firm's sustainability performance in determining its idiosyncratic risk, prior literature shows that firms operating in environmentally sensitive industries are regarded as especially risky and face greater exposure and scrutiny by the markets (Cho and Patten, 2007; El Ghouli et al., 2011; Guenster et al., 2011). Against this backdrop, Oikonomou et al. (2012) find that firms with higher environmental strengths are less exposed to systematic and litigation risk. Ge and Liu (2015) find that bondholders are more attentive to firms in environmentally 'sinful' industries. Given that firms in industries more subject to litigation are more likely to be penalized through withdrawal of capital or higher debt interest rates (Goss and Roberts, 2011; Chava, 2014; Du et al., 2015), the increased likelihood of environmental 'sin' firms to engage in IR might be a means to signal social contribution (Stacchezzini et al., 2016; Fasan and Mio, 2017; Rivera-Arrubla et al., 2017). Thus, assuming that industry affiliation moderates the association between cost of debt and IR, we expect the disclosure of an integrated report by a firm operating in an environmentally sensitive industry to lead to a disproportionately higher reduction in information asymmetry and agency costs, which, in consequence, should result in stronger decreases in bond investors' assessment of the downside risk and the interest premium levied. Accordingly, we pose the following hypothesis:

H2b: The negative association between IR and cost of debt is stronger for firms operating in environmentally sensitive industries.

4. Methodology

4.1 Sample Selection

Our initial sample comprised all publicly listed European firms with Datastream coverage of their ESG scores between 2015 and 2017, amounting to 3,404 firm-year observations of 1,235 firms. The sampling period was determined by the non-availability of different debt-specific variables prior to the financial year of 2015. Subsequently, we excluded 824 firm-year observations belonging to the financial service industry (SIC 6000-6999) as prior studies have revealed that these firms differ substantially with respect to (a) their asset structure and

financial leverage, (b) their accounting standards, (c) their disclosure regulation and supervision, and, correspondingly, (d) their capital structure and (re-)financing costs (Fama and French, 1992; Barth et al., 2004; Benlemlih, 2017). After excluding 384 observations due to missing data, the final sample consists of 2,196 firm-year observations of 834 firms between 2015 and 2017. As presented in Table 1, the firm-year observations are similarly distributed over time (2015: 707, 2016: 743, 2017: 746, Panel B), belong to 28 European countries (Panel C) and are heterogeneous with respect to their industry division (Panel D).

[insert Table 1 here]

4.2 Variable Definitions

Dependent variable

Our dependent variable, cost of debt (COD), is derived from Thomson Reuters StarMine Analytics and represents a firm's marginal cost of raising new public debt in its current economic environment while taking into consideration different company-specific information regarding its industry, currency and credit rating. In the absence of a specific credit rating, COD is estimated with StarMine's Combined Credit Risk model; this incorporates proprietary information from different credit risk models (StarMine Structural-, SmartRatios-, and Text Mining Risk Model) in order to most precisely estimate a firm's probability of default or bankruptcy by choosing the credit curve that best matches the company's individual credit risk. Specifically, the marginal COD is calculated as follows:

$$\text{COD} = (K_{\text{short}} * W_{\text{short}} + K_{\text{long}} * W_{\text{long}}) * (1 - \varphi),$$

where K_{short} is the pre-tax, short-term debt cost, which we take to equal the one-year yield on the appropriate credit curve for the company, K_{long} is the pre-tax, long-term debt cost, which we take to equal the ten-year yield on the appropriate credit curve, W_{short} and W_{long} are the fractions of the company's short-term and long-term debt, respectively, and φ is the effective tax rate for the company (see Table 2 for variable definitions).

[insert Table 2 here]

Explanatory variables

We define IR_IIRC as a hand-collected dichotomous variable with the value, 1, if the firm discloses an integrated report in the corresponding year, t , with a clear reference to the IIRC's <IR> Framework (2013), and 0, otherwise (Gerwanski et al., 2019). For this purpose, we rely on all firms being listed in the <IR> Examples Database and manually scanned about 600 integrated reports for an explicit reference to the <IR> Framework. In doing so, we clearly define the term 'integrated report' and methodologically respond to critical scholars' claim that IR, with its managerial discretion and reporting heterogeneity, often constitutes a 'rebranded' annual report rather than a *real* integrated report (Haji and Hossain, 2016; Rivera-Arrubla et al., 2017; Briem and Wald, 2018). To measure a firm's ESG performance (ESG_SCORE), we use the combined ESG score obtained from Thomson Reuters Database. In line with Reverte (2009), ENV_SEN is a binary variable with the value, 1, if the firm belongs to an environmentally sensitive industry (two-digit SIC codes 08, 10-14, 26, 28, 33-34, 49), and 0, otherwise.

Control variables

Based on a comprehensive review of extant literature, we include different debt-, risk-, and firm-specific control variables that have been shown to affect COD. As is common in a debt context, we control for the inflation-adjusted risk-free interest rate (INFL_ADJ_INT), the interest coverage ratio (INT_COV), and the long-term debt ratio (LT_DEBT_RATIO) as well as the security's price movement relative to the market's price movement (BETA). Further, in order to control for a firm's financial health, we include Piotroski's (2000) F-score (PIOTROSKI_F), a composite score of a firm's fundamentals (factors relating to a firm's financial performance, capital structure, ability to meet future debt obligations and efficiency of operations), ranging from 0 to 9 where higher values represent financially stronger firms (Chung et al., 2015). Since larger firms have a longer (borrowing) history and are more established, tend to provide more detailed disclosures and have a lower probability of default (Barclay et al., 2003; Guidara

et al., 2014; Gong et al., 2018), we control for firm size (SIZE), defined as the natural logarithm of the firm's total assets. We further include a firm's leverage (LEV), measured as the ratio between total debt and total assets, as this has been shown to increase default risk and thus cost of debt (Ye and Zhang, 2011; Gong et al., 2018). Since, in case of bankruptcy, tangible assets are more easily recovered and therefore decrease the liquidity risk (Diamond, 1991; Bharath et al., 2008; Attig et al., 2013; Jung et al., 2018), we control for TANGIBILITY, measured as tangible book value scaled by total assets. Because more profitable firms are less exposed to bankruptcy risk and therefore are more likely to repay their obligations (Ye and Zhang, 2011; Ge and Lui, 2015; Bae et al., 2018), we include return on assets (ROA) as a measure for a firm's profitability. To control for a firm's market value and its investment growth opportunities (Kallapur and Trombley, 1999; Dhaliwal et al., 2011; Benlemlih, 2017; Bae et al., 2018), we include Tobin's q (TOBINS_Q).

4.3 Model Specification

GLS random effects estimator

In order to estimate the effect of IR on COD, our basic linear regression model is specified as follows:

$$\begin{aligned} \text{COD}_{i,t+1} = & \beta_0 + \beta_1 \text{IR_IIRC}_{i,t} + \beta_2 \text{ESG_SCORE}_{i,t} + \beta_3 \text{ENV_SEN}_{i,t} + \\ & \beta_4 \text{INFL_ADJ_INT}_{i,t} + \beta_5 \text{INT_COV}_{i,t} + \beta_6 \text{LT_DEBT_RATIO}_{i,t} + \beta_7 \text{BETA}_{i,t} \\ & + \beta_8 \text{PIOTROSKI_F}_{i,t} + \beta_9 \text{SIZE}_{i,t} + \beta_{10} \text{LEV}_{i,t} + \beta_{11} \text{TANGIBILITY}_{i,t} + \\ & \beta_{12} \text{ROA}_{i,t} + \beta_{13} \text{TOBINS_Q}_{i,t} + u_i + e_{i,t}, \end{aligned}$$

where i and t represent the firm and time subscript indicators, respectively. Since market reactions following corporate reporting generally do not materialize immediately, there is a time lag between the dependent and the independent variables. To model effects over time and account for the underlying panel data structure, we apply a generalized least squares random effects estimator for two reasons: first, an alternative within-transformation would remove higher level variance (Bell and Jones, 2015); second, entity-fixed effects are not applicable since our explanatory variable of interest (IR_IIRC) has only limited variability

over time as (a) the strategic decision to adopt IR is rarely revised in subsequent periods and (b) firms build upon an established infrastructure and thereby benefit from decreased marginal preparation costs, which increases the likelihood of adopting IR also in future periods (Feng et al., 2017; Gerwanski et al., 2019). In addition, application of the Breusch-Pagan Lagrange multiplier test indicates that random effects estimation is preferable over pooled OLS (basic model: $\chi^2 = 552.03$, p-value < 0.001).²³ In order to address possible within-cluster correlation, we use autocorrelation and heteroscedasticity robust standard errors (Huber-White estimator; Rogers, 1993; Bell and Jones, 2015). We further perform correlation analysis and collinearity diagnostics (mean VIF of basic model = 1.46, highest VIF = 2.11), which do not provide any evidence of multicollinearity. Since INFL_ADJ_INT is country- and time-specific, it is only included in our base model (1) and dropped in subsequent models which include time- and country-fixed effects (2-4) in order to increase the model's explained variance; corresponding χ^2 tests (p-values < 0.001) reinforce the inclusion of country- and time-fixed effects. We do not include industry-fixed effects due to a potential collinearity with ENV_SEN. Model 2 represents the base model including the above-mentioned fixed effects, models 3 and 4 contain the interaction terms IR_IIRC*ESG_SCORE (3) and IR_IIRC*ENV_SEN (4), to test for the moderation effects as stated in H2a and H2b, respectively.

Hierarchical three-level variance component maximum likelihood estimator

Prior studies revealed that a firm's cost of debt is negatively associated with different country-specific factors; for example, a country's sustainability-related performance (Hoepner et al., 2016), investor protection (Gul et al., 2013), debt holders' rights (Boubakri and Ghouma, 2010), political rights (Qi et al., 2010), and religiosity (Chen et al., 2016). Due to these exemplary country-specific factors, we assume that a firm's debt financing terms in the same country might be more comparable with one another than for firms from different countries. For

²³ For the sake of completeness, if the regressions are re-run with pooled OLS with robust standard errors, the results of our hypotheses remain inferentially equivalent with regard to significance and effect size (untabulated). The only exception is the interaction term of H2a (IR_IIRC*ESG_SCORE), which points in the expected direction, but slightly exceeds the threshold of significance (p-value = 0.118).

this reason, we re-run the above-specified models with a multilevel mixed-effects regression to methodologically account for a possible hierarchical structure in our data and to test for the stability of our empirical results. For this purpose, we use a three-level variance component maximum likelihood estimator with robust standard errors, where occasions (level 1) are nested in firms (level 2), which are nested in countries (level 3) as presented in Figure 1. This estimator includes both fixed and random effects and allows the efficient modeling of variance both between and within hierarchical levels in estimating lower level slopes and employing them in higher-level outcomes (Hofmann, 1997; Woltman et al., 2012). Moreover, hierarchical linear models have further valuable properties; i.e., the assumptions of linearity and normality are unproblematic for multilevel models (Chang et al., 2018), and hierarchical models account for partial interdependence of entities within the same group (Hofmann, 1997; Woltman et al., 2012). Our three-level variance component maximum likelihood model is specified as follows:

$$\begin{aligned} \text{COD}_{ijk} = & \beta_0 + \beta_1 \text{IR_IIRC}_{ijk} + \beta_2 \text{ESG_SCORE}_{ijk} + \beta_3 \text{ENV_SEN}_{ijk} + \beta_4 \text{INT_COV}_{ijk} + \\ & \beta_5 \text{LT_DEBT_RATIO}_{ijk} + \beta_6 \text{BETA}_{ijk} + \beta_7 \text{PIOTROSKI_F}_{ijk} + \beta_8 \text{SIZE}_{ijk} + \\ & \beta_9 \text{LEV}_{ijk} + \beta_{10} \text{TANGIBILITY}_{ijk} + \beta_{11} \text{ROA}_{ijk} + \beta_{12} \text{TOBINS_Q}_{ijk} + u_{\text{country } i} + \\ & u_{\text{firm } j} + e_{ijk}, \end{aligned}$$

where COD is measured as COD_{t+1} , $i=1,2,3,\dots, N_1$ represents the country 1 to country N_1 ; $j= 1,2,3, \dots, N_2$ indicates firms 1 to firm N_2 , $k=1,2,3, \dots, N_3$ indicates occasion (measurements of COD) 1 to occasion N_3 ; $u_{\text{country } i}$ is the random effect of the country I (random part); $u_{\text{firm } j}$ is the random effect of the firm j (random part) and e_{ijk} is the residual corresponding to ijk (residual), where $u_{\text{country } i}$, $u_{\text{firm } j}$, and $e_{ijk} \sim N(0, \sigma^2)$.

[insert Figure 1 here]

5. Results

5.1 Descriptive Statistics and Correlation Analysis

[insert Table 3 here]

Table 3 presents descriptive statistics for the variables included in the models. Our dependent variable COD_{t+1} has an average of 2.28 and a standard deviation of 1.81, which aligns with prior studies investigating a firm’s cost of public debt (e.g., Gong et al., 2018). IR_IIRC has an average value of 0.06, indicating that about 6% of firms in our sample prepared an integrated report (presence of an integrated report: 124, absence of an integrated report: 2,072), which is reflective of the relatively low but increasing IR coverage in Europe (Sierra-Garcia et al., 2015; Burke and Clark, 2016; Dumay et al., 2016). On average, firms show an ESG performance of 60.16; about 29% of the firms operate in an environmentally sensitive industry. Table 4 presents results from a simple ANOVA that differentiates between IR and non-IR preparers. As presented, COD_{t+1} seems to be significantly lower for IR-preparing firms by 0.67 (p-value < 0.001), which indicatively coincides with our expectation. Also, IR-preparing firms on average have a higher ESG performance (+12.89, p-value < 0.001), implying that sustainability-related high-performing firms might be more likely to engage in IR. The results further suggest that firms operating in an environmentally sensitive industry are more likely to prepare an integrated report (+0.18, p-value < 0.001), which aligns with prior findings on determinants of IR. Correlation analysis, as presented in Table 5, delivers preliminary results on a possible association between COD_{t+1} and IR_IIRC , ESG_SCORE , and ENV_SEN . The results indicate that, in line with our prediction, COD_{t+1} is negatively correlated with IR_IIRC (-0.086) as well as with ESG_SCORE (-0.204) and positively associated with ENV_SEN (0.199) at the 1% level of significance.

[insert Table 4 here]

[insert Table 5 here]

5.2 Multivariate Analysis

GLS random effects estimator

[insert Table 6 here]

In line with our expectation, models 1 and 2 reveal a significant negative association between IR and COD_{t+1} (Table 6). The adoption of the novel reporting medium is associated with a corresponding decrease in cost of debt by 0.335 (p-value = 0.002) to 0.446 (p-value = 0.019) percentage points, depending on the model specification. The findings support H1. Our results reinforce the IIRC's claim that IR leads to more efficient capital allocation and underpin our agency theoretical reasoning with respect to IR's ability to decrease information asymmetries and to provide decision-useful information incremental to present corporate reporting. In line with the underlying rationale that good CSR reduces firm risk and may have an insurance-like property (Godfey, 2005; Godfrey et al., 2009), the results of models 1 and 2 reveal that each unit of a firm's ESG performance significantly decreases its cost of debt by 0.009 percentage points (p-values = 0.005 and 0.004, respectively). In terms of economic significance, an increase of ESG by one standard deviation decreases COD_{t+1} by 0.143. As expected, models 1 and 2 show that 'sinful' firms (ENV_SEN) face significantly higher marginal costs of debt (0.406 to 0.496, p-values < 0.001), presumably due to higher litigation and legitimacy risks.

As well as the isolated main effect of ESG_SCORE and ENV_SEN on COD_{t+1} , we are interested in the joint effects of the two explanatory variables with IR_IIRC on a firm's cost of debt. The corresponding results of the moderation models 3 (H2a) and 4 (H2b) are presented in Table 6; the marginal effects are visualized in Figures 2 and 3.

[insert Figure 2 here]

[insert Figure 3 here]

Column 3 of Table 6 presents the results relating to H2a. The main effect of IR_IIRC on COD_{t+1} (-1.353, p-value = 0.019) suggests that, in the very extreme (and rather theoretical) case that a firm's ESG performance was equal to zero, the preparation of an integrated report leads to a decrease in COD_{t+1} by 1.353. The main effect of ESG_SCORE implies that, in the absence of an integrated report, an increase in a firm's sustainability performance by one unit leads to a reduction in its marginal cost of debt by 0.009 (p-value = 0.003). In line with our prediction, the joint effect of IR_IIRC*ESG_SCORE is positively and significantly associated with COD_{t+1} (Wald test for joint significance: p-value = 0.001), which, as depicted in the margins plot in Figure 2, connotes a decreasing utility of IR_IIRC on a firm's cost of debt with increasing ESG performance. Accordingly, model 3 confirms our H2a and aligns to the agency theoretical assumption that firms with lower sustainability performance derive a higher value from IR adoption in terms of lending. Specifically, the positive main effect of IR_IIRC (-1.353 when ESG_SCORE = 0) is offset by +0.014 for each (increasing) unit of a firm's ESG performance. The intersection in the margins plot illustrates that, in terms of borrowing, IR pays off for firms with an ESG_SCORE lower than 96.6, which applies to all firms in our sample (maximum value of ESG_SCORE = 95.76).

Column 4 presents the main effects of IR_IIRC and ENV_SEN, as well as their joint effect on COD_{t+1} . In line with the theoretical reasoning that firms operating in an environmentally sensitive industry are subject to higher risk, ENV_SEN significantly increases COD_{t+1} by 0.455 (p-value < 0.001) if firms do not produce an integrated report, while the main effect of IR_IIRC misses statistical significance (p-value = 0.964). In line with our prediction, the joint effect of IR_IIRC*ENV_SEN significantly decreases COD_{t+1} by 0.756 (Wald test for joint significance: p-value < 0.001). This finding has two implications: first, IR only decreases a firm's marginal cost of debt when the company operates in an environmentally sensitive industry; firms that prepare an integrated report but do not belong to 'sinful' industries do not benefit from IR in terms of cost of debt capital. Second, the disclosure of an integrated report completely compensates for/offsets the industry risk-specific borrowing premium (main effect of

ENV_SEN without IR: 0.455) and even leads to lower total cost of debt (-0.301) compared to firms from other industries which do not engage in IR. Figure 3 visualizes these findings. Our results confirm H2b, coincide with the agency theoretical arguments, and suggest that firms in sensitive industries can provide information incremental to their traditional financial and nonfinancial reporting through engaging in IR.

Hierarchical three-level variance component maximum likelihood estimator

Table 7 presents the results of our hierarchical linear models with 28 groups on the country level (level 3) and 834 groups on the firm level (level 2). The estimated residual standard deviation of COD_{t+1} between countries ($\sqrt{\psi^2}$) equals 0.970 and between firms ($\sqrt{\psi^3}$) amounts to 0.996, while the remaining residual standard deviation ($\sqrt{\theta}$) is estimated as 0.889.²⁴ The corresponding variance partition coefficients ($VPC_{country} = 0.346$, $VPC_{firm} = 0.364$, $VPC_{occasion} = 0.290$) show that 34.6% of total variance lies between countries (between-countries differences), 36.4% lies within countries between firms (between-firm differences) and 29.0% lies within firms between occasions (within-firm differences). The corresponding intraclass correlation coefficients ($ICC_{country} = 0.346$, $ICC_{firm} = 0.710$) imply that the percentage of variance caused by random effects at the firm level is higher than that at the country level, while ICC values >0.01 for country indicate clustering at this level (Chang et al., 2018). Accordingly, the VPC and ICC reinforce the application of higher-level modeling.

[insert Table 7 here]

The results support our prior estimations. In line with our prediction, IR_IIRC is negatively associated with COD_{t+1} and leads to a decrease in a firm's debt costs by 0.351 (p-value = 0.008). Further, COD_{t+1} is negatively related to corporate ESG performance (-0.009, p-value = 0.015) and positively associated with a firm's

²⁴ For the sake of simplicity, we use ψ^2, ψ^3, θ of the main model for the calculation of the following VPC and ICC values. Since ψ^2, ψ^3, θ are incrementally equal in all model specifications, the corresponding VPC and ICC values should be similar to one another. The values are calculated as follows: $VPC_{country} = \psi^2 / (\psi^2 + \psi^3 + \theta)$, $VPC_{firm} = \psi^3 / (\psi^2 + \psi^3 + \theta)$, $VPC_{occasion} = \theta / (\psi^2 + \psi^3 + \theta)$; $ICC_{country} = \psi^2 / (\psi^2 + \psi^3 + \theta)$, and $ICC_{firm} = (\psi^2 + \psi^3) / (\psi^2 + \psi^3 + \theta)$.

belonging to an environmentally sensitive industry (0.403, p-value < 0.001). Regarding H2a, the main effects of IR_IIRC (-1.424, p-value = 0.041) and ESG_SCORE (-0.010, p-value = 0.015) show a significant negative effect on a firm's marginal cost of borrowing. The joint effect of IR_IIRC*ESG_SCORE points in the expected direction, but misses statistical significance (p-value = 0.157), although the Wald test shows a joint significance of covariates (p-value < 0.001). However, when including industry-fixed effects and dropping countries with less than five observations (four countries with a total of nine firm-year observations) to avoid highest level units with few observations in lower level units, the joint effect IR_IIRC*ESG_SCORE turns significant at the 10% level of significance (0.020, p-value = 0.088, untabulated). Column 3 of Table 7 presents the results for H2b. The main effect of ENV_SEN increases a firm's marginal cost of debt by 0.452 (p-value < 0.001) in the absence of IR, while the main effect of IR_IIRC misses statistical significance (p-value = 0.893). In line with prior findings, the interaction term IR_IIRC*ENV_SEN reveals a reduction in a firm's cost of debt by 0.775 (p-value = 0.004; Wald test for joint significance: p-value < 0.001). Findings imply that the publication of an integrated report is only beneficial for firms operating in an environmentally sensitive industry.

5.3 Robustness Checks

To test the robustness of our results, we apply a battery of robustness checks for our base model (model 2), which are jointly presented in Table 8.

[insert Table 8 here]

Re-specification of dependent variable IR_IIRC

First, we replace our hand-collected explanatory variable IR_IIRC with an alternative measure for a firm's engagement with IR (IR_GRI) obtained from the Global Reporting Initiative's (GRI) Sustainability Disclosure Database. Unlike the IR_IIRC variable, which requires a clear reference to the <IR> Framework, IR_GRI is based on organizations' self-declarations and captures whether the report includes both nonfinancial and financial disclosures beyond basic economic information. Because the database only covers corporate reports until the

financial year 2016, our sample is restricted to observations of the financial years 2015 and 2016. IR_GRI leads to a surplus of 30 integrated reports in the observed time period (IR_GRI: 114, IR_IIRC: 84). As presented in column 1 of Table 8, the results confirm prior findings. The preparation of an integrated report significantly decreases a firm's marginal cost of public debt by -0.249 (p-value = 0.022). To ensure that this effect is not driven by the shortened time period, we also re-run our model with the restricted time period for IR_IIRC and the effect remains significant (-0.304, p-value = 0.029).

Endogeneity: Additional variable analysis and propensity score matching

In order to address concerns of a possible omitted variable bias, we re-specify our empirical model and include additional variables that might affect a firm's marginal cost of debt. Since a borrower's repayment capacity might be positively related to its current ratio, we include liquidity ratio (LIQUIDITY), operationalized as the ratio between current assets and current liabilities (Weber, 2012; Hoepner et al., 2016; Jung et al., 2018; La Rosa et al., 2018) and substitute ROA with cash flow (CASH_FLOW) scaled by total assets (La Rosa et al., 2018). Further, instead of controlling for a firm's investment growth opportunities (TOBINS_Q), we include SALES_GROWTH to control for revenue growth opportunities which, depending on the literature, might either lead to higher cash flows and less financing costs or signal a higher likelihood of financial distress and, therefore, increase debt costs (Gong et al., 2018). Finally, instead of measuring financial strength by PIOTROSKI_F, we include ALTMAN_Z score, an established measure for corporate financial distress (Altman, 1968; Mazumdar and Sengupta, 2005; Ge and Liu, 2015; Hoepner et al., 2016). As reported in column 2 of Table 8, our results are robust to the inclusion of additional variables; the coefficients and levels of significance remain similar.

The decision to voluntarily produce an integrated report might not be completely exogenous, but may be determined *inter alia* by cost-benefit considerations and thus may be described as a function of different determining factors. To address the concern of a potential selection bias driven by unobserved firm-level heterogeneity, there is merit in controlling for these observable confounding

factors by matching the focal IR preparing firm-year observation (treatment group) with another firm-year observation (control group) which is most identical, except from the decision to engage in IR (Tucker, 2010; Fuhrmann et al., 2017; Shipman et al., 2017). In line with the explanation put forth by Rosenbaum and Rubin (1983, p.41) that the “propensity score is the conditional probability of assignment to a particular treatment given a vector of observed covariates”, PSM should remove bias by a closer comparison between firms that share same characteristics. In doing so, we assume that the decision to engage in IR can be fully explained by observable factors, while unobservable factors can be neglected. Hence, we adopt a nearest-neighbor PSM procedure. We use the following logistic regression model to estimate the probability that a firm produces an integrated report:

$$IR_IIRC = \pi_0 + \pi_1 BOARD_GEND_DIV + \pi_2 BOARD_SIZE + \pi_3 DJSI + \pi_4 SIZE + \pi_5 ROA + \sum_{i=1}^{n=57} \pi_6 INDUSTRY + \sum_{i=1}^{n=28} \pi_7 COUNTRY + e.$$

The selection of variables is derived from prior studies that have investigated determinants of IR adoption. Board-specific characteristics, such as board gender diversity and board size, enrich board decisions and have been shown to increase the likelihood of IR preparation (e.g., Frias-Aceituno et al., 2013a; Fasan and Mio, 2017; Gerwanski et al., 2019). We include listing in the Dow Jones Sustainability Index (DJSI) to control for sustainability leadership (Cho et al., 2012; Miralles-Quiros et al., 2017) and the likelihood of communicating this leadership via IR (Gerwanski et al., 2019). Besides, larger firms (SIZE) and more profitable firms (ROA) assumedly have higher financial resources to voluntary engage in the costly preparation of an integrated report (e.g., Frias-Aceituno et al., 2013b; Sierra-Garcia et al., 2015). We include industry- (two-digit SIC codes) and country-fixed effects since prior studies have shown that industry membership and legal origin affect corporate decisions to engage in IR (e.g., Frias-Aceituno et al., 2013b; Garcia-Sanchez and Noguera-Gamez, 2018). We note that the matching model has high explanatory power.

Based on the propensity scores calculated in the logistic model, we match each of the 124 observations of firms that prepare an integrated report to a specific control observation from the remaining sample without IR that best fits the focal firm. Hence, we exclude observations that do not have adequate controls; the following analysis covers 248 firm-year observations derived from the PSM procedure. The model is specified like the base model with time- and country-fixed effects, but uses a pooled OLS estimator with robust standard errors. Colum 3 of Table 8 presents the corresponding regression results. In line with prior results, IR_IIRC is significantly negatively related to COD_{t+1} (-0.470, p-value = 0.001). The results suggest that the predicted association holds when controlling for confounding factors and selection bias.

6. Discussion and Conclusion

Although the <IR> Framework explicitly defines providers of financial capital as equity and debt holders (IIRC, 2013), there is a distinct lack of research on the association between voluntary IR engagement and a firm's cost of debt. We reason from an agency perspective that, especially among public debt market participants who, unlike 'delegated private lenders', do not have access to proprietary corporate information (Diamond, 1984), an integrated report should decrease information asymmetries, lead to a better assessability of the investment risk and thus decrease the firm's cost of debt. In the light of this research paucity, this study investigates the effects of voluntary IR adoption on a firm's marginal cost of public debt for European firms between 2015 and 2017.

In line with our expectation, we find that IR significantly reduces a firm's cost of debt. Additional moderation analyses reveal that (a) this effect is stronger for firms with lower ESG performance and (b) only holds for firms operating in environmentally sensitive industries. Specifically, when jointly considering the publication of an integrated report and a firm's sustainability performance, the results show that IR decreases the firm's cost of debt but that this effect gradually attenuates with increasing ESG performance. The results not only suggest that the IR utility for a firm in terms of cost of debt decreases with increasing ESG performance, but reveal that IR is also beneficial for firms with

high ESG performances (up to an ESG score of 96.6). This threshold might be attributable to preparation costs and cost-benefit considerations of IR (Lee and Yeo, 2016; Cortesi and Vena, 2019). Subsequent moderation analyses further reveal that firms that belong to an environmentally sensitive industry pay an interest premium, but are able to more than compensate for this penalty interest through IR. In line with our theoretical reasoning, firms seem to use IR in order to decrease costly information asymmetries and as a signaling mechanism to overcome penalizing interests levied due to a higher risk of litigation and default, while bond investors seem to appreciate the risk management property of IR. In subsequent models, in order to account for possible endogeneity, we added further control variables and applied PSM. Our findings are robust to these model alterations as well as to the application of hierarchical linear modeling with countries as the highest-level units.

Our results have valuable implications for theory, managers, investors, standard setters, and policy makers and regulators. In line with the agency theoretical lens underlying this study, the finding that IR is associated with lower marginal public borrowing costs is commensurate with the conjecture that IR decreases information asymmetry between firms and lenders, and provides information incremental to traditional reporting formats. In the light of the structural differences between equity and debt investors, the additional transparency resulting from IR adoption might have resulted in a reduction of lenders' claims for a premium that compensates for the risk of detrimental (hidden) managerial intentions, such as underinvestment, asset substitution, overinvestment, or wealth expropriation. Apart from this notion, IR may decrease investors' information screening efforts and, due to lower agency costs, lead to more efficient capital allocations. Alongside these theoretical implications, the study's results have several practical implications. The findings should encourage managers that intend to raise new debt to engage in IR in order to benefit from significantly lower financing costs. In practical terms, surmising that the average volume of a European corporate bond issue amounted to EUR 591m in the past,²⁵

²⁵ The average volume of a European corporate bond issue is calculated as follows: at first, we chose all active European bond issues (investment grade or high yield bonds; no junk bonds, no

engaging in IR may save high interest expenses, especially for firms with lower ESG performances and those operating in environmentally sensitive industries. In this light, information memoranda that accompany future debt issuances should point out a firm's engagement in IR and stress the firm's underlying integrated thinking approach that governs corporate control and risk management. Reflecting the study's results from a broader perspective that also takes into account the value relevance of IR in terms of cost of equity and firm value (e.g. Lee and Yeo, 2016; Barth et al., 2017; Zhou et al., 2017), results suggest the need to establish a more integrated capital market communication. In the light of our findings, debt investors should screen a firm's integrated report to gather additional insights relevant for their investment decision, such as corporate risk management practices and future perspectives. However, lenders should not regard the issuance of an integrated report as a panacea for corporate sustainability, but should carefully evaluate whether the increased transparency and accountability justify lower interest rates given that firms might use IR as a strategic signaling mechanism to distract from either poor ESG performance or their belonging to a sensitive industry. Standard setters, such as the IIRC, should put more emphasis on communicating the (value) relevance of IR for leveraged firms and those who intend to increase their financial leverage. To this purpose, the IIRC should address debt holders in the <IR> Framework (2013) with greater vigor. Along the same lines, the IIRC should further make efforts to promote IR as a means to adhere to different (voluntary) regulatory initiatives, such as the European Non-Financial Reporting Directive (2014/95/EU), the United Nations Sustainable Development Goals, or the recommendations put forth by the Financial Stability Board's Task Force on Climate-related Financial Disclosures. In this context, policy makers and regulators should promote and foster IR not only as a reporting mechanism that increases capital allocation efficiency and has the potential to reduce financing costs, but should stress that the novel reporting instrument coincidentally allows to abide by the aforementioned disclosure regulations. However, keeping in mind

sukuks) over the last 2.5 years (time period 01.01.2017-30.06.2019) with Datastream coverage. Subsequently, to ensure consistent application of our results, we excluded all bond issues of firms belonging to the financial industry. The average emission volume was EUR 591m (USD 679m, average exchange rate USD/EUR over the last 2.5 years: 0.871).

the critical debate on voluntary (integrated) disclosures as a mechanism for impression management and green washing (Schlenker, 1980; Delmas and Burbano, 2011; Beck et al., 2017), regulatory advocacy should always be prefaced by the discussion on IR quality requirements and enforcement mechanisms.

The results of this study suggest several directions for further research. First, while this study focused on the overall effect of IR on corporate borrowing costs, future research might break down the IR variable to a more fine-grained level that allows to assess precisely which elements of IR (e.g., connectivity, future-oriented focus) contribute to its financing costs-decreasing property. Second, while our cost of debt variable is an aggregated measure that takes into consideration different company-specific information regarding its industry, currency, and credit rating, future studies could reassess the relation between IR and cost of debt based on different measures, such as bond spreads (Gong et al., 2018). Third, given that prior scholars have shown that cost of debt is not only affected by corporate reporting per se but likewise its quality (Sengupta, 1998; Mazumdar and Sengupta, 2005; Garcia-Sanchez and Noguera-Gamez, 2017), there is merit in reassessing the findings while differentiating between integrated reports of different quality (e.g., Pistoni et al., 2018; Vitolla et al., 2019b). This may be a fruitful avenue for further research, especially in the light of critical IR scholars that disparage the lack of clear guidance and high degrees of managerial discretion that lead to low reporting quality and high reporting heterogeneity (Lai et al., 2016; Lueg et al., 2016; Chaidali and Jones, 2017). Fourth, future studies should assess whether the preparation of an integrated report is also relevant for rating agencies or ‘delegated’ private lenders, who face lower information asymmetries, but increasingly take into account sustainability-specific issues in loan contracting (Goss and Roberts, 2011; Kim et al., 2014; Hoepner et al., 2016).

As in all empirical investigations, the results should be considered within the confines of their limitations. First, this study is situated in the voluntary European setting; thus the results might not hold for South African firms where IR is mandatory (‘apply or explain’; King IV, 2016). Second, the number of firms

preparing an integrated report as well as the sample period is relatively small, which might impair the validity of our results. Finally, the results might not be generalizable to firms that belong to the financial sector.

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Panel A: Sample Selection	Firms	Firm-year observations
Firms with Datastream ESG coverage between 2015-2017	1,235	3,404
Financial services firms (SIC 6000-6999)	(297)	(824)
Missing data items	(104)	(384)
Total sample	834	2,196

Panel B: Sample Distribution over Time	Firm-year observations
2015	707
2016	743
2017	746
Σ	2,196

Panel C: Countries					
Country	n	Country	n	Country	n
Austria	33	Hungary	9	Poland	54
Belgium	50	Ireland	73	Portugal	21
Cyprus	2	Isle of Man	6	Russia	84
Czech Republic	9	Italy	79	Spain	90
Denmark	59	Jersey	5	Sweden	146
Finland	67	Luxembourg	23	Switzerland	143
France	225	Malta	1	Ukraine	3
Germany	210	Monaco	9	United Kingdom	625
Greece	33	Netherlands	90		2,196
Guernsey	3	Norway	44		

Panel D: Industries		
SIC2	Industry division	n
10-14	Mining	176
15-17	Construction	89
20-39	Manufacturing	975
40-49	Transportation, communications, electric, gas and sanitary services	413
50-59	Trade	231
70-89	Service providers	312
		2,196

Table 1: Sample Selection and Distribution

Table 1 presents the sample selection (Panel A), the distribution of the firm-year observations over time (Panel B), the regional distribution across countries (Panel C), and the distribution across industries (Panel D).

VARIABLES	Variable definition
<i>Dependent variable</i>	
COD	<p>Marginal cost to the company of issuing new debt; calculated by adding weighted cost for short term debt and weighted cost of long term debt based on the 1-year and 10-year points of an appropriate credit curve, multiplied by the firm's effective tax rate.</p> $COD = (K_{short} * W_{short} + K_{long} * W_{long}) * (1 - \varphi),$ <p>where K_{short} and K_{long} is the pre-tax, short-term and long-term debt cost, respectively, W_{short} and W_{long} are the fractions of the company's debt that are short-term and long-term, respectively, and φ is the effective tax rate for the company.</p>
<i>Explanatory variables</i>	
IR_IIRC	Indicator variable taking the value 1 if the firm has disclosed an integrated report with explicit reference to the IIRC's <IR> Framework (2013) in the corresponding year, and 0 otherwise.
ESG_SCORE	Overall weighted score of the firm's environmental, social and governance performance.
ENV_SEN	Indicator variable taking the value 1 if the firm is operating in an environmentally sensitive industry (two-digit SIC codes: 08, 10-14, 26, 28, 33-34, 49), and 0, otherwise, following Reverte (2009).
<i>Control variables</i>	
INFL_ADJ_INT	<p>Inflation adjusted risk free rate is calculated as the sum of the country's 10-year inflation forecast and the difference between the US 10-year treasury yield and the US 10-year forecasted inflation rate.</p> $R_t = I_{FY10} + (USY_{FY10} - USI_{FY10}),$ <p>where I_{FY10} is 10-year inflation forecast, USY_{FY10} is 10-year US treasury yield, and USI_{FY10} is 10-year US inflation forecast.</p>
INT_COV	Earnings before interest and taxes divided by interest expense; winsorized at the 5th and 95th percentile.
LT_DEBT_RATIO	Total long term debt/total debt
BETA	<p>Covariance of the security's price movement in relation to the market's price movement.</p> $\beta = \frac{cov(r_e, r_m)}{var(r_m)},$ <p>where r_e is the return of the security and r_m is the market return.</p>
PIOTROSKI_F	Measure of a firm's financial health according to Piotroski (2000), composed of nine fundamental financial performance signs, which relate to performance-related factors (ROA, Δ ROA, CFO, ACCRUAL), changes in capital structure and indicators of a firm's ability to meet future debt obligations (Δ LEVER, Δ LIQUID, EQ_OFFER), and the efficiency of operations (Δ MARGIN, Δ TURN); the score ranges between 0 and 9, where higher values indicate higher degrees of financial strength.
SIZE	Natural logarithm of total assets.
LEV	Total debt/total assets.
TANGIBILITY	Tangible book value divided by total assets, where tangible book value is calculated as total equity less goodwill less intangibles less redeemable preferred stock less non-redeemable preferred stock; winsorized at the 5th and 95th percentile.
ROA	Income after taxes divided by total assets; winsorized at the 1st and 99th percentile.
TOBINS_Q	Market value of a firm as captured by enterprise value divided by book value of total assets; winsorized at the 1st and 99th percentile.

Table 2: continued

VARIABLES	Variable definition
<i>Robustness check: Re-specification of IR_IIRC</i>	
IR_GRI	Indicator variable taking the value 1 if the firm has disclosed an integrated report according to the GRI Sustainability Disclosure Database in the corresponding year, and 0 otherwise.
<i>Robustness check: Additional control variables</i>	
LIQUIDITY	Total current assets divided by total current liabilities; winsorized at 1st and 99th percentile.
CASH_FLOW	Total cash flow/total assets; winsorized at 1st and 99th percentile.
SALES_GROWTH	Revenue _t /revenue _{t-1} ; winsorized at 1st and 99th percentile.
ALTMAN_Z	Measure of firm's financial strength, respectively financial distress, calculated as: $Z = 1.2x_1 + 1.4x_2 + 3.3x_3 + 0.6x_4 + 1.0x_5$ where x_1 = working capital/total assets, x_2 = retained earnings/total assets, x_3 = earnings before interest and taxes/total assets, x_4 = market value of equity/book value of total debt, x_5 = sales/total assets; winsorized at 1st and 99th percentile.
<i>Robustness check: PSM</i>	
BOARD_GEND_DIV	Percentage of gender board diversity.
BOARD_SIZE	Total number of board members.
DJSI	Indicator variable taking the value 1 when a firm is listed in the Dow Jones Sustainability Index in the corresponding year, and 0, otherwise.

Table 2: Variable definitions and description

Table 2 defines the dependent, explanatory, and control variables included in the empirical models. IR_IIRC is a hand-collected variable, COD, INFL_ADJ_INT, and BETA were derived from Thomson Reuters StarMine Analytics; all other items were obtained from Thomson Reuters Eikon Datastream.

VARIABLES	N	Mean	Std. Dev.	Min	Median	Max
COD _{t+1}	2,196	2.28	1.81	-0.34	1.86	13.38
IR_IIRC	2,196	0.06	0.23	0	0	1
ESG_SCORE	2,196	60.16	15.91	10.21	61.30	95.76
ENV_SEN	2,196	0.29	0.46	0	0	1
INFL_ADJ_INT	2,196	2.27	0.55	1.36	2.20	5.56
INT_COV	2,196	21.68	33.10	-0.29	9.04	132.84
LT_DEBT_RATIO	2,196	0.76	0.25	0	0.84	1
BETA	2,196	0.94	0.46	-0.30	0.88	3.64
PIOTROSKI_F	2,196	5.05	1.28	1	5	8
SIZE	2,196	22.30	1.51	17.06	22.22	26.77
LEV	2,196	0.26	0.18	0	0.25	1.62
TANGIBILITY	2,196	0.34	0.75	-0.38	0.14	2.90
ROA	2,196	4.87	7.65	-27.93	4.60	32.66
TOBINS_Q	2,196	1.40	1.11	0.02	1.06	6.49

Table 3: Summary statistics

Table 3 provides summary statistics for the variables included in the main models.

VARIABLES	Integrated report (n=124)		No integrated report (n=2,072)		ANOVA		
	Mean	Std. Dev.	Mea n	Std.Dev.	Δ	F- value	p-value
COD _{t+1}	1.65	1.20	2.32	1.83	-0.67	16.36	0.000***
ESG_SCORE	72.32	11.51	59.43	15.85	12.89	79.49	0.000***
ENV_SEN	0.46	0.50	0.28	0.45	0.18	17.69	0.000***
INT_COV	16.25	23.91	22.01	33.55	-5.76	3.55	0.060*
LT_DEBT_RATIO	0.76	0.20	0.76	0.26	0.00	0.00	0.948
BETA	0.96	0.39	0.94	0.47	0.02	0.30	0.585
PIOTROSKI_F	5.15	1.36	5.04	1.27	0.11	0.86	0.354
SIZE	23.40	1.32	22.24	1.49	1.16	71.42	0.000***
LEV	0.28	0.16	0.26	0.18	0.02	1.32	0.251
TANGIBILITY	0.44	0.83	0.33	0.75	0.11	2.41	0.121
ROA	4.82	7.24	4.87	7.67	-0.05	0.01	0.943
TOBINS_Q	1.23	1.04	1.41	1.12	-0.18	3.25	0.072*

Table 4: Analysis of variance between IR firms and non-IR firms

Table 4 presents simple ANOVA differentiating between IR and non-IR reporters. INFL_ADJ_INT is not reported as the variable refers to the firm's country and accordingly is rather a function of a firm's likelihood to prepare an integrated report in a given country instead of a firm-specific variable. The results show that inter alia COD_{t+1}, ESG_SCORE, and ENV_SEN vary systematically between IR and non-IR reporting firms as indicated by corresponding p-values.

*** p < 0.01, ** p < 0.05, * p < 0.1

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) COD _{t+1}	1.000													
(2) IR_IIRC	-0.086***	1.000												
(3) ESG_SCORE	-0.204***	0.187***	1.000											
(4) ENV_SEN	0.199***	0.089***	0.007	1.000										
(5) INFL_ADJ_INT	0.301***	-0.032	-0.131**	0.152***	1.000									
(6) INT_COV	-0.271***	-0.040*	-0.065***	-0.056***	-0.056***	1.000								
(7) LT_DEBT_RATIO	0.214***	-0.001	0.055**	0.013	-0.056***	-0.351***	1.000							
(8) BETA	0.272***	0.012	0.055**	0.156***	0.051*	-0.159***	-0.037*	1.000						
(9) PIOTROSKI_F	-0.071***	0.020	0.079***	0.007	-0.025	0.084***	0.150***	-0.063***	1.000					
(10) SIZE	-0.051**	0.178***	0.513***	0.151***	0.033	-0.215***	0.101***	0.103***	0.067***	1.000				
(11) LEV	0.317***	0.024	-0.032	0.061***	0.052**	-0.462***	0.251***	0.124***	-0.023	0.116***	1.000			
(12) TANGIBILITY	0.184***	0.033	-0.136***	0.220***	0.494***	0.184***	-0.152***	0.070***	-0.034	-0.033	-0.251***	1.000		
(13) ROA	-0.221***	-0.002	0.000	-0.089***	0.092***	0.497***	-0.084***	-0.251***	0.170***	-0.104***	-0.178***	0.110***	1.000	
(14) TOBINS_Q	-0.138***	-0.038*	-0.067***	-0.075***	-0.084***	0.495***	-0.104***	-0.200***	0.073***	-0.313***	-0.046**	0.023	0.547***	1.000

Table 5: Correlation matrix

*** p < 0.01, ** p < 0.05, * p < 0.1

VARIABLES	(1)	(2)	(3)	(4)
IR_IIRC	-0.446*** (0.147)	-0.335** (0.143)	-1.353** (0.579)	-0.009 (0.191)
ESG_SCORE	-0.009*** (0.003)	-0.009*** (0.003)	-0.009*** (0.003)	-0.009*** (0.003)
ENV_SEN	0.496*** (0.118)	0.406*** (0.123)	0.405*** (0.102)	0.455*** (0.106)
IR_IIRC*ESG_SCORE			0.014* (0.008)	
IR_IIRC*ENV_SEN				-0.747*** (0.256)
INFL_ADJ_INT	0.614*** (0.109)			
INT_COV	-0.003** (0.001)	-0.003* (0.001)	-0.003* (0.001)	-0.003* (0.001)
LT_DEBT_RATIO	1.038*** (0.160)	0.860*** (0.153)	0.861*** (0.154)	0.861*** (0.153)
BETA	0.514*** (0.097)	0.451*** (0.094)	0.450*** (0.094)	0.451*** (0.093)
PIOTROSKI_F	-0.018 (0.023)	-0.027 (0.020)	-0.027 (0.020)	-0.027 (0.020)
SIZE	-0.120*** (0.037)	-0.042 (0.036)	-0.042 (0.035)	-0.040 (0.036)
LEV	2.277*** (0.449)	2.110*** (0.398)	2.111*** (0.398)	2.112*** (0.396)
TANGIBILITY	0.260*** (0.080)	0.139 (0.090)	0.140 (0.090)	0.147 (0.090)
ROA	-0.012* (0.007)	-0.018*** (0.006)	-0.018*** (0.006)	-0.018*** (0.006)
TOBINS_Q	-0.084* (0.043)	-0.110*** (0.042)	-0.111*** (0.042)	-0.110*** (0.042)
Constant	2.390*** (0.802)	1.388* (0.757)	1.421* (0.755)	1.319* (0.757)
Time FE	No	Yes	Yes	Yes
Country FE	No	Yes	Yes	Yes
Observations	2,196	2,196	2,196	2,196
Number of companies	834	834	834	834
R ²	0.34	0.47	0.48	0.48

Table 6: Multivariate results

Table 6 presents the results for the generalized least squares random effects regression for the main model without (model 1) and with time- and country fixed-effects (model 2) and for the joint effects of IR_IIRC and ESG_SCORE (model 3) and ENV_SEN (model 4), respectively. We further control for AR(1) disturbances in model 1 by following the empirical approach developed by Baltagi and Wu (1999), although not for the models including time-fixed effects. The results remain robust. When including industry-fixed effects in models 2-4, ENV_SEN remains significant at the 1% level in all models, but the size of the coefficient increases to 1.022 to 1.085, depending on the model specification.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

VARIABLES	(1)	(2)	(3)
IR_IIRC	-0.351*** (0.133)	-1.424** (0.697)	-0.023 (0.168)
ESG_SCORE	-0.009** (0.004)	-0.010** (0.004)	-0.009** (0.004)
ENV_SEN	0.403*** (0.081)	0.402*** (0.083)	0.452*** (0.081)
IR_IIRC*ESG_SCORE		0.015 (0.010)	
IR_IIRC*ENV_SEN			-0.752*** (0.259)
INT_COV	-0.003** (0.001)	-0.003** (0.001)	-0.003** (0.001)
LT_DEBT_RATIO	0.870*** (0.180)	0.871*** (0.182)	0.871*** (0.180)
BETA	0.465*** (0.130)	0.464*** (0.130)	0.465*** (0.128)
PIOTROSKI_F	-0.028 (0.019)	-0.029 (0.019)	-0.028 (0.019)
SIZE	-0.045 (0.042)	-0.045 (0.042)	-0.042 (0.042)
LEV	2.187*** (0.362)	2.189*** (0.360)	2.189*** (0.358)
TANGIBILITY	0.179 (0.157)	0.180 (0.157)	0.186 (0.159)
ROA	-0.018*** (0.004)	-0.018*** (0.004)	-0.017*** (0.004)
TOBINS_Q	-0.114*** (0.040)	-0.115*** (0.040)	-0.113*** (0.041)
Constant	2.619*** (0.919)	2.654*** (0.898)	2.548*** (0.916)
Time FE	Yes	Yes	Yes
Country FE	No	No	No
$\sqrt{\psi^2}$	0.970	0.966	0.970
$\sqrt{\psi^3}$	0.996	0.996	0.992
$\sqrt{\theta}$	0.889	0.888	0.889
Observations	2,196	2,196	2,196
Highest level units (country)	28	28	28
Lower level units (firms)	834	834	834
Log likelihood	-3489.03	-3488.31	-3486.21

Table 7: Three-level variance component maximum likelihood estimator (HLM)

Table 7 presents the results obtained from the hierarchical linear model with robust standard errors and countries as highest level units. When including industry-fixed effects in the models, the results remain significant. The coefficient of ENV_SEN increases to 1.045 to 1.108, depending on the model specification.

*** p < 0.01, ** p < 0.05, * p < 0.1

VARIABLES	(1)	(2)	(3)
	<i>Re-specification model</i>	<i>Additional variable model</i>	<i>Propensity score matching</i>
IR_GRI	-0.249** (0.109)		
IR_IIRC		-0.308** (0.144)	-0.470*** (0.142)
ESG_SCORE	-0.009*** (0.003)	-0.009*** (0.003)	0.001 (0.006)
ENV_SEN	0.383*** (0.106)	0.403*** (0.103)	0.053 (0.167)
INT_COV	0.0002 (0.002)	-0.003** (0.001)	-0.001 (0.004)
LT_DEBT_RATIO	1.078*** (0.155)	0.781*** (0.150)	-0.366 (0.554)
BETA	0.503*** (0.108)	0.455*** (0.096)	0.542** (0.227)
F_SCORE	-0.033 (0.023)		-0.172*** (0.054)
SIZE	0.019 (0.038)	-0.032 (0.037)	0.040 (0.078)
LEV	1.799*** (0.331)	2.035*** (0.435)	3.194*** (0.880)
TANGIBILITY	0.198** (0.890)	0.116 (0.089)	0.179 (0.209)
ROA	-0.017** (0.008)		0.007 (0.033)
TOBINS_Q	-0.084 (0.054)		0.045 (0.193)
LIQUIDITY		0.047 (0.045)	
CASH_FLOW		-2.027*** (0.630)	
SALES_GROWTH		-0.037 (0.139)	
ALTMAN_Z		-0.028* (0.015)	
Constant	-0.126 (0.765)	1.120 (0.801)	0.393 (1.675)
Time FE	Yes	Yes	Yes
Country FE	Yes	Yes	Yes
Observations	1,450	2,176	248
R ²	0.49	0.48	0.47

Table 8: Robustness tests

Table 8 presents the results for different robustness tests, where the first two models are based on GLS regressions with robust standard errors and the third uses pooled OLS with robust standard errors. Column 1 presents the results of the re-specification model with IR_GRI as explanatory variable. Column 2 provides the results for the analysis with additional control variables. Column 3 presents the results from the PSM analysis. The results in all models remain constant when industry-fixed effects are included.

*** p < 0.01, ** p < 0.05, * p < 0.1

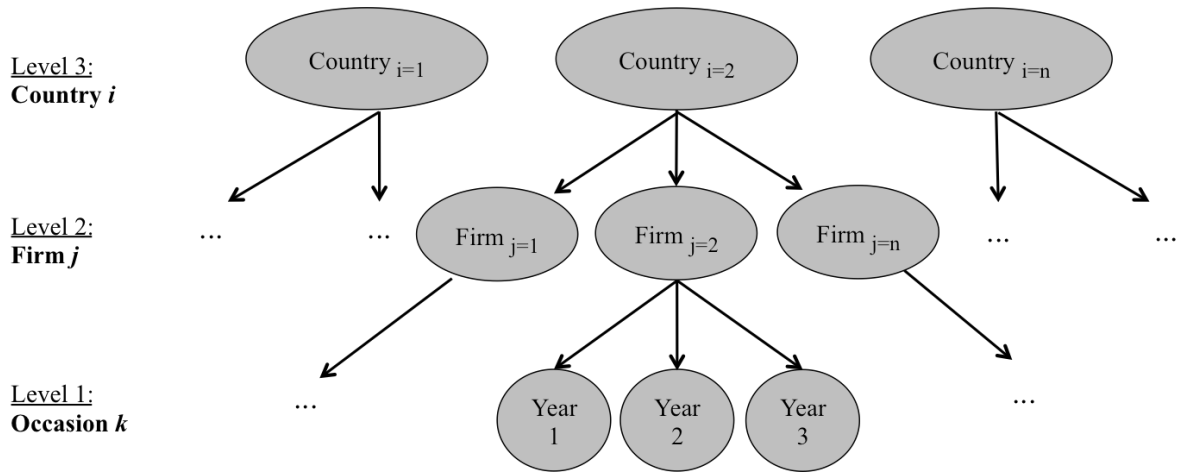


Figure 1: Hierarchically nested data structure

Figure 1 depicts the hierarchical structure in our dataset. Occasions k (level 1) are nested in firms j (level 2), which are nested in countries (level 3).

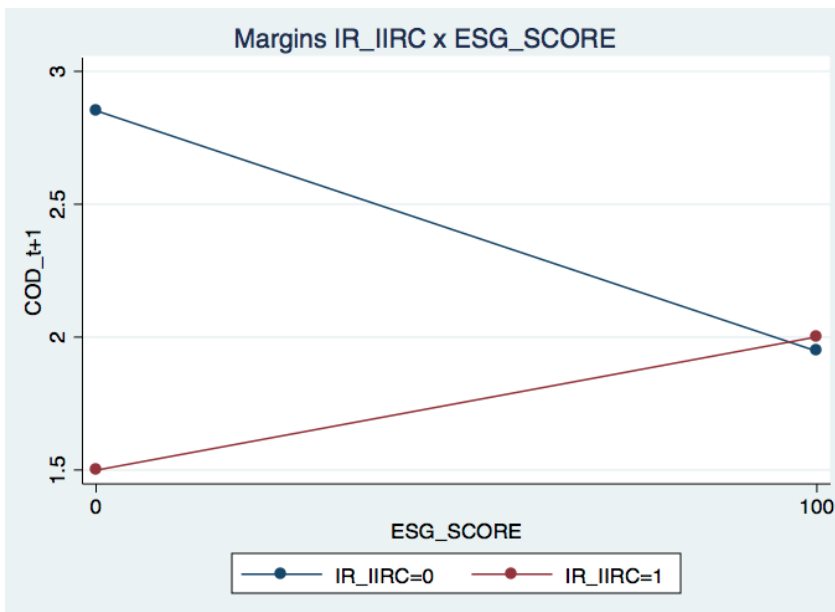


Figure 2: Marginal Effects H2a

Figure 2 depicts marginal effects for the interaction term IR_IIRC*ESG_SCORE on COD_{t+1}.

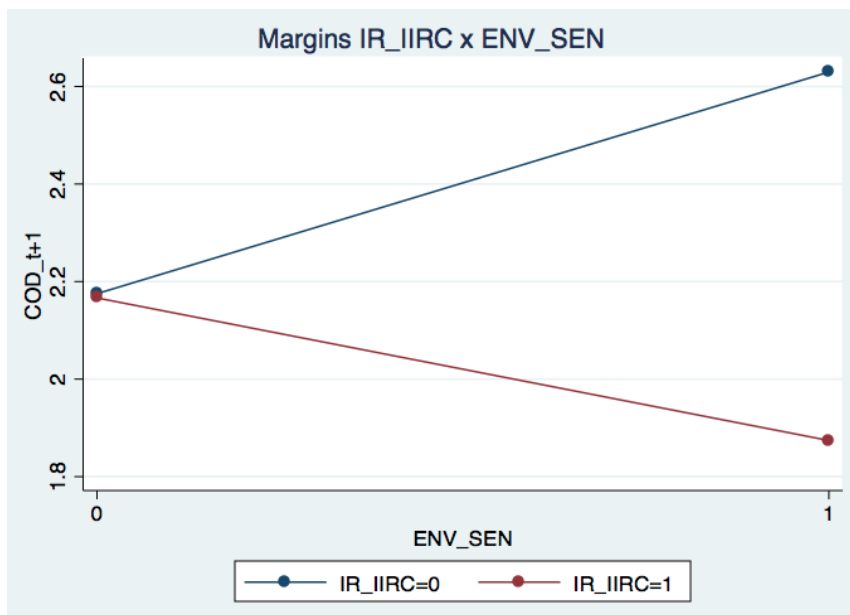


Figure 3: Marginal Effects H2b

Figure 3 depicts marginal effects for the interaction term $IR_IIRC * ENV_SEN$ on COD_{t+1} .

Annex 4: Do Nonprofessional Investors Value the Assurance of Integrated Reports? Exploratory Evidence (article 4)

Abstract²⁶

Using an experimental design, this explorative study provides first empirical evidence on the effects of an integrated reporting assurance (IRA) on nonprofessional investors' financial decision-making in a laboratory experiment. For this purpose, two independent experiments were carried out, one relying on a sample of Masters students, and one focusing on managers of large corporations. We find that students value an IRA positively, evidenced through significantly higher investments, while, against our expectations, an IRA leads to the opposite effect among managers. The results reveal that, dependent on the empirical model, an IRA has either no or even an investment-decreasing impact on executives. In order to assess the sense-making process underlying this behavior, subsequent interviews with managers were carried out which ascertained that this effect stems from negative practical experiences with audit and assurance engagements and technical doubts specific to IRA as well as emotional caveats regarding the audit and assurance profession; these shape practitioners' critical attitudes towards assurance engagements. These findings indicate a prevailing divergence between the extolled theoretical contribution of an IRA to report credibility and its actual nature in prevailing practice. In the further course of the investigation, we also find that the assurance provider (Big 4 auditor versus specialized consultant) does not affect investment decisions, but that a higher assurance level leverages investments among students. The results of this study add to the growing, albeit still small, IRA research body and deliver valuable insights for research, regulators, and practice.

²⁶ The style, form and citation style are in accordance with the individual journal guidelines and hence may differ from the other parts of this dissertation.

Keywords

Integrated Reporting Assurance, Integrated Reporting, Nonprofessional Investors, Nonfinancial Reporting, Corporate Governance, Managers

1 Introduction

Amplified by the financial crisis and the resulting loss of confidence in financial reporting, over the past years an increasing number of firms have responded to investors' growing expectations regarding sustainability by voluntarily disclosing nonfinancial information (Perrini, 2005; Dhaliwal et al., 2011; 2012). Although academia shows that corporate social responsibility (CSR) reporting is value relevant (Godfrey et al., 2009; El Ghouli et al., 2011; Cheng et al., 2014; Malik, 2015; Cahan et al., 2016), the prevailing disconnectedness of firms' reporting environments is frequently criticized for leading to information overload, the risk of 'greenwashing' and impaired decision usefulness for shareholders and other stakeholder groups (Miller, 2010; Lyon and Maxwell, 2011). Building upon a large strand of extant research on investment behavior, this should particularly apply to nonprofessional investors (NPIs), who, unlike professional investors, often neither possess subject-related in-depth knowledge nor apply efficient information-processing and acquisition strategies to cope with the extent of information (e.g. Frederickson and Miller, 2004; Elliott, 2006; Rennekamp, 2012). In consequence, firms' current reporting often imposes a natural investment constraint on NPIs ("dysfunctional consequences for those with lesser expertise", Snowball, 1980, p. 324), although they account for substantial investment amounts in capital markets (Elliott et al., 2007, 2008). For instance, in 2016, 16.1% of the stocks in free float listed in the German DAX-30 (approximately €162.5 bn) were held by private investors (DIRK and IPREO, 2017).

In an attempt to remedy this, the International Integrated Reporting Council (IIRC) developed the Integrated Reporting (IR) <IR> Framework, which aims to replace the current variety of stand-alone reports and to emerge as the new holistic corporate reporting standard (IIRC, 2013). By aggregating and connecting material financial and nonfinancial information, IR intends not only to enable firms to cohesively depict their value creation over time, but also to improve (nonprofessional) investors' capital allocations (Eccles and Krzus, 2010; IIRC, 2013). In order to realize its *raison d'être* as a comprehensive decision-making tool, the information in the integrated report ought to fulfill both axioms of decision usefulness (Goicoechea et al., 2019), namely relevance and reliability

(Kadous et al., 2012; IIRC, 2013). Although the relevance of IR to investors and capital markets has been evidenced in a plethora of empirical studies (e.g. Barth et al., 2015; Lee and Yeo, 2016; Zhou et al., 2017; García-Sánchez and Noguera-Gámez, 2017), its reliability has, as yet, received scant attention. For this reason, in its Assurance on <IR> consultation draft the IIRC “initiated a debate about trust and credibility regarding <IR>, with a particular focus on the role of independent assurance” (IIRC, 2015, p.4). Drawing upon earlier empirical findings on the related voluntary assurance of CSR reports (CSRA), an external assurance of the integrated report (IRA) can be assumed to leverage its reliability and thus to bolster investors’ trust (Cohen and Simnett, 2015; Velte and Stawinoga, 2017a). Along these lines, a handful of studies have engaged with the evolving topic of IRA, revealing that an external verification of the integrated report leads to better reporting quality (Gerwanski et al., 2019; Maroun, 2019), higher firm values and better capital market performance (Akisik and Gal, 2019; Caglio et al., 2019; Gal and Akisik, 2019) and greater investment willingness among professional investors (Reimsbach et al., 2018). Another stream of predominantly normative studies is critical of present IRA practice, positing that the lack of specific and distinct assurance guidelines holds it captive in a premature stage and impairs its validity (Cheng et al., 2014; Huggins et al., 2015; Simnett and Huggins, 2015; Maroun, 2017, 2018; Briem and Wald, 2018; Green and Cheng, 2019). However, despite the recent surge in academic interest in IRA and in spite of the relevance of NPIs for capital markets and firms, no study has yet investigated the effects of the “<IR> assurance journey” (IIRC, 2015, p.6) on the investment behavior of those with lesser expertise.

Using a 2 x 2 + 1 design, our experiment analyzes the effects of an IRA on the investment decisions of NPIs. For this purpose, two independent experiments were carried out with two different groups of NPIs, namely Masters students and managers of large corporations; subsequent interviews with the latter contextualized and triangulated the experimental results. This approach was chosen for three reasons: first, in its ‘Assurance on <IR>’ consultation draft, the IIRC (2015) emphasizes the relevance of managers for further discourse on IRA. Second, while Masters students are a common surrogate for NPIs in academia,

assumedly managers are private investors themselves (as confirmed in subsequent interviews), who should exhibit a strategic understanding of IRA. Hence, there is merit in investigating how experienced participants with practical knowledge act in their role as NPIs when it comes to investment decisions surrounding an IRA (e.g. Lachmann et al. (2014) use auditors as a proxy for knowledgeable NPIs). Third, drawing on earlier evidence that the decision usefulness of an assurance and the related expectation gap depend on the investor's sophistication (Gold et al., 2012) and audit-specific education (Monroe and Woodliff, 1993; Gay et al., 1997), the sample composition allows discrimination between less sophisticated students with an academic-theoretical investment orientation and more sophisticated managers with an experienced-practical investment background.

Our study contributes to the emerging debate on IR in the following ways: first, to the best of our knowledge, this study is the first to investigate the effects of an IRA and its determinants on NPIs' investment decisions (IIRC, 2015) and thereby answers Goicoechea et al.'s (2019) specific call for research on NPIs and IRA. Specifically, our study advances earlier scientific literature in the growing area of IRA as it sheds light on previously fundamentally unexplored questions such as the relevance of the IR assessor for NPIs or "the value [that providers of financial capital] attribute to different levels (limited, reasonable, etc.) ... of assurance" (IIRC, 2015, p.12); it thus delivers relevant insights for research, regulators, and practice. Second, as subsequent interviews with managers revealed a prevailing divergence between the extolled theoretical contribution of an IRA to reporting quality (i.e. credibility, reliability, independence) and its actual shape in practice (i.e. managerial capture, economic bonding, technical challenges), our results suggest that the value attributed to an IRA may depend on subjects' practical experience with voluntary assurance engagements. The unveiling of the underlying motives that drive the critical attitude of managers toward assurance engagements at first hand adds to the scant critical IRA literature and should have valuable practical implications for both the assurance profession and prevailing assurance practice. Bearing in mind Goicoechea et al.'s (2019) belief that "the decision usefulness of integrated reporting must be

enhanced if the practice is to be widely adopted in the future” (p.2), the recommendations put forth may provide additional momentum to the IR(A) journey and may be regarded as a new impetus for a fruitful avenue of further research. Finally, building on the IIRC’s statement that “academic research is a critical component in advancing ... assurance on <IR>” (IIRC, 2015, p.8), our study replies to various calls for empirical research on IRA and extends the present experimental research field (FEE, 2014; IIRC, 2015; IAASB, 2016; Maroun, 2017; Velte and Stawinoga, 2017b; Goicoechea et al., 2019).

The remainder of this paper is structured as follows: in section 2, we derive our research hypotheses, building on theory and earlier empirical evidence. Section 3 describes the experimental methodology, which encompasses the design, sample selection, task and procedure of the experiment. In section 4, the hypotheses are tested and the results are presented. Subsequently, in section 5, the results are ex-post cross-validated and contextualized through interviews. In the final section, we discuss our results, reflect on limitations and suggest further research opportunities.

2 Theoretical Background, Related Literature and Hypotheses

Development

2.1 Theoretical Background

As the credibility of (especially the non-financial) information provided in the integrated report is inherently bounded by virtue of the report’s voluntary character and unfettered managerial discretion during its preparation (Simnett and Huggins, 2015; Corrado et al., 2019; Gerwanski et al., 2019), investors face a high degree of uncertainty if the information is only ‘self-assured’ by the firm (Eccles and Krzus, 2015). This applies, above all, to the non-financial information in the integrated report, which often is not subject to the same rigor and controls in the information-generation process as financial information and therefore provides great leeway for impression management (Haji and Hossain, 2016). In the absence of assertive mechanisms for oversight, management can, for instance, emphasize positive and obfuscate negative information to create an overall positive framing of the firm (Delmas and Burbano, 2011). By voluntarily

providing assurance on the information provided in the integrated report, management can rectify, or at least attenuate, these concerns and signal trustworthiness and reliability to investors. Reasoning from an agency perspective (Jensen and Meckling, 1976), an independent external assessor in its gatekeeper function mitigates agency conflicts, lowers information risk and alleviates the probability of impression management (Simnett et al., 2009; Junior et al., 2014; Casey and Grenier, 2015; Sethi et al., 2017). Hence, it follows that an assurance apparently fulfills a monitoring role in general and in particular subsumes the monitor role of investors; this has the effect of increasing reporting quality (e.g. Ballou et al., 2018) as it substitutes for weaknesses in corporate governance systems, contributes to compliance with reporting guidelines and decreases the risk of material misstatements. It is reasonable to assume that managers engage in voluntary external verification if they expect the benefits (higher credibility and investment likelihood) to outweigh the assurance costs, which are driven by different assurance details, such as the choice of the assurance provider and the assurance level applied. These factors are elaborated on in greater detail below.

Taking into account that particularly NPIs, with their limited subject-specific expertise, are not capable of (dis)proving either the information veracity, or the initial data generation process by themselves, an IRA is expected to serve as a quality seal especially for the investment decisions of those with lesser expertise (Moroney et al., 2012; Braam and Peeters, 2018). Given that Schaub (2006) points out that investors often put more emphasis on the assurance than on the report itself, the IRA is expected to possess a valuable credibility and quality signaling function that increases NPIs' investment confidence.

2.2 Related Literature and Hypotheses Development

Relevance of IRA on NPIs' investment decisions

In line with Eccles et al.'s (2012) belief that "the full value of integrated reporting will only be realized when integrated assurance is provided on the report" (p.162), Gal and Akisik (2019) show that IR only increases a firm's market value if accompanied by an external assurance. Investigating the IR practice of South

African firms, Caglio et al. (2019) reveal that an IRA acts as a credibility-enhancing instrument for external users as it attenuates the negative effects of low-quality textual attributes on market value and liquidity, and decreases analyst forecast dispersion. In a similar vein, Maroun (2019) and Gerwanski et al. (2019) point out that an IRA is positively related to IR quality and has an attesting function that signals to outsiders the validity and reliability of the information reported. Briem and Wald (2018) add that firms' engagement in IRA is driven by coercive pressures to increase the credibility of the disclosed information to investors and rating agencies, as well as a desire to increase data quality and to improve internal processes. In an experimental setting, Reimsbach et al. (2018) find that an assurance of sustainability information leads to higher evaluation of a firm's sustainability performance and consequent investment-related judgments by professional investors, although the assurance effect was stronger in the case of separate reporting compared to integrated reporting. The authors explain this by a radiating halo effect, which, given that the integrated report contains mandatorily audited financial information, may mute the incremental effect of an additional voluntary assurance of the non-financial information in IR.

Although, as yet nothing is known about the association between NPIs' financial decision-making and IRA, there is prior empirical evidence in the related domain of CSRA (Velte and Stawinoga, 2017a). Hodge et al. (2009) find that users approve of CSRA, which the authors attribute to an increase in reliability. Comparably, Shen et al. (2017) show a positive association between CSRA and NPIs' investment willingness, especially when the information disclosed is positive in nature. In a similar vein, Cheng et al. (2015) reveal that NPIs' investment willingness may be amplified by a CSRA, depending on the strategic relevance of the sustainability-related information. Moreover, Brown-Liburd and Zamora (2015) show that NPIs' stock price (re-)assessments are positively related to the presence of a CSRA.

H1: NPIs invest higher amounts in case of an IRA.

Relevance of the IRA Assuror on NPIs' investment decisions

Earlier empirical literature identified two predominant assurance providers for voluntary assurance engagements, namely auditors – primarily represented by the Big 4 auditors – and specialized consultants (Simnett et al., 2009; Stawinoga and Velte, 2017). We expect the choice of the IRA provider to affect NPIs' financial decision-making, as it frequently serves as a surrogate to iterate (perceived) assurance quality, which in turn determines investors' information risk (Teoh and Wong, 1993; Weber et al., 2008; Boone et al., 2009). Consequently, NPIs should have higher investment willingness if the IRA assuror fulfills the requirements for high assurance quality, which the IIRC defines as skills and experience, subject matter and industry-specific competence, soft skills, ethical values and an understanding of value creation across capitals (IIRC, 2015).

Unlike specialized consultants, Big 4 auditors not only have a diversified client portfolio, which impedes opportunistic behavior and leads to a higher independence (DeAngelo, 1981), they are also bound by international auditing and assurance standards (e.g. ISAE 3000). These standards strongly align with the competencies summarized in the IIRC's 'Assurance on <IR>' consultation draft (2015), such as “professional skepticism and professional judgment; evaluating internal systems; applying a risk-based approach based on understanding the organization and its environment; testing the reliability of data and applying analytical skills” (p.18). Moreover, during the assurance process, Big 4 auditors are subject to strict quality control mechanisms (Cohen and Simnett, 2015) which, for example, attenuate the risk of management involvement and capture of the IRA process (e.g. Ball et al., 2000; O'Dwyer and Owen, 2005; O'Dwyer, 2011; Smith et al., 2011), but which do not equally apply to consultants (Simnett et al., 2009). Although specialized consultants are frequently judged as having high subject-related (CSR or IR) expertise, Simnett et al. (2009) argue that this specialized expertise can easily be acquired by Big 4 audit firms, either bought in or through investments in training, knowledge transfer and technical systems. Furthermore, taking into consideration the view that “financial and non-financial assurance providers ... certainly don't speak the same language” (IIRC, 2015, p.19), and that consultants are not allowed to audit

a firm's financials, Big 4 auditors are able to assure the whole of an integrated report from a single source (Fernandez-Feijoo et al., 2016).

Specific to the IR context, Simnett and Huggins (2015) and Goicoechea et al. (2019) state that the diverse subject matters, multidisciplinary and narrative character, and the forward-looking information in IR require a much broader set of skills than the assurance of CSR reports. Against this backdrop, Eccles et al. (2012, p.172) expect Big 4 auditors, who exhibit “global networks, established relationships with all public companies, and the skills and a long tradition of conducting rigorous audits”, to play a major role in IRA; this aligns with the Big 4's current supremacy in IRA (Stawinoga and Velte, 2017). Drilling into this notion, Akisik and Gal (2019) and Gal and Akisik (2019) find that an IRA increases (decreases) a firm's market value if provided by an accounting (non-accounting) firm. However, results are less straightforward when referring to the firm's accounting-based financial performance (i.e. return on assets and return on equity). Specifically, Akisik and Gal (2019) reveal that an IRA leads to higher accounting-based performance independent of whether it was conducted by an accounting or non-accounting firm. In a similar vein, Caglio et al. (2019) point out that IRAs conducted by accountants provide higher reputation and credibility to market participants compared to those assured by providers outside the accounting profession. Similarly, Maroun (2019) writes that an IRA by a Big 4 accounting firm leads to higher IR quality. Contrary to the value-enhancing trend of IR disclosure as put forth in earlier literature, Landau et al. (2019) find that IR decreases a firm's market value; however, the negative consequences are offset by the appointment of a Big 4 auditor. The results of the few studies can be further confirmed through earlier research in the related domain of CSRA, which attributes a higher assurance quality to auditors – especially the Big 4 – measured by higher assurance quality indices (Perego and Kolk, 2012; Zorio et al., 2013; Martínez-Ferrero et al., 2018), higher confidence of report users (Hodge et al., 2009; Pflugrath et al., 2011) and positive capital market reactions (Casey and Grenier, 2015). Accordingly, we expect the appointment of a Big 4 auditor to increase the investments made by NPIs.

H2: NPIs invest higher amounts when the integrated report is assured by a Big 4 auditor compared to a specialized consultant.

Relevance of the IRA Level on NPIs' investment decisions

The IRA level qualifies the degree of confidence of NPIs that the subject matter is free from material misstatements and determines the assurance providers' liability in case of failure (Manetti and Becatti, 2009). In the absence of IRA-specific standards, in practice, the assurance of an integrated report predominantly refers to the standards established for CSRA (Cheng et al., 2014; IIRC, 2015; Maroun, 2017, 2019). Depending on the assurance standard applied (ISAE 3000 or AA1000AS), the assurance level of the integrated report is specified as either high/reasonable with a positive wording or moderate/limited with a negative wording, respectively (Boiral and Gendron, 2011; Junior et al., 2014; Hummel et al., 2019). While the moderate/limited assurance is a review engagement, a high/reasonable assurance represents an in-depth examination; this encompasses not only a rigorous analytical information evaluation and risk assessment of the information provided in the integrated report, but also an audit of the underlying IR reporting- and internal control systems (Maroun, 2017). Hence, corresponding to the risk-oriented approach in assurance engagements, a high/reasonable level of IRA should provide more confidence to NPIs (Hasan et al., 2003) since it has a higher likelihood of detecting material misstatements and implies a lower assurance risk (Manetti and Becatti, 2009). Also, a high IRA is also expected to attenuate the 'assurance expectation gap' in IRA, which connotes a divergence between the assurer's intention and the investor's interpretation of the message conveyed in the assurance report (Gray et al., 2011; Maroun, 2017). Following the notion that the assurance expectation gap is negatively related to audit-specific education and knowledge (Monroe and Woodliff, 1993; Gay et al., 1997; Gold et al., 2012), NPIs in particular should be affected by the IRA expectation gap. Against this backdrop, Simnett and Huggins (2015) question "how well users understand the basic scale of 'reasonable' and 'limited' assurance" (p.47). Following the argument of Hodge et al. (2009), the systematic assurance process and the positive wording in a high/reasonable assurance might be more congruent with NPIs' perception of *what* assurers

(might) do compared to a review engagement with a “negative assurance opinion [which] might confuse users” (Schelluch and Gay, 2006, p. 653). This opinion is commensurate with the results of an experimental study by Rivière-Giordano et al. (2018), who find that a moderate/limited assurance level has an adverse effect on analysts; they actually prefer the absence of a CSRA over a moderate/limited level of assurance. Originating from the theoretical consideration, a higher assurance level is hypothesized to positively affect NPIs’ investments.

The IIRC’s statement in its discussion paper on IRA that “it is not clear what value they [investors] attribute to different levels (limited, reasonable, etc.) ... of assurance” (IIRC, 2015, p.12) is reflective of the scarce research on the IRA level. One of the few exceptions is Reimsbach et al. (2018), who show that an IRA with a high/reasonable assurance level leads to a higher investment willingness among professional investors; however, the study neither differentiates between the different assurance levels nor addresses NPIs. Maroun (2019) reveals that a reasonable level of IRA has a higher contribution to both IR reporting quality and corporate financial performance compared to a limited level of assurance. Goicoechea et al. (2019) find that IR users (including about 60% managers) regard a reasonable assurance as the most appropriate assurance level for IRA, which reinforces Eccles et al.’s (2012) view that an IRA would ideally be provided in the form of a positive, rather than a negative, assurance. Along these lines, given the early state of IRA and the absence of specific guidelines, Cheng et al. (2014) point out that in practice reasonable assurance is only provided for selected sections of integrated reports of South African firms. Stawinoga and Velte (2017) note that the majority of the firms listed in the IIRC Examples Database have a high/reasonable assurance for at least some section(s) of their integrated report, despite the fact that the absence of an IRA-specific standard (IIRC, 2015; Maroun, 2017) and the frequent lack of a sufficiently implemented IR reporting infrastructure among firms (Steyn, 2014; Stubbs and Higgins, 2014) would suggest that assurance practitioners seek to limit the assurance scope when auditing ‘new’ reporting formats in order to decrease litigation and reputation risks (Hasan et al., 2005). In a related context, Fuhrmann et al. (2017) find that a CSRA only decreases information asymmetries (and thus delivers

value to NPIs) if the assurance level is high/reasonable, while Hodge et al. (2009) reveal that NPIs perceive the CSRA as more reliable if it was conducted by an auditor with a high/reasonable level of assurance. Accordingly, we expect that NPIs respond to a higher assurance level through increased investments.

H3: NPIs invest higher amounts if a high/reasonable level of IRA is conducted compared to a moderate/limited level.

3. Methodology

3.1 General Experimental Strategy

To assess the effect of an IRA on the investment behavior of NPIs, we carried out two independent experiments, one relying on Masters students, and one focusing on top and middle managers of large German corporations who were instructed to act as NPIs. By selecting two participant groups with a different degree of financial sophistication and assurance-specific expertise (Graf-Vlachy, 2019), we intended to take note of potential systematic differences in underlying investment-related decision frames (e.g. experience vs. academic knowledge) and (non-)financial reporting attitudes (e.g. Abdel-Khalik, 1974; Dyer et al., 1989; Monroe and Woodliff, 1993; Gold et al., 2012). While students are a common surrogate for NPIs in experiments (Elliott et al., 2007), managers as participants are hard to acquire and hence experiments with executives are rare (Graf-Vlachy, 2019). Given that a pre-test revealed processing time (Lochmann and Steger, 2002) and site-dependency as major factors that drive managers' likelihood of participation, the experimental procedure (section 3.4) was tailored to, and thus slightly differed between, the two subject groups; the experimental design (section 3.2), however, was the same in both. Due to the reasons outlined above, the executives received only one scenario, which was completed at their workplace (between-subjects design), while the students participated in two scenarios (within-subjects design). The authors are aware that these differences might affect the comparability of the results between the different groups. Accordingly, the experiments should be considered independently from each other; however, both experiments are internally valid.

3.2 Experimental Design

The experimental material comprised a two-page extract from an integrated report disclosed by Schmidt-SE, a fictitious EURO STOXX 50 listed company belonging to the automobile industry, accompanied by a short assurance statement and a questionnaire. The design of the extract was inspired by a real report, but was sufficiently modified to avoid participants identifying the actual firm. The general firm setting outlined a moderate growth in profitability and a medium industry risk. The extract from the integrated report focused on the Business Health Culture Index (BHCI) and illustrated the relationships between employee engagement, customer loyalty, emissions and the operating profit of Schmidt-SE. While the extract of the integrated report was the same for all cases, the two manipulated dimensions were located in the IRA statement. The first manipulated variable is the *IRA assurator*, which is either a professional Big 4 audit firm or a specialized consultant and the second is the underlying *level of IRA*, which was specified either as high/reasonable with a positive wording or moderate/limited with a negative wording. The expression of the IRA level combines the phrasing of the two most commonly used assurance standards for non-financial information, ISAE 3000 and AA1000AS (Boiral and Gendron 2011; Junior et al., 2014; Hummel et al., 2017; Caglio et al., 2019). We thereby draw on the findings by Perego and Kolk (2012) who state that assurance standards are often used jointly in assurance practice to increase reliability, and the recommendations by Hodge et al. (2009) as well as Goicoechea et al. (2019) to combine or standardize the wordings in order to facilitate the differentiation for users.²⁷ To assess the value of an IRA per se, participants in a control treatment received the extract from the integrated report with a note that the report was not assured by any independent third party. This yields a 2 x 2 + 1 design with the following treatments:

²⁷ See Appendix for the complete experimental material. By utilizing the combined expressions 'high/reasonable' and 'moderate/limited', we combined the phrasings of the two most common non-financial assurance standards. While the equivalent moderate (limited) assurance level of the AA1000AS (ISAE 3000) standard is formulated in a positive (negative) form and is commonly applied by consultants (auditors), Michelin et al. (2019) state that these standards have become more aligned over time. We followed Hodge et al. (2009) and decided to use the negative expression of the more established ISAE 3000 standard (Manetti and Becatti, 2009).

- Big 4 auditor with a high/reasonable assurance (BIG4_REAS),
- Big 4 auditor with a moderate/limited assurance (BIG4_LIM),
- specialized consultant with a high/reasonable assurance (CONS_REAS),
- specialized consultant with a moderate/limited assurance (CONS_LIM),
and
- control treatment without an assurance (NO_ASS).

3.3 Participants

In the first experiment 142 Masters students enrolled in six different business administration courses at three German universities participated. The selection of students from different universities at different stages of their study is intended to ensure a broad cross-section. After excluding observations with missing and invalid answers, the within-subjects design amounts to an overall sample of 234 observations.²⁸

The second experiment explores the reactions of managers. Due to their high financial sophistication and strategic experience (Ouakouak et al., 2014; Lampaki and Papadakis, 2018), top and middle managers should exhibit a sound understanding of the concept of IRA (Goicoechea et al., 2019) to be able to make reasonable investment decisions. In line with Kumar et al.'s (1993) reasoning that qualified key informants deliver better data, we introduced a minimum annual external firm turnover of €15m (trading industry > €30m) as a requirement for participation for two reasons (Wilms et al., 2019): first, increasing firm size presumably is positively related to managerial experience and knowledge (e.g. Brenner and Schwabach, 2003; Bloom and van Reenen, 2010); and, second, executives' ability (e.g. professionalism and expertise) is likely to increase with firm size and corresponding compensation (Henderson and Fredrickson, 1996; Gabaix and Landier, 2008). This approach should lead to reasonable responses even if the participant is only a little familiar with IR in

²⁸ In total, 50 observations from 25 participants were discarded because of missing answers (n=42); invalid answers due to an investment amount >€1,000 (n=6); invalid answers in only one of the two questionnaires in the within-subjects design (n=2), which ensures a balanced sample. The empirical results remain robust respective to including or excluding the latter. In total, the student sample amounts to 234 observations of 117 participants.

practice. The managers were sourced with the help of a major German bank's corporate customer advisers, who were asked to randomly (without any systematic pattern) choose participants (other than investment firm managers, since their tasks rather resemble those of professional investors) within their portfolio. In total, 140 managers were contacted, of which 97 returned the questionnaire. The high response rate of approximately 70% reduces the probability of participation- and non-response biases (Groves and Peytcheva, 2008) and might be due to the corporate customer advisers' preliminary notifications, intrinsic motivation, customer loyalty, and the high relevance of the bank account. After discarding invalid responses, the total sample was 82 managers.²⁹

[insert table 1 here]

As depicted in Table 1, we randomly assigned the managers to one and the students to two of the five scenarios BIG4_REAS, BIG4_LIM, CONS_REAS, CONS_LIM and NO_ASS.

3.4 Task and Procedure

[insert figure 1 here]

The experiment was conducted as a pen-and-paper experiment in German language. Figure 1 describes the experiment flow for the two participant groups; as described above, the procedure differed slightly to account for the peculiarities of the corresponding participant group. Whereas the Masters students participated during their lectures at university, the location-bound executives were contacted by their corporate customer advisers and, after agreeing to participate, received the experimental material via mail. Before the experiment started, the students received a standardized oral introduction and instructions,

²⁹ Among the managers, invalid questionnaires were attributable to missing answers (n=3), invalid answers due to an investment amount >€1,000 or inconsistent answers in the lottery task (n=3) and formal invalidity, i.e. the questionnaire was returned without the corresponding case (n=9).

while the experimental material sent to the executives was accompanied by a cover letter to create a setting as comparable as possible.³⁰

In the oral introduction, the concept of IR was explained to the students and they were provided with general information about voluntary IRA engagements, assurance levels and providers.³¹ Analogously, the cover letter sent to the managers briefly introduced the concept of IR as well as the basic idea of an IRA and contained all relevant information. As it was reasonable to assume that the managers would know about the different assurance levels from their practical experience (as confirmed in subsequent interviews, see section 5), we decided to omit this information in order to keep the cover letter as short as possible; this was considered important to ensure close reading and participation. At the end of the cover letter, the managers were asked to return the material by means of the stamped return envelope attached: this was addressed to the authors to guarantee anonymity. In the instructions part, the students were orally advised to read the information carefully and in the prescribed sequence, not to cooperate, to complete the questionnaire, and to decide from the perspective of a

³⁰ See Appendix for the complete experimental material.

³¹ We decided to provide a standardized introduction to the research area, thereby following the approach of prior related experimental studies (e.g. Hodge et al. (2009); Anderson et al. (2018), who supplied participants with specific background information on retirement investing in the form of a PowerPoint presentation to elucidate their investment decisions). The introduction was designed in a neutral fashion that provided only general information about voluntary assurance practice so as not to bias participants in either direction. Generally speaking, there is an ongoing methodological debate on (the extent of) context-free versus in-context presentation of experimental tasks and information; each has advantages and disadvantages. While a subject-specific introduction may, in the worst case, lead to distortions of data and lower external validity of results, based on a review of related literature, Alekseev et al. (2017) conclude that context-framed instructions are either useful or produce no change in behavior, particularly as they can lead to a better identification, reduce confusion among participants when it comes to sophisticated reasoning, yield responses of better quality and allow for more accurate conclusions to be drawn about behavior in real-world contexts (e.g. Abbink and Hennig-Schmidt, 2006; Levitt and List, 2007; Weimann and Brosig-Koch, 2019). Given that the absence of an IRA-specific standard leaves investors with high degrees of uncertainty (Cheng et al., 2014; Maroun, 2017, 2018; Briem and Wald, 2018), the provision of initial information (e.g. that basic elements of current IRA practice are adopted from the related CSRA discipline) arguably decreases participants' confusion and helps them to identify with the setting. To dispel any remaining risk of a potentially distracting framing effect also from a methodological perspective, we re-ran the experiment without the introduction with a smaller group of Masters students (18 participants, 36 questionnaires). Descriptive (average investment amounts) and multivariate results (coefficients and levels of significance of OLS regressions with subject-level clustered standard errors) remain inferentially equivalent and fortify our findings (untabulated).

fictitious private investor. Similar instructions were presented to the managers on the first page of the experimental case.

After processing the experimental material, the participants completed the questionnaire. Comparable to the design in Shen et al. (2017), the dependent variable is a participant's investment amount, ranging from €0 to €1,000. It was worded as follows: 'Imagine you have savings of €10,000. Based upon the information provided in the case, how much of an additional €1,000 would you invest in Schmidt-SE?'. Because students and managers are likely to be heterogeneous with respect to their private wealth level and thus might inherently differ in their investment behavior (Riley and Chow, 1992; Guiso and Paiella, 2008), the investment value was predicated on a base wealth of €10,000 to set a uniform reference point and establish a comparable decision-making basis. In the next step, several IR-specific questions were posed to measure participants' attitudes toward and experience with the concept of IR, as these factors presumably affect the investment decision. Finally, to control for observable participant-specific factors, the participants were asked to answer demographic questions about their age, gender, professional work experience, risk attitude and cognitive ability. The individual risk attitude was captured by two established measures: first, by a self-assessment of risk-taking on a scale ranging from 0 (risk-averse) to 10 (risk-seeking) and, second, by means of a lottery task (Dohmen et al., 2011). Cognitive ability was assessed with a specific question following Frederick (2005), which was worded as follows: 'If an orange and an apple cost €1.10 together, and the apple costs €1 more than the orange, how much does the orange cost?'. To maintain the cognitive character of the question in a pen-and-paper design, we covered the question and instructed the participants to give the first intuitive answer within seven seconds after uncovering the question. The demographic questions were posed at the end to avoid biases resulting from priming effects.

After finishing the questionnaire, in each session two students were selected through the drawing of lots, one to receive a €25 voucher as participation fee and another to participate in the lottery gamble (Dohmen et al., 2011). To ensure

incentive comparability, the lottery player drew a second lot which determined the random row to be used; the subject then decided whether to accept the safe payment (€0 - €19) or to play the lottery with a 50/50 chance of receiving either €0 or €30. The equal probability of each lottery outcome was ensured by flipping a coin. In total, seven students received a €25 voucher and the average lottery gamble payment was €13.29 (a total of €93 was paid to the seven participants).³² Every experimental session was logged with an observation sheet. The managers did not receive any monetary compensation as ensuring anonymity was considered to be more important. Since the payments paid to the students were not performance-related, marginal incentives are the same for both samples. All variables are defined in Table 2.

4. Results

4.1 Participant-Related Descriptive Statistics

[insert tables 2 and 3 here]

Table 3 presents the participant-related descriptive statistics with respect to their attitude towards IR as well as different demographic characteristics for both samples. Overall, the managers exhibit both a higher IR-specific knowledge (2.23 compared to 1.98) as well as experience with IR (0.84 compared to 0.66). However, students attribute a higher importance to IR (3.77) than do managers (3.06). Whereas about half of the participating students are female (50%), all but two managers in our sample are male (98%). Students on average are 24.9 years old and have 2.6 years of work experience, while managers' average age (50.1 years) and work experience (26.8 years) is distinctly higher. Further, the demographics reveal that the managers are slightly more willing to take risks (self-assessment: students 0.88, executives: 0.89; lottery task: students 4.50, executives 5.37) and show a higher cognitive ability (0.61) compared to students (0.40). Subsequent tests (ANOVA and Kruskal Wallis tests) did not reveal any statistically significant differences (all p-values > 0.1) between the five scenarios

³² One particularly large Masters course was split into two classes, therefore seven students received a voucher and seven participated in the lottery gamble risk task.

with respect to IR-specific (knowledge, experience and importance) or personal (age, gender, years of work experience, risk attitude and cognitive ability) characteristics, with the exception of the managers' risk attitude in the self-assessment task (Kruskal Wallis test: p-value = 0.03; ANOVA: p-value = 0.04).³³ Table 4 provides pairwise correlations, subdivided into the student (Panel A) and manager samples (Panel B). Results do not raise collinearity concerns and univariate statistics reveal preliminary associations between the variables of interest. In line with our expectations, ASSUR, BIG4 and REAS are positively associated with students' investment volume, while, against our presupposition, managers' financial decision-making seems not to be associated with these factors.

[insert table 4 here]

4.2 Test of H1: IRA

[insert table 5 here]

Hypothesis 1 states that NPIs invest more in case of an external IRA. As presented in Table 5, univariate statistics (two-sided t-tests) revealed that students showed a significant investment surplus of €131.94 (p-value = 0.006) in case of an assurance (€380.94), compared to the absence of an external verification (€249.00). Contrary to our expectations, among managers the presence of an IRA diminished the average investment amount from €467.65 without an IRA to €379.23 with an IRA, but without statistical significance (two-sided t-test: p-value = 0.350; Wilcoxon rank-sum test: p-value = 0.384).

[insert table 6 here]

³³ For the sake of robustness, in addition to ANOVA, we performed Kruskal Wallis tests for the smaller sample of managers. The results indicate that managers' risk attitude (self-assessment) is not equally distributed among the five scenarios. Specifically, this is driven by the managers in the control treatment (NO_ASS), who are significantly less willing to take risks (Kruskal Wallis test: p-value = 0.04; ANOVA: p-value = 0.05). Nevertheless, when considering the second measure for risk attitude (lottery task), there is no significant difference (p-values > 0.1). Conservatively, it should be mentioned that gender in the student sample is close to the 10% level (p-value = 0.15). We account for this in the following empirical consideration by including control variables, as well as applying both measures of risk attitude.

Table 6 reports the results of subsequent regression analyses, which allow the inclusion of control variables. The models are specified with robust standard errors (manager sample) and subject-level clustered standard errors (student sample), since observations from the same student in subsequent rounds are not considered independent. Columns 1 and 3 (2 and 4) of Table 6 present the results from the regression without (with) controls. If the results are qualitatively the same, the subsequent empirical consideration focuses on the analyses with control variables.

In line with our expectation and consonant with the univariate results, among students (col. 2) an IRA (ASSUR) leads to significantly higher - by €137.02 - investments (p -value < 0.001), which lends support to H1. The findings align with our theoretical argument and prior research on the potential value-enhancing effects of an IRA (Reimsbach et al., 2018; Akisik and Gal, 2019; Caglio et al., 2019; Gal and Akisik, 2019) and CSRA (Coram et al., 2009; Dhaliwal et al., 2011; Casey and Grenier, 2015; Shen et al., 2017). *Ceteris paribus*, it is reasonable to assume that an IRA has an attesting function to NPIs (if proxied by students) that signals reliability and credibility, and, in turn, increases investment confidence.

Counter to our hypothesis and contradictory to Goicoechea et al.'s (2019) findings that managers endorse an IRA, an assurance had no effect on executives' investments in the base model (col. 3) and even triggered the opposite effect in the full model (col. 4). Specifically, the results in column 4 suggest that executives invest €177.32 less in case of an IRA (p -value = 0.055). The results remain the same when excluding GENDER in a subsequent analysis due to low variance in the variable (only two female participants in sample, non-interpretable coefficient). Hence, referring to Gold et al.'s (2012, p.5) conclusion that "more knowledgeable users place less responsibility on auditors than less knowledgeable users", sophisticated and experienced managers seem to assign an IRA no or even a negative value. This could be due to several reasons: the investment-impairing tendency of an IRA might arise from managers' doubts regarding the assurator's independence which might be thwarted through

management involvement and economic bonding in IRA practice (Simnett and Huggins, 2015). This assumption relates to a strand of critical studies, which claims an insufficient independence of assurors (e.g. Maury, 2000; O'Dwyer and Owen, 2005; Smith et al., 2011). In this respect, the 'insider-like knowledge' of experienced managers might lead them to the conclusion that an IRA neither reduces information asymmetries nor decreases information risk. Another explanation, which in part complements the latter theorization, is that managers (due to their professional experience with expensive voluntary reporting and assurance engagements) might refuse a costly external assurance (Park and Brorson, 2005) even in their role as NPIs, especially when they do not attribute a noteworthy value to an external verification. This is commensurate with Briem and Wald (2018), who find in an interview study with auditors that many firms refuse to undertake an IRA due to expected costs. A potential value-impairing property of an IRA has previously been found by Gal and Akisik (2019) and Akisik and Gal (2019), who show that an IRA, if conducted by non-accountants, may be even detrimental to a firm's market value. The authors note that the generally high assurance costs might "lead investors to see IRs as actually providing negative value" (Gal and Akisik, 2019, p.4), especially since integrated reports often include sections (e.g. financial information) that have already been audited (see halo effect by Reimsbach et al., 2018) and an effective internal control system can substitute for a costly assurance engagement. Finally, the wording of the assurance statement in the experiment, following the prevailing but opaque wordings in practice (Rivière-Giordano et al., 2018) might have led to an 'assurance expectation gap' (Gray et al., 2011; Maroun, 2017) which, in turn, might have impaired subjects' investment willingness. However, instead of speculating further on the underlying reasons for this puzzling finding, the results are contextualized and elaborated on in section 5.

To test for the robustness of the results, we subsequently re-ran our regressions with a battery of modifications. First, in line with previous literature (e.g. Hodge et al., 2009; Brown-Liburd and Zamora, 2015; Cheng et al., 2015), we included a 'manipulation check alike question' (in the following manipulation check) as well

as a control question.³⁴ Our first modification considers only those participants who succeeded in the manipulation check, whereas the second modification restricts the sample to those who additionally correctly answered the control question (see Appendix: Table 1). While both modifications show that the findings are robust to the exclusion of failing students, there is one exception: in the manager sample, the exclusion of participants who failed the manipulation check results in a p-value which slightly exceeds the threshold of significance (p-value = 0.142). However, while the absolute value of the point estimate increases from -177.32 to -271.15, the sample size decreases from 82 to 40 observations, which yields a strong decrease in statistical power and might explain the insignificance. As an additional robustness check, we test for possible order effects with two different approaches (see Appendix: Table 3). In the first, we split the student sample into the first and second round and re-ran our regressions for each round; the results are consistent in both sub-samples (first treatment: coef. 151.50, p-value = 0.011; second treatment: coef. 115.93, p-value second = 0.057). In the second, we re-ran the regression with all observations of the second round and included five dummy variables that capture which case was assigned to the first round (cases A-E) in order to control for corresponding carryover effects. The result of ASSUR remains the same (coef. 112.34, p-value = 0.082; untabulated). Finally, the results remain constant in all models independent of whether the participant's risk attitude is measured by the self-assessment or the lottery task.

³⁴ The 'manipulation check alike question' *What level of assurance is provided in the assurance opinion to your mind?* had three possible answers: *no assurance*, *moderate/limited assurance* and *high/reasonable assurance*. Since the question asks for the participant's opinion of the underlying level of IRA instead of the actual level in the assurance opinion, and thus allows a certain degree of subjectivity, we qualify the question as being 'manipulation check alike'. As well as the number of choices (three possible answers rather than a binary yes/no option), the subjectivity might be the reason for the failure rate of 41.5% (38.0% among students and 51.2% among managers). This assumption is reinforced in subsequent correlation analyses of participants' investments and their corresponding answers (pairwise correlation coefficients: no assurance -0.172***, moderate/limited assurance -0.130**, high/reasonable assurance 0.289***). The control question asked whether the preparation of an integrated report was voluntary or mandatory in Germany and was correctly answered by 91.4% of the remaining participants (91.7% among students and 90.0% among executives). In total, 53.5% of the participants succeeded in both the 'manipulation check alike' and the control question, which is in line with comparable studies by Hodge et al. (2009), Brown-Liburd and Zamora (2015) and Cheng et al. (2015), which also included more than one manipulation check or control question.

4.3 Test of H2 and H3: IRA Provider and Level of IRA

[insert tables 7 and 8 here]

H2 states that NPIs invest more if the IRA was conducted by a Big 4 audit firm, while H3 posits that the investment willingness of private investors is higher when the level of the IRA is high/reasonable. Table 7 visualizes the average investment amounts according to the IRA provider. On average, the students invested slightly higher amounts in case of a Big 4 audit firm (€394.33) compared to a specialized consultant (€367.55); the executives also invested more if the IRA was conducted by a Big 4 auditor (€407.50) in comparison to a consultant (€334.00). However, in both samples, these differences are statistically insignificant (two-sided t-tests, all p-values > 0.1). Table 8 disaggregates the investments according to the underlying assurance levels. Overall, students, on average, were willing to invest €441.20 in the presence of a high/reasonable assurance, but only €318.00 when the IRA was conducted with moderate/limited assurance intensity. Corresponding two-sided t-tests revealed that this difference is statistically significant (p-value = 0.007). The investment difference among managers is marginal (€8.97) and misses statistical significance (p-value = 0.917).

[insert table 9]

In the following, we test H2 and H3 in different regression analyses to ascertain whether the results derived from the reported statistical tests hold in multivariate analyses with control variables, and, since Hodge et al. (2009) revealed a joint effect of the assurance provider and the assurance level, to examine possible interaction effects. Again, the models are specified with robust standard errors (managers) and subject-level clustered standard errors (students), respectively. Instead of restricting the model to only those observations which received an assurance (i.e. cases A-D), the regressions were run with a dummy variable (assurance fixed effect), which captures whether an assurance was present or not and prevents the loss of statistical power.

Consistent with our univariate analysis, the IRA provider (BIG4) had no significant effect on the investment decision of NPIs throughout both samples (col. 2 and 4 of Table 9). Accordingly, neither students' nor managers' investment behavior is affected by the choice of the assurator. This finding rejects H2 and is in contradiction to earlier findings, which reveal that Big 4 auditors generate higher confidence among investors (Akisik and Gal, 2019; Caglio et al., 2019; Gal and Akisik, 2019).

In line with our prediction, a higher level of IRA (REAS) leads to higher investments among students (col. 2, p-value = 0.037), who invest €117.20 more (less) when the underlying level of assurance is high/reasonable (moderate/limited). The results are in line with earlier studies which show that higher levels of assurance lead to decreasing information asymmetries (Fuhrmann et al., 2017) and that report users not only acknowledge the underlying assurance level (Hasan et al., 2003), but also prefer high levels of assurance (Rivière-Giordano et al., 2018; Goicoechea et al., 2019; Maroun, 2019). Further, building upon Goicoechea et al. (2019, p.5), who find that IR users doubt “whether it is possible to assure the content of integrated reporting without assuring the information generation process”, the findings might be explained by the higher reliability resulting from the rigorous test of the information systems in a high/reasonable assurance. Another explanation might be the positive (negative) expression of the high/reasonable (moderate/limited) assurance that may have leveraged (impaired) students' investments and adds to the debate on whether the wording of the assurance opinion affects users: while Hasan et al. (2003) reveal that investors are unaffected by whether a low assurance is expressed with either a positive or negative statement, Schelluch and Gay (2006) state that negative assurance opinions confuse users and contribute to the audit expectation gap. The executives are not significantly affected by the level of assurance (p-value = 0.913). Building upon Gay et al. (1997), who find that users with considerable business or investing experience have “more moderate expectations of auditors' responsibilities” (p.51), subjects' confidence in the value of a high/reasonable IRA might be affected by experience. Unlike Hodge et al.

(2009), we do not find any evidence for an interaction effect between the IRA provider and the assurance level (p-values > 0.1).

We again test for the robustness of the results with several model modifications. The results are robust when first excluding those participants who failed the manipulation check, and second, when also excluding those who failed the control question (see Appendix: Table 2). As reported, the exclusion of those who failed the manipulation check confirms prior results since it (i) does not affect the results regarding which assurance provider is engaged and, (ii) leads to a significant effect of the assurance intensity among students (p-value = 0.000), whereas the effect remains insignificant for managers (p-value = 0.605). Again, we test for order effects and carryover effects, respectively, with the two different approaches introduced. In the first, we split the student sample into the first and second treatment/round (see Appendix: Table 3). The results reveal that the assurance level is only significant in the second round (p-value = 0.002), indicating a higher awareness or learning effects in the processing of integrated reports. However, when re-running the regressions for the two rounds with only those participants who succeeded in the manipulation check, REAS is significant in the first and second treatment (p-value 1st round = 0.043, p-value 2nd round = 0.001, untabulated). In the second test, we assigned five dummy variables to capture and control for the treatment of the first round; the result of REAS is unaffected (coef., 203.52 p-value = 0.012, untabulated). Moreover, the results remain constant independent of whether the participant's risk attitude was measured by the self-assessment or the lottery task. Collectively, the model alterations support our findings.

5. Follow-Up Interviews

In order to understand why, at odds with the theoretical prediction in H1, managers tend to disparage an IRA and to triangulate the experimental results with a mixed-methods approach (McGrath, 1981; Bezzina et al., 2017), we conducted 16 follow-up interviews with managers who had participated in the experiment (M1 to M16). Again, the managers were randomly selected by the bankers. Table 10 reports the managers' backgrounds, which are relatively

heterogeneous with respect to industry, firm size and their hierarchical position. All interviews were conducted face-to-face in the executives' offices in a semi-structured style. The interview duration varied between 14 and 51 minutes with an average of 25 minutes, for a total of 400 transcribed minutes of recorded interviews. The interviews were analyzed with the structural three-stage Gioia methodology (Gioia et al., 2013) in which first order concepts are grouped to second order themes, which are then aggregated to superordinate dimensions.

[insert table 10 here]

All participants stated that they successfully empathized with their role in the experimental setting and that the cover letter accomplished the purpose of both explaining the concept of IR and introducing the voluntary IRA. Since the majority of the interviewees are not only managers but also invest their own money privately, they identified with their role as a NPI in the experiment, and stated that their private investment behavior and their assessment of investment opportunities is inextricably linked with their practical experience; this lends support to our conjecture that managers may be regarded as a valid proxy for knowledgeable and sophisticated NPIs. As conjectured, most managers had practical experience with audit engagements and stated, for example, that they were able to differentiate between different assurance levels.

In line with our theoretical prediction stated in H1, the few proponents of an IRA said that an assurance leads to a “good feeling” [M14] for investors, as it increases the report’s “reliability” [M6] and evokes “comparability and transparency” [M15]. Nevertheless, the majority of the managers exhibited a critical attitude toward IRA and thus do not attribute any value-enhancing properties to an external verification. Applying the Gioia methodology, we identified three superordinate dimensions which shape an assurance-related critical attitude, namely (i) practical experience with audit and assurance engagements, (ii) technical doubts specific to IRA and (iii) emotional caveats regarding the audit and assurance profession.

The findings indicate negative *practical experiences with audit and assurance engagements* as a major determinant of many executives' dismissive attitude toward IRA. About half of the managers criticized the audit and assurance process in practice as being characterized by time pressure, over-standardized processes ("mass business" [M1]) and lack of willingness to scrutinize the underlying assumptions (O'Dwyer, 2011). This finding corresponds with Eccles and Saltzman (2011), who remark that IRA and financial audits are not conducted with "the same degree of rigor" (p.59) and calls into question whether "reliability comes from the fact that the user knows that an *objective* third party has carefully reviewed" (Eccles et al., 2012, p.162) the integrated report. In the eyes of many managers, the latter is reinforced by the inherent fact that "an assurator is always paid by the firm that he/she assures" [M2], which leads to a relation of dependence that one interviewee described as "the one who pays the piper calls the tune" [M1]. Drilling into this notion, several executives criticized the audit and assurance process as being too client-oriented in practice, since "there are always dependencies in an auditor-client-relationship" [M12], as reported by several landmark studies on economic bonding (e.g. Maury, 2000; O'Dwyer and Owen, 2005; Smith et al., 2011). This further corresponds to Briem and Wald's (2018) finding that auditors often follow the appropriated definition of the IR concept of their clients (i.e. a simple rebranded combination of a conventional financial and a sustainability report) instead of scrutinizing whether the document fulfills the requirements of a legitimate integrated report. Further, one manager specifically deprecated the conjunction of audit (e.g. financial statement) and non-audit services (e.g. IRA), which is considered as "nothing out of the ordinary" [M7] and reinforces the attitude of another manager that the prospect of a "lucrative [audit] mandate might have a distorting effect" [M13] on the assurator's independence. Additionally, two managers critically interjected that voluntary assurance engagements have emerged as a lucrative business model (Eccles et al., 2012; Pucheta-Mártinez et al., 2019; Corrado et al., 2019) in a "pleasant time, a very good decade for assurance firms" [M3]; and paved the way for intense lobbying by assurance providers to foster the future development of IRA (O'Dwyer et al., 2011; Flower, 2015; Briem and Wald, 2018).

Collectively, these findings suggest that managers' assurance-related experiences contradict the intended (theoretical) value of an IRA to report reliability.

Beyond the aforementioned experiences, we identify *technical doubts specific to IRA* as the second aggregate dimension to compromise the value of an IRA. In line with the imminent “technical challenges” and the need for “innovation and experimentation” in IRA as mentioned in the IIRC’s discussion paper (2015, p.4), some managers doubted the practicability of reliably assuring the link between financial and nonfinancial information in practice. Especially in the light of the “low regulation” [M7] and the lack of “appropriate standards” [M5], several managers stated that the “hardly quantifiable” [M7] nature of the information in the integrated report provides great “leeway for valuation” [M8] and interpretation. Consequently, in the eyes of the managers, the subjectivity of the IR content, technical challenges in the assurance of the new reporting medium and absence of an IR-specific assurance standard considerably reduce the reliability of the information provided, especially if the underlying information generation process is not fully assured (Goicoechea et al., 2019). This coincides with Cheng et al.’s (2014) and Maroun’s (2018) belief that, in the absence of clear guidance and appropriate subject matter, the preparation of an integrated report, as well as its assurance, require a lot of (necessarily) subjective professional judgment that jeopardizes reporting neutrality. Maroun (2018) states that auditors and IR preparers share the view that an IRA was limited to that information that can be tested and measured against a scale. Briem and Wald (2018) add that auditors consider themselves as change agents who help firms to interpret the vague and non-distinctive IR reporting guidelines which, in practice, are difficult to audit, given the absence of a uniform assurance procedure and the non-predictability of most qualitative and future-oriented data. The challenges auditors face with IRA engagements also manifested in the experimental study by Green and Cheng (2019). Findings show that, given the low degrees of guidance and difficulties in assessing the diverse qualitative and quantitative information, auditors tend to under-audit risky strategically relevant information, giving rise to a significant risk of not detecting misstatements in key strategic information.

As the third dimension for the assurance-related critical attitude, we identify *emotional caveats regarding the audit and assurance profession*. Strikingly, more than two-thirds of the interviewees immediately mentioned “manipulated balance sheets” [M8] and “accounting scandals” [12] such as “Enron” [M3], which seem to have substantially damaged the image of the audit profession (Weber et al., 2008; Skinner and Srinivasan, 2012). The statements of two managers that “there were many scandals in spite of an assurance and certificate” [M1] and that various scandals in the last decades have shown that “an alleged certificate of an auditor by no means guarantees that what is written there is true” [M13] are representative of the resulting loss of confidence in the audit and assurance profession.

When, towards the end of the follow-up interviews, managers were asked about a possible negative effect of the IRA on investments in the experiment, they gave mixed responses. Whereas most participants shared the view that an IRA, despite any reservations they held regarding its worth, should have no impact rather than a negative one, about one-third considered the results plausible. While the negative effect is hard to explain from a theoretical perspective, it seems reasonable that it is, at least to some extent, what one interviewee described as “emotionally driven” [M6]. In total, the interviews generally revealed a critical attitude toward IRA, which implies that the value of an IRA might be assessed differently if participants have in-depth experience with voluntary assurance engagements. While one manager considered an IRA a “theoretical thing” [M3], another commented with a grin: “That is what I call reality shock, welcome to practice” [M1]. However, for the sake of completeness, it should be noted that several managers generally questioned the relevance of both IR (too complex) and an IRA in the investment practices of NPIs. Specifically, in line with the assurance expectation gap (Gray et al., 2011; Maroun, 2017), several managers fundamentally doubted NPIs’ ability to understand and interpret assurance statements in practice, what one manager expressed as “without specific knowledge on what the assurance statement means one can create a false sense of reliability, although there is no reliability” [M5].

6. Discussion and Implications

By its very nature, IR is intended to increase the decision usefulness of corporate reporting to investors by connecting all material information that determines the firm's value creation over time within one single succinct document. However, given the vagueness of the IR concept and high degrees of managerial discretion during its preparation, its value to investors is bounded by its reliability (Eccles and Krzus, 2010). Referring to earlier voluntary disclosure literature and drawing upon a handful of studies that have engaged with the growing but, as yet, under-investigated topic of IRA, an external verification is assumed to bolster the credibility of the information provided in the integrated report (IIRC, 2015; Briem and Wald, 2018; Reimsbach et al., 2018; Akisik and Gal, 2019; Caglio et al., 2019; Gal and Akisik, 2019). Building on the relevance of NPIs for capital markets (Elliott et al., 2007), our exploratory study investigates the effects of an IRA and its determinants on the investment behavior of two different groups of NPIs, namely students with an academic-theoretical investment orientation and sophisticated managers with an experienced-practical investment background who act as NPIs.

Our study provides valuable insights and implications for research, practice and regulators, opens new directions for further research and contributes to the existing literature in several ways. First, this study adds to scarce research on the value relevance of an IRA. Specifically, the study's finding that an IRA increases the investment likelihood of NPIs (when proxied by Masters students) extends earlier empirical findings on the role of IRA as a credibility-enhancing mechanism for professional investors (Reimsbach et al., 2018) and external users more generally (Caglio et al., 2019). In the light of this study's findings, firms might consider prominently highlighting the presence of an IRA instead of simply attaching the assurance statement as an annex as is common in prevailing reporting practice. The insight that NPIs' investments are unaffected by the IRA provider suggests that firms tend to neither attract nor lose investors through their choice of assurator, which provides a solid base for negotiation on IRA fees in practice and contributes to the unresolved discussion as to which is the better choice – Big 4 auditors or specialized consultants (e.g. Simnett et al., 2009;

Martínez-Ferrero et al., 2018). In the realms of assurance quality, future research might assess whether the effect of the assurance provider remains insignificant if the IRA is provided by multidisciplinary assurance teams (e.g. experts on financial accounting, sustainability, data science) that embody the advantages of both provider types. Against this backdrop, in recent work, Canning et al. (2019) reveal that accountant and non-accountant assurers seek synergies and cooperate to unite their formal and tacit knowledge base when it comes to the auditability of novel and discretionary assurance services (such as IR). With respect to the assurance depth, the higher (lower) investment likelihood in case of a higher (lower) assurance level should be taken into consideration in firms' cost-benefit considerations when it comes to stipulating the scope of assurance engagements. However, given the speculative and forward-looking assertions in IR and the absence of specific IRA guidance (Maroun, 2017, 2018), reasonable assurance is only provided for specific sections of the integrated report, which presently might curtail a firm's opportunities to benefit from the (theoretical) value of higher assurance levels to investors.

Second, this study advances the emerging literature that is critical of IRA and contributes to landmark studies in the broader domain of assurance and auditing. In particular, results suggest that the positive association between IRA and investment willingness might not hold or be even opposite for sophisticated investors that have high practical experience with voluntary assurance engagements and proverbially 'know how the land lies'. The identification of relevant factors that currently impair the value of an IRA should be of interest for standard setters and regulators, and not only because managers are a relevant piece of the jigsaw in the further process of IR and IRA. The critical results contribute to the ongoing debate on the existence of an IRA expectation gap and spur on the discussion on the necessity for a specific IRA standard (Maroun, 2017, 2018). In this sense, we reaffirm the concerns advanced by Reimsbach et al. (2018) that an IRA is not a guarantee of higher reliability as long as the assurance quality is hampered by missing standardization, non-familiarity with the IRA practice and lack of independence. Accordingly, the IIRC should consider lobbying for an IRA-specific assurance standard to increase the

perceived value of IRA amongst users as well as reporting- and assurance quality. In this regard, scholars should investigate whether an interpretive IRA model as proposed by Maroun (2018) would be able to cope with current drawbacks in IRA practice and would affect NPIs' investment behavior. Given the inherently subjective character of most qualitative information in IR, Maroun (2018) argues that an innovative and fit-for-purpose IRA standard should examine the applied methods and processes rather than testing the accuracy of the data itself, and thereby should complement traditional assurance approaches. While this study's findings suggest that the idea of IRA is valid in principle, they also show that IRA has a long way to go in practice to achieve its intended goal of *actually* providing higher credibility. In the light of the reservations voiced, assurance providers should make every effort to provide more details about the assurance process, which might lead to an increased transparency, trust and acceptance, not only among investors but also among IRA-contracting firms (Junior et al., 2014). Although highly sophisticated managers with an assurance-specific expertise represent only a small fraction of investors in capital markets, our findings imply that firms should carefully consider their target groups when contemplating IRA. Against this backdrop, future research should investigate whether sophisticated managers are also representative of a broader group of highly skilled or leading employees with above-average income.

Our findings should be considered while taking into account several limitations. First, the experimental material was kept simple and thus may not have contained all information relevant for investors in practice. Second, the experimental procedure slightly differed between the samples and unobservable factors (e.g. managers might have used ancillary information) might have affected the results. Thus, the findings should be considered as those of two independent experiments with internal validity. Third, it cannot be ruled out that the double change from the high/reasonable assurance level with positive wording to the moderate/limited level with negative wording (as is common in assurance practice) might have accelerated the effect of the assurance level on participants' investments. Similarly, the manipulation check that asked for the participant's opinion of the underlying level of IRA might have caused an

anchoring effect (Roux and Thöni, 2015). As a final caveat, the results might not be generalizable to investors from other countries or professional investors, such as fund managers or analysts, who may have another attitude towards IRA and might have requested further information on financials in order to make a reasonable investment decision.

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Tables and Figures

Panel A: Sample Composition			Students	Managers
Total number of participants			142	97
Total number of questionnaires			284	97
Invalid questionnaires			(50)	(15)
Total sample			234	82

Panel B: Sample Distribution				
#	IR Assuror	IR Assurance level		
A	Big 4 auditor	High/Reasonable	49	26
B	Big 4 auditor	Moderate/Limited	43	14
C	Consultant	High/Reasonable	45	13
D	Consultant	Moderate/Limited	47	12
E	--	--	<u>50</u>	<u>17</u>
		Σ	234	82

Table 1: Sample description.

Panel A describes the composition of the two samples. The number of questionnaires doubles in the student sample due to the between-subjects design, whereas the managers participated in a within-subjects design. Panel B discriminates between the different manipulations (A-D) and the control treatment (E).

VARIABLE	DEFINITION
<i>Dependent variable</i>	
INV	Participant's investment amount invested in Schmidt-SE between €0 and €1,000, (#1)
<i>Explanatory variables</i>	
ASSUR	Indicator variable taking the value 1 in the case of an IRA (cases A-D) and 0 otherwise (case E).
BIG4	Indicator variable taking the value 1 if the IRA assurator is a professional Big 4 auditor (cases A+B) and 0 if a specialized consultant (cases C+D).
REAS	Indicator variable taking the value 1 if the underlying level of IRA assurance is high/reasonable (cases A+C), and 0 if moderate/limited (cases B+D).
<i>Control variables</i>	
IR_KNOW	Participant's knowledge of IR, measured on a scale ranging from "very low" (1) to "excellent" (5), (#3).
IR_EXP	Equally weighted measure of the participant's experience with IR, composed of the two variables READ_IR, (#5), and KNOW_IIRC, (#6), where READ_IR reflects whether the participant has ever read an IR (0: no, 1: yes, less than 3 times, 2: yes, more than 3 times) and KNOW_IIRC whether the subject is familiar with the <IR> framework, issued by the IIRC (0: no, 1: yes, somehow, 2: yes).
IR_IMP	Participant's assessment of the importance of IR as a shareholder relations tool, (#8).
<i>Subject-related information</i>	
AGE	Participant's age, (#9).
GENDER	Indicator variable taking the value 1 if the participant is male, and 0 otherwise, (#10).
EXP_YEARS	Total number of years of professional work experience, (#11).
RISK_SCALE	Participant's risk self-assessment on a scale, ranging from 0 (risk-averse) to 10 (risk-seeking), (#12).
RISK_LOTT	Participant's risk attitude according to the lottery gamble introduced by Dohmen et al. (2011), where participants are declared risk-averse if the switching point <€15, risk-neutral if switching point = €15 and risk-seeking if switching-point >€15, (#13).
COG_AB	Measurement of participant's cognitive ability in line with Frederick (2005) and Lachmann et al. (2014), where COG_AB is coded 1 if the participant answers the question correctly, and 0 otherwise, (#14).

Table 2: Variable definitions and descriptions.

The table depicts variable definitions and their measurement, as well as their reference to the questionnaire, denoted as (#). #2 and #7 are not included in the table because these questions are a 'manipulation check alike' and a control question, respectively.

VARIABLE	Students (n=234)		Managers (n=82)	
	Mean	SD	Mean	SD
INV	352.75	303.40	397.56	345.24
IR_KNOW	1.98	0.86	2.23	0.96
IR_EXP	0.66	0.97	0.84	0.99
IR_IMP	3.77	0.78	3.06	0.95
AGE	24.89	1.85	50.10	7.85
GENDER	0.50	0.50	0.98	0.16
EXP_YEARS	2.58	2.22	26.76	8.96
RISK_SCALE	4.50	2.04	5.37	1.84
RISK_LOTT	0.88	0.82	0.89	0.86
COG_AB	0.40	0.49	0.61	0.49

Table 3: Summary statistics.

The table summarizes the means and standard deviations of the variables of interest across the two samples. The variable definitions refer to those provided in Table 2.

Panel A: Students	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) INV	1.000										
(2) ASSUR	0.179***	1.000									
(3) BIG4	0.111*	0.420***	1.000								
(4) REAS	0.239***	0.427***	0.215***	1.000							
(5) IR_KNOW	-0.020	-0.035	-0.045	0.047	1.000						
(6) IR_EXP	-0.154**	-0.044	-0.077	-0.008	0.558***	1.000					
(7) IR_IMP	0.135**	-0.047	0.104	-0.056	0.071	0.179***	1.000				
(8) EXP_YEARS	-0.092	-0.002	-0.031	-0.008	0.053	0.017	-0.086	1.000			
(9) GENDER	-0.034	0.016	-0.133**	-0.028	0.139**	-0.038	-0.343***	0.066	1.000		
(10) RISK_SCALE	0.177***	-0.011	-0.076	0.032	0.147**	-0.134**	-0.074	0.178***	0.339***	1.000	
(11) COG_AB	0.004	0.087	-0.054	-0.049	-0.126*	-0.124*	-0.093	0.015	0.338***	0.186***	1.000
Panel B: Managers	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) INV	1.000										
(2) ASSUR	-0.105	1.000									
(3) BIG4	0.028	0.499***	1.000								
(4) REAS	-0.061	0.487***	0.341***	1.000							
(5) IR_KNOW	0.237**	-0.065	-0.032	0.050	1.000						
(6) IR_EXP	0.131	0.040	-0.066	-0.095	0.600***	1.000					
(7) IR_IMP	0.387***	0.001	0.040	0.068	0.365***	0.195*	1.000				
(8) EXP_YEARS	0.218**	0.074	-0.035	-0.004	0.198*	-0.048	0.178	1.000			
(9) GENDER	-0.220**	-0.081	-0.162	-0.008	-0.127	-0.106	-0.074	-0.146	1.000		
(10) RISK_SCALE	0.088	0.218**	-0.035	0.037	0.021	0.121	-0.019	-0.008	-0.012	1.000	
(11) COG_AB	-0.151	-0.224**	-0.070	-0.039	-0.042	-0.129	-0.028	-0.019	-0.127	-0.114	1.000

Table 4: Correlation matrix.

Panel A of Table 4 provides pairwise correlations of the variables among the Masters students sample, whereas Panel B reports correlations of managers. The variable definitions refer to those provided in Table 2. *, ** and *** denote significance at a 10%, 5% and 1%.

IRA (H1)	Students (n=234)			Managers (n=82)		
	n	Mean	SD	n	Mean	SD
Assurance	184	380.94	310.70	65	379.23	337.49
No assurance	50	249.00	251.42	17	467.65	375.81
Two-sided t-test						
t-value		-2.77			0.93	
p-value		0.0061***			0.3503	
Wilcoxon rank-sum						
z-value					0.87	
p-value					0.3838	

Table 5: Univariate analysis for H1: IRA.

Table 5 shows average investment amounts and the corresponding standard deviation in the presence (cases A-D) and absence (case E) of an IRA among the two samples. Corresponding values for two-sided t-tests are reported. For robustness purposes, we additionally performed a Wilcoxon rank-sum test for the relatively small managers sample, which leads to similar results. The results are robust to subsequent tests, first, those participants who failed the manipulation check and second, in addition, those who did not correctly answer the control question were excluded. *, ** and *** denote significance at a 10%, 5% and 1%.

	Students		Managers	
	Coefficient		Coefficient	
	(p-value)		(p-value)	
	(1)	(2)	(3)	(4)
ASSUR	131.94*** (0.001)	137.02*** (0.000)	-88.42 (0.374)	-177.32* (0.055)
IR_KNOW		34.89 (0.307)		12.77 (0.795)
IR_EXP		-84.89*** (0.002)		-5.20 (0.919)
IR_IMP		64.63* (0.058)		132.31*** (0.000)
EXP_YEARS		-16.36* (0.063)		4.95 (0.257)
GENDER		-44.25 (0.394)		-469.09*** (0.000)
RISK_SCALE		39.78*** (0.005)		32.50 (0.104)
COG_AB		-25.55 (0.610)		-135.96* (0.078)
Constant	249.00*** (0.000)	-116.32 (0.456)	467.65*** (5.22)	342.81 (0.176)
F-value	11.76	4.26	0.80	9.62
R ²	0.0319	0.1563	0.0109	0.2879
N	234	234	82	82

Table 6: Regression results for H1: IRA.

Table 6 displays multivariate results for H1, where the dependent variable is the participant's investment amount. The models are estimated with subject-level clustered standard errors (students sample) or robust standard errors (managers sample), respectively. Variable definitions are given in Table 2. To test for the robustness of the results, we applied a battery of modifications, such as (i) the exclusion of participants who failed in the manipulation check and the control question (see Appendix: Table 1), (ii) testing for possible learning and carryover effects among students with (a) sample split regressions and (b) dummy regressions, where dummies captured the previous case in the first treatment (A-D), with the control group (E) as the basic case, and (iii) application of different measures of participants' risk attitude. The results are robust with one exception. When excluding managers who failed in the manipulation check, the significant effect fades away over the threshold of the 10% level of significance.

*, ** and *** denote significance at a 10%, 5% and 1%.

IRA Provider (H2)	Students (n=184)			Managers (n=65)		
	n	Mean	SD	n	Mean	SD
Big 4 auditor	92	394.33	331.09	40	407.50	351.11
Specialized consultant	92	367.55	290.09	25	334.00	316.14
Two-sided t-test						
t-value		-0.58			-0.85	
p-value		0.5604			0.3972	
Wilcoxon rank-sum						
z-value					-0.76	
p-value					0.4500	

Table 7: Univariate analysis for H2: IRA Provider.

Table 7 shows average investment amounts and the corresponding standard deviation depending on whether the IRA was conducted by a Big 4 auditor (cases A+B) or by a specialized consultant (cases C+D) among the different samples. Corresponding values for two-sided t-tests are reported. For robustness purposes, we additionally performed a Wilcoxon rank-sum test for the relatively small managers sample, which leads to similar results. The results are robust to subsequent tests, where in the first step those participants who failed the manipulation check were excluded, and in the second step additionally those, who did not correctly answer the control question. *, ** and *** denote significance at a 10%, 5% and 1%.

Level of IRA (H3)	Students (n=184)			Managers (n=65)		
	n	Mean	SD	n	Mean	SD
Moderate/Limited	90	318.00	305.45	26	384.62	378.62
High/Reasonable	94	441.20	305.23	39	375.64	312.22
Two-sided t-test						
t-value		-2.74			0.10	
p-value		0.0068***			0.9173	
Wilcoxon rank-sum						
z-value					-0.32	
p-value					0.7508	

Table 8: Univariate analysis for H3: Level of IRA.

Table 8 shows average investment amounts and the corresponding standard deviation when the IRA level was either high/reasonable (cases A+C) or moderate/limited (cases B+D). Corresponding values for two-sided t-tests are reported. For robustness purposes, we additionally performed a Wilcoxon rank-sum test for the relatively small managers sample, which leads to similar results. The results are robust to subsequent tests, where in the first step those participants were excluded, who failed in the manipulation check and in the second step additionally those, who did not correctly answer the control question. *, ** and *** denote significance at a 10%, 5% and 1%.

	Students		Managers	
	Coefficient		Coefficient	
	(p-value)		(p-value)	
	(1)	(2)	(3)	(4)
BIG4	12.51 (0.812)	1.94 (0.970)	126.19 (0.395)	93.62 (0.492)
REAS	113.53* (0.054)	117.20** (0.037)	33.33 (0.797)	14.88 (0.913)
BIG4 * REAS	17.50 (0.804)	-2.92 (0.968)	-87.73 (0.625)	-39.54 (0.817)
IR_KNOW		29.52 (0.401)		11.10 (0.830)
IR_EXP		-82.35*** (0.003)		-1.07 (0.982)
IR_IMP		69.27** (0.049)		131.47*** (0.000)
EXP_YEARS		-15.82* (0.075)		5.10 (0.242)
GENDER		-36.82 (0.484)		-436.04*** (0.000)
RISK_SCALE		37.93*** (0.008)		33.94 (0.106)
COG_AB		-16.45 (0.743)		-137.29* (0.087)
Constant	249.00* (0.000)	-124.53 (0.437)	467.65*** (0.000)	303.62 (0.252)
Assurance fixed effects	Yes	Yes	Yes	Yes
F-value	4.97	3.55	0.44	7.31
R ²	0.0656	0.1843	0.0230	0.2960
N	234	234	82	82

Table 9: Regression results for H2: IRA Provider and H3: Level of IRA.

Table 9 displays multivariate results for H2 and H3, where the dependent variable is the participant's investment amount. The models are estimated with subject-level clustered standard errors (students sample) or robust standard errors (managers sample), respectively. Variable definitions are given in Table 2. Instead of restricting the model to only those observations which received an assurance (i.e. cases A-D only), the models are estimated with a dummy variable (assurance-fixed effect) which captures whether an assurance was present or not, and prevents the loss of the statistical power of excluded observations. Again, the regressions are re-run with different modifications to test for the robustness of the results. The results are robust to the exclusion of participants who failed in the manipulation check and the control question. To test for possible order or learning effects arising from the within-subjects design among students, we re-run the regressions for the first and second treatment separately (see Appendix: Table 3). REAS is only significant in the second treatment, which indicates a higher awareness of participants in the second round. When re-running these two rounds and excluding those participants who failed in the manipulation check, REAS is significant in the first and second treatment. Additionally, we performed dummy regressions for the second treatment, where dummies captured the previous case in the first treatment (A-D), with the control group (E) as the basic case. The results remain constant. Again, the results do not change regardless of which measure for the participant's risk attitude is chosen. *, ** and *** denote significance at a 10%, 5% and 1%.

Interview sample composition

<i>Industry</i>		<i>Firm</i>	<i>size</i>	<i>Capital</i>	<i>market</i>
		<i>(revenue)</i>		<i>orientation</i>	
Trade	3	€15m – 100m	4	Yes	5
Financial service	3	€100m – 250m	4	(MDAX)	(1)
Service provider	3	€250m – 500m	5	(TecDAX)	(1)
Logistics	2	€500m – 1bn	1	(HDAX)	(1)
Manufacturing	3	€< 1bn	<u>2</u>	No	<u>11</u>
Manufacturing/Logistics	1		1		16
Pharmaceuticals	<u>1</u>		6		
	16				
				<i>Function</i>	
				1 st level executive	4
				2 nd level executive	<u>12</u>
					16

Table 10: Composition of interview sample.

Table 10 describes the relevant characteristics of the interview sample. It reveals that the executives are relatively heterogeneous with respect to their industry affiliation and their firm size, as well as their hierarchical position.

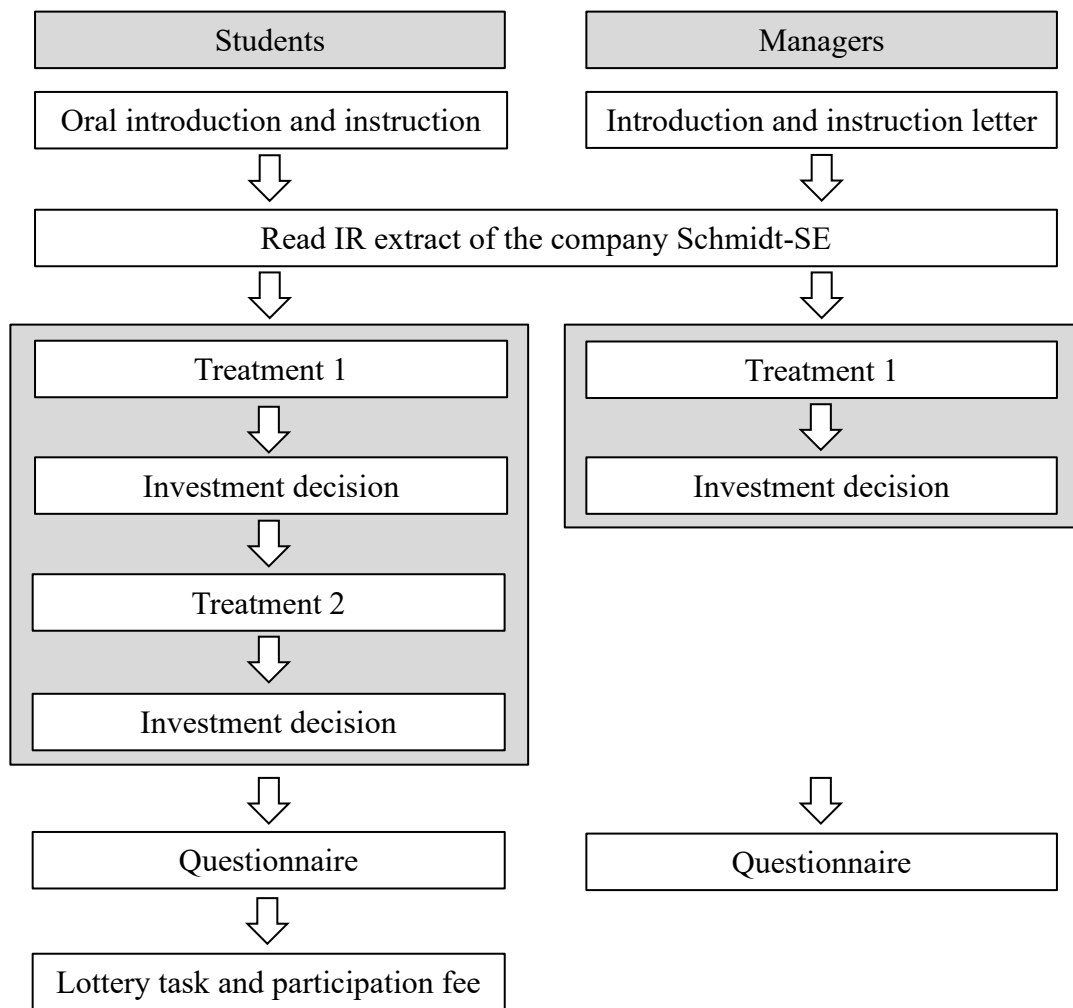


Figure 1: Experiment flow.

The figure displays the process of the experimental flow for both samples. Whereas the students received an oral introduction and instructions before the experiment started, the locally dispersed executives received the experimental information via mail. The cover letter contained all relevant information and instructions and thus substitutes for the oral introduction. Due to their time limitations, the executives participated in a between-subjects design, while the students received two treatments. The executives were not financially rewarded for their participation.

Appendix: Case Description, Assurance Information and Questionnaire

Schmidt-SE

Background

Schmidt-SE is a listed corporation on the Euro Stoxx 50 in the automobile sector. The profitability has moderate growth, and the industry exhibits medium risk in that is mostly affected by overall economic conditions. The company has been listed on the Euro Stoxx 50 for several years.

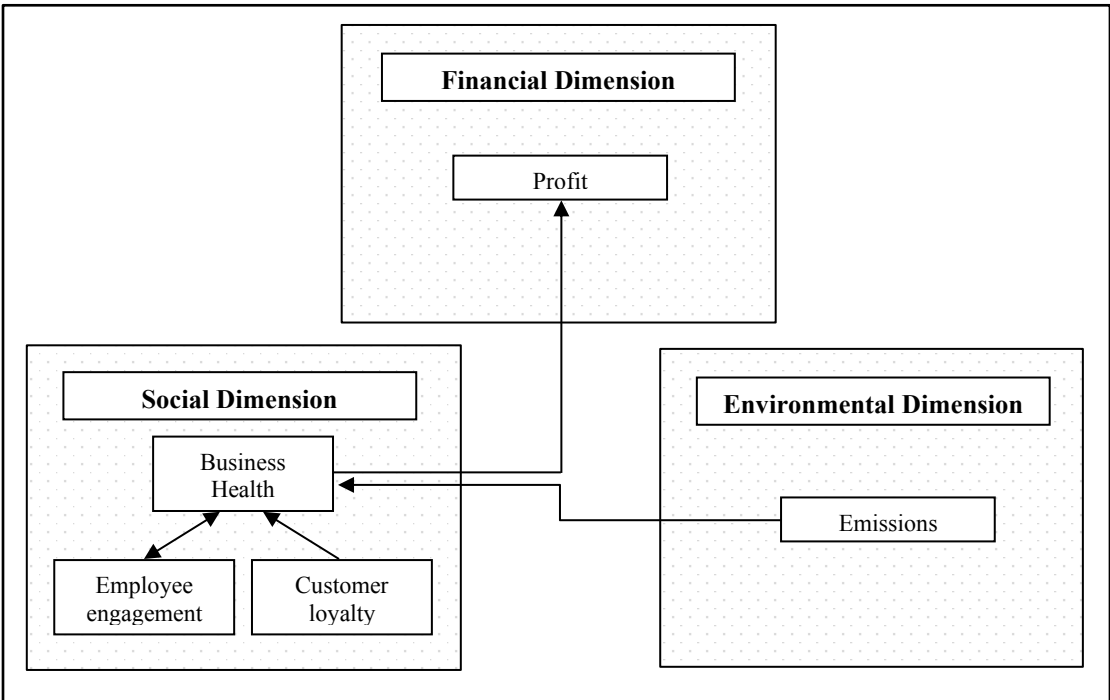
Extract from Schmidt-SE Integrated Report (the Business Health Culture Index (BHCI))

General remarks

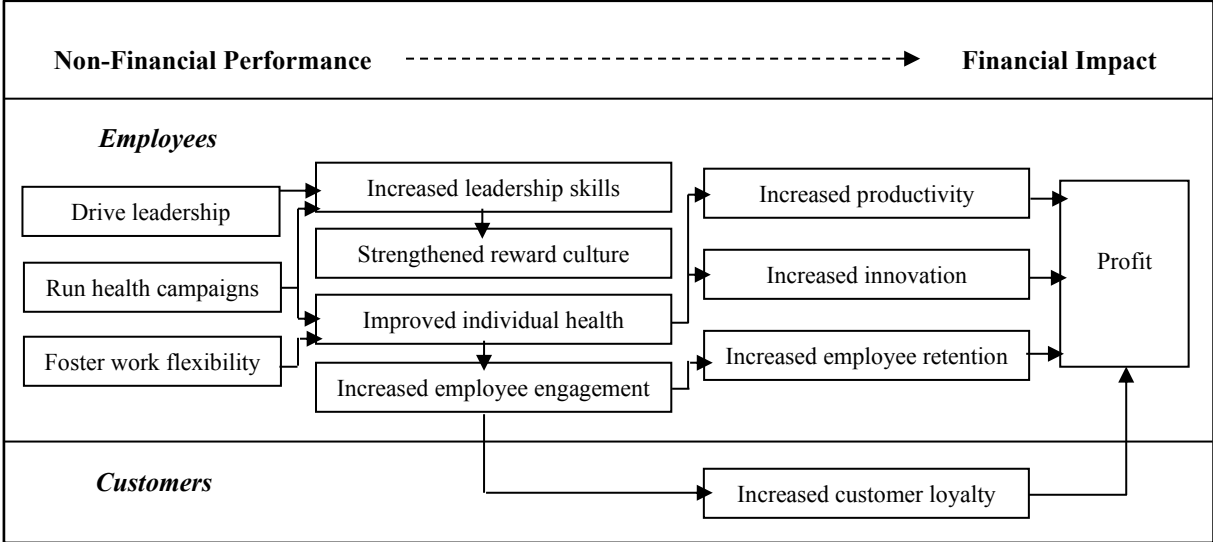
Schmidt-SE has adopted an integrated policy of financial and nonfinancial data and is committed to measuring the impact of IR management on financial performance on an annual basis. The policy was initiated by the board and developed through a consultative process with external stakeholders, employees and management. The integration of financial and nonfinancial information is the basis of the integrated report. The company is in line with the framework of the International Integrated Reporting Council (IIRC).

For this reporting period, the company has achieved a satisfactory performance for most elements, indicating performance, which is in compliance with regulations and commitments, but has some gaps in planning and management systems and some gaps in meeting objectives and measurable targets.

We determine how four social and environmental indicators – our Business Health Culture Index (BHCI), employee engagement, customer loyalty and emissions – impact Schmidt’s operating profit. BHCI is a score for the general cultural conditions in an organization that enable employees to stay healthy and balanced. The index is calculated based on the results of regular employee surveys.



Below we present the cause-and-effect chain for BHCI, illustrating how we established the financial impact of this nonfinancial indicator. Our chain starts with activities that support health at Schmidt-SE, from flexible work arrangements to leadership development to our global health and innovation awareness weeks. Each of these strengthens our organizational culture and helps our employees manage stress, achieve work/life balance, feel empowered in their roles, and perform at their best.



Moving from left to right, we diagram the impact of these activities. Flexibility, for example, enhances stress resilience and work/life balance, which in turn leads to greater productivity. Greater productivity then results in a higher operating profit. In each case, the chain demonstrates how the intangible becomes tangible. Overall, such connections tell the story of how actions in one area are inextricably tied to impacts in another. A change by one percentage point of the BHCI would have an impact of €65-75 million for Schmidt-SE’s operating profit.

Assurance Information

Assurance provider:

Option 1: Big 4 (cases A & B)

Assume that the following assurance opinion was provided for Schmidt-SE's integrated report. The assurance practitioner, Herrmann & Partner, is a Big 4 auditor.

Option 2: Specialized consultant (cases C & D)

Assume that the following assurance opinion was provided for Schmidt-SE's integrated report. The assurance practitioner, Smith & Partner, is a specialized consulting firm.

Assurance Opinion/Level:

Option 1: High/reasonable level of assurance (cases A & C)

As a result of the procedures performed, we conclude, with a high/reasonable level of assurance, that the information in the integrated report conforms, in all material respects, with the IIRC framework and presents a sound, balanced and objective view of Schmidt-SE's performance.

Option 2: Moderate/limited level of assurance (cases B & D)

As a result of the procedures performed, we reject, with a moderate/limited level of assurance, that the information in the integrated report does not conform, in all material respects, with the IIRC framework and does not present a sound, balanced and objective view of Schmidt-SE performance.

Smith & Partner [Herrmann & Partner]
Specialized consulting firm [Big 4 auditor]

30 November 2015

In case E, where no assurance was present, the assurance information above was replaced by the following:

Assurance Information

Assume that the following integrated report was not assured by an independent third party.

Questionnaire

Please answer all questions to ensure the questionnaire's usability and validity.

All data is treated confidentially and anonymously.

1. Imagine you own savings worth €10,000. Based upon the information provided in the case: Which amount of an additional €1,000 would you invest in the Schmidt-SE?

_____ €

2. What level of assurance is provided in the assurance opinion to your mind?

No assurance

Moderate/limited
level of assurance

High/reasonable
level of assurance

3. Please rate your knowledge of integrated reporting.

Very low

Low

Some knowledge

Good

Excellent

4. How did you learn about integrated reporting?

School

Professional experience

Both

Other

5. Have you ever read an integrated report?

No

Yes (less than 3 times)

Yes (more than 3 times)

6. Do you know the integrated reporting framework of the International Integrated Reporting Council (IIRC)?

No

Yes, somehow

Yes

7. Is the preparation and disclosure of an Integrated Report in Germany mandatory or voluntary?

Mandatory

Voluntary

8. How would you rate the importance of Integrated Reporting as a shareholder-relations tool?

Unimportant

Little important

Somehow important

Important

Extremely important

Demographic and individual questions:

9. Age: _____

10. Gender:

Male

Female

11. Work experience:

No

Yes

Years: _____

If yes: In which area are you employed/do you have practical experience?

Finance & Accounting

Commerce

Production

Administrative

Other

12. How do you see yourself? Are you a risk taker or do you avoid risk taking in financial decisions? Please tick a box in the scale below. A value of 0 indicates you are “not willing to take any risks at all” and 10 means “you are very willing to take risks”.

risk averse risk seeking
 0 1 2 3 4 5 6 7 8 9 10

13. Imagine in a lottery game, you can either win €30 or €0, both with an equal probability of 50%.

Instead of playing the lottery, you could also choose a safe gain.

In each stage please decide whether you prefer the safe gain or the lottery gamble.

	<i>Safe Gain</i>	<i>Possible Gain Lottery (p=0.5)</i>	<i>Choose Safe Gain</i>	<i>Play Lottery</i>
(1)	0€	0€ or 30€	O	O
(2)	1€	0€ or 30€	O	O
(3)	2€	0€ or 30€	O	O
(4)	3€	0€ or 30€	O	O
(5)	4€	0€ or 30€	O	O
(6)	5€	0€ or 30€	O	O
(7)	6€	0€ or 30€	O	O
(8)	7€	0€ or 30€	O	O
(9)	8€	0€ or 30€	O	O
(10)	9€	0€ or 30€	O	O
(11)	10€	0€ or 30€	O	O
(12)	11€	0€ or 30€	O	O
(13)	12€	0€ or 30€	O	O
(14)	13€	0€ or 30€	O	O
(15)	14€	0€ or 30€	O	O
(16)	15€	0€ or 30€	O	O
(17)	16€	0€ or 30€	O	O
(18)	17€	0€ or 30€	O	O
(19)	18€	0€ or 30€	O	O
(20)	19€	0€ or 30€	O	O

14. If an orange and an apple cost €1.10 together, and the apple costs €1 more than the orange, how much does the orange cost?

_____ €

Appendix: Oral Introduction for the Students

Thank you very much for your willingness to participate in this experiment which deals with IR and IRA. In the experiment, you are going to make a fictitious investment decision as a private investor based on the information you receive. Participation in the experiment is voluntary. Accordingly, if anyone does not want to participate, you can leave the class. The outline is as follows: at the beginning, you will get a short introduction to both the topic of IR, as well as the opportunity of an IRA. Further, you will receive various assurance-related information, which you might or might not know from your studies so far. Subsequently, before the experiment starts, you will receive all the relevant instructions you need for your participation in the experiment.

First of all, what is IR and why might a company make use of IR? I will start with an illustrative example. All of you know Daimler AG. In 2016, Daimler published an annual report of 314 pages and a sustainability report of 133 pages, a total of almost 450 pages of information. This is very extensive and poses the question: which investor reads all that information? Further, most nonfinancial information is not connected to the financial dimensions. Does it pay off? This is where IR comes into play, as it aims to concisely connect financial and nonfinancial information in one single and generally much shorter report. In this report, Daimler could disclose, for example, a KPI which unfolds how R&D investments contribute to long-term success or to environmental sustainability. Nevertheless, in Germany and Europe, the disclosure of an integrated report is voluntary, which means that firms are not obligated to prepare an integrated report.

When a firm decides to prepare an integrated report, they can have their integrated report voluntarily externally assured by a third party. This might be due to different reasons: for example, to signal credibility to investors that the information disclosed by management on a voluntary basis is reliable. Further, firms might want to examine their own data generation process. If a firm decides to have the report assured, two major choices have to be made. First, the *choice of the assurator*. In the market for voluntary IRA, one can differentiate between two common practitioners: Big 4 auditors and specialized consultants, which, for example, put their focus on the assurance of CSR reports or IR. The second important choice is the *level of the assurance*, which reflects the work performed by the assurator and provides the confidence an investor can place in the information assured. Some of you might have heard about the two common assurance levels in your courses at university. We differentiate between two levels, namely moderate/limited and high/reasonable. The first one, moderate/limited, is more of a review than an in-depth assurance with a higher risk of material misstatements compared to the high/reasonable level of assurance. Instead of proving the veracity of each piece of information in the integrated report, the assurator rather tests for plausibility. While the costs of such an assurance engagement for a firm are considerably smaller, the confidence it engenders is also smaller. Contrarily, the high/reasonable level of assurance is an in-depth assurance with a detailed data gathering process, an audit of the underlying data generation systems and an information evaluation and risk assessment. Thus, the risk of material misstatement is smaller, but the assurance is more expensive for firms.

Thus, keep that in mind, not only for the experiment but for the future in general, that firms can have voluntary integrated reports assured and if so, they have to decide (i) which assurance provider, and (ii), which assurance level, i.e. moderate/limited and high/reasonable level of assurance, to choose.

Now, everybody will receive two experimental parts and a questionnaire. Please read the case and the corresponding information carefully and take your time. Process the information in the order you received them and please answer all questions to ensure validity and usability of the questionnaire. Please do not cooperate. You are invited to make a fictitious investment decision as a private investor. Based on the information you receive, please invest an amount between €0 and €1,000 in Schmidt-SE. The €10,000 mentioned in the first question is the total of your overall savings, just to give all of you a comparable reference point. The possible investment amount is limited to €1,000. Further, the last question is covered by yellow stickers. Please answer the question within seven seconds of uncovering it and please be honest.

At the end, one participant will receive a €25 voucher as a participation fee, while another will have the opportunity to participate in the lottery gamble you will see in the questionnaire. This person chosen can win an amount between €0 and €30. The participants will be selected randomly by drawing lots in the end after all of you finished the experiment.

Thank you.

Appendix: Cover Letter and Information to Executives

Dear Participant,

A current research project aims to empirically investigate the effects of an integrated reporting assurance. More specifically, the case study attached to this letter is the basis of an empirical analysis, which explores how nonprofessional investors react to an externally assured integrated report when facing investment decisions. For this purpose, the following research groups were chosen:

- Executives of large German corporations
- Masters students specializing in business administration.

For several years, integrated reporting has increasingly gained momentum among public interest entities and is regarded as a key element of a capital market oriented corporate communication by supporters of integrated reporting. Particularly, integrated reporting intends to connect both financial and sustainability reporting to depict the firm's value creation process more differentiated. In consequence, the new reporting medium shall increase the decision usefulness of the firm's reporting, especially for investors. Similar to the voluntary preparation of an integrated report, firms can voluntarily have their report assured by an external party. The principles-based framework for integrated reporting was published by the International Integrated Reporting Council (IIRC), which explicitly recommends an independent assurance.

The purpose of this letter is to cordially ask for your participation in the case study, which will take about 15 minutes of your time. Please make your decisions from the perspective of a fictitious nonprofessional investor, who takes an investment decision based on the information provided in the case study.

In light of the high relevance of the topic, the success of the study crucially depends on your participation. Please read the case study carefully and answer the subsequent questionnaire. Please answer all questions to ensure validity and usability of the questionnaire. If you want to add supplementary information or explanations, feel free to occasionally provide an additional individual complement. We would like to cordially thank you for your participation, which contributes to empirical research and might deliver valuable insights for future assurance practice.

The results will be treated confidentially and will only be published on an aggregate basis. For queries and further information, please do not hesitate to contact us (*contact details*). Besides, we would be pleased with further recommendations and suggestions.

As recognition for of your valuable support, if desired, we would like to provide you with a summary of the empirical results. Please return the case study and the questionnaire by (*date*).

Sincerely,
the authors

Additional instructions given to the managers on the first page of the experimental case were:

- 1.) Please answer all questions. Otherwise the questionnaire is invalid.
- 2.) Relating to question 1: Fictitious maximum investment amount: €1,000.
- 3.) Relating to the last question: Please give the first intuitive answer within seven seconds after uncovering the question.

Appendix: Regression Results with Restricted Sample (Manipulation Check)

	Students		Managers	
	Coefficient		Coefficient	
	(p-value)		(p-value)	
	(1)	(2)	(3)	(4)
ASSUR	273.75*** (0.000)	257.23*** (0.000)	-24.29 (0.883)	-271.15 (0.142)
IR_KNOW		58.37 (0.112)		7.39 (0.942)
IR_EXP		-124.50*** (0.000)		49.84 (0.573)
IR_IMP		40.31 (0.346)		163.27** (0.011)
EXP_YEARS		-6.47 (0.539)		5.98 (0.422)
GENDER		-42.42 (0.450)		-507.24*** (0.000)
RISK_SCALE		56.42*** (0.001)		59.94* (0.082)
COG_AB		38.42 (0.479)		-75.82 (0.539)
Constant	175.86*** (0.000)	-227.62 (0.200)	390.00** (0.015)	142.79 (0.714)
F-value	33.66	8.11	0.02	--
R ²	0.1227	0.2875	0.0005	0.4049
N	145	145	40	40

Table 1: Regression results for H1 (IRA): Only correct manipulation checks.

Table 1 displays multivariate results for H1 for those participants who passed the manipulation check. The dependent variable is the participant's investment amount. The models are estimated with subject-level clustered standard errors (students sample) or robust standard errors (managers sample), respectively. Variable definitions are presented in Table 2 of the study. When, additionally, the participants who failed to answer the control question correctly are excluded (less than 10% of the sample), the results remain robust.

*, ** and *** denote significance at a 10%, 5% and 1%.

	Students		Managers	
	Coefficient		Coefficient	
	(p-value)		(p-value)	
	(1)	(2)	(3)	(4)
BIG4	23.99 (0.689)	29.83 (0.597)	8.89 (0.957)	-49.99 (0.811)
REAS	286.05*** (0.000)	271.56*** (0.000)	322.22 (0.105)	142.10 (0.605)
BIG4 * REAS	-13.44 (0.881)	-10.73 (0.899)	-265.30 (0.307)	-53.00 (0.873)
IR_KNOW		49.27 (0.161)		1.39 (0.991)
IR_EXP		-117.62*** (0.000)		54.29 (0.570)
IR_IMP		43.99 (0.304)		145.72** (0.031)
EXP_YEARS		-4.22 (0.645)		6.41 (0.421)
GENDER		-16.78 (0.741)		-594.55*** (0.001)
RISK_SCALE		47.88*** (0.003)		60.81* (0.060)
COG_AB		64.65 (0.203)		-87.19 (0.586)
Constant	175.86*** (0.000)	-217.34 (0.220)	390.00** (0.019)	279.98 (0.555)
Assurance fixed effects	Yes	Yes	Yes	Yes
F-value	17.94	11.30	0.78	--
R ²	0.2784	0.4260	0.0529	0.4209
N	145	145	40	40

Table 2: Regression results for H2 (Assuror) and H3 (Level of assurance): Only correct manipulation checks.

Table 2 displays multivariate results for H2 and H3 with those participants who passed the manipulation check. The dependent variable is the participant's investment amount. The models are estimated with subject-level clustered standard errors (students sample) or robust standard errors (managers sample), respectively. Variable definitions are provided in Table 2 of the study. When, additionally, the participants who failed to answer the control question correctly are excluded (less than 10% of the sample), the results remain robust. Instead of restricting the model to only those observations which received an assurance (i.e. cases A-D only), the models are estimated with a dummy variable (assurance-fixed effect) which captures whether an assurance was present or not, and prevents the loss of statistical power from excluded observations.

*, ** and *** denote significance at a 10%, 5% and 1%.

Appendix: Regression Results for H1-H3 among Students with Differentiation Between First and Second Treatment

Treatment #	Students (H1)		Students (H2-H3)	
	Coefficient (p-value)		Coefficient (p-value)	
	1st (1)	2nd (2)	1st (3)	2nd (4)
ASSUR	151.50** (0.011)	115.93* (0.057)		
BIG4			11.59 (0.907)	-0.63 (0.994)
REAS			-9.18 (0.916)	234.47*** (0.002)
BIG4*REAS			17.50 (0.895)	-21.30 (0.865)
IR_KNOW	40.67 (0.297)	27.85 (0.487)	40.47 (0.314)	23.69 (0.536)
IR_EXP	-79.61** (0.011)	-90.21*** (0.004)	-79.93** (0.012)	-88.07*** (0.003)
IR_IMP	35.04 (0.355)	95.38*** (0.009)	34.56 (0.382)	89.25** (0.012)
EXP_YEARS	-15.56 (0.119)	-16.18 (0.113)	-14.72 (0.171)	-12.31 (0.213)
GENDER	-77.56 (0.192)	-8.90 (0.878)	-72.64 (0.239)	-6.05 (0.914)
RISK_SCALE	38.52*** (0.009)	41.18*** (0.008)	38.68*** (0.009)	40.35*** (0.007)
COG_AB	-32.45 (0.581)	-23.20 (0.682)	-38.14 (0.537)	6.85 (0.900)
Constant	17.73 (0.919)	-249.91 (0.165)	15.43 (0.931)	-238.60 (0.151)
Assurance fixed effects	No	No	Yes	Yes
F-value	2.47	3.99	1.79	4.74
R ²	0.1486	0.1778	0.1496	0.2761
N	117	117	117	117

Table 3: Regression results for H1-H3 among students with differentiation between 1st and 2nd treatment.

Table 3 displays multivariate results for H1-H3 within the student sample and differentiates between the first and second treatment. The dependent variable is the participant's investment amount. The models are estimated with robust standard errors. Variable definitions are given in Table 2 of the study. When re-running the models after excluding those participants who failed the manipulation check, REAS is positively significant in all models.

*, ** and *** denote significance at a 10%, 5% and 1%.

Annex 5: Allocations of contribution to articles

Article 1: Determinants of materiality disclosure quality in integrated reporting:
Empirical evidence from an international setting

	Weight	Gerwanski (in %)	Kordsachia (in %)	Velte (in %)
Development of research idea (i.e. research approach, hypotheses development etc.)	15%	33%	33%	33%
Engagement with theoretical background and prior literature	25%	33%	33%	33%
Development of research framework (data generation, analysis and interpretation)	40%	33%	33%	33%
Discussion of results, implications and recommendations	20%	33%	33%	33%
Sum	100%	33.3%	33.3%	33.3%



(Jannik Gerwanski)



(Othar Kordsachia)



(Prof. Dr. Patrick Velte)

Article 4: Do nonprofessional investors value the assurance of integrated reports? Exploratory evidence

	Weight	Gerwanski (in %)	Velte (in %)	Mechtel (in %)
Development of research idea (i.e. research approach, hypotheses development etc.)	15%	60%	40%	0%
Engagement with theoretical background and prior literature	25%	60%	40%	0%
Development of research framework (data generation, analysis and interpretation)	40%	65%	10%	25%
Discussion of results, implications and recommendations	20%	50%	25%	25%
Sum	100%	60%	25%	15%



(Jannik Gerwanski)



(Prof. Dr. Patrick Velte)



(Prof. Dr. Mario Mechtel)

Annex 6: The Impact of corporate governance on integrated reporting – a literature review

Abstract³⁵

In line with the increasing relevance of integrated reporting (IR) in recent years, a growing body of research has emerged investigating various determinants of IR implementation and quality. Corporate governance potentially affects IR practices; prior studies have documented their influence on sustainability reporting and other forms of voluntary disclosure. This chapter provides a systematic literature review of empirical quantitative studies that analyse the relationship between specific governance factors and IR. Building on stakeholder-agency theory, our literature review describes the effect of both firm-specific and country-specific governance factors on IR. The subsequent discussion of key implications and recommendations for further research offers valuable insights for academia, practice and regulators.

³⁵ The style, form and citation style are in accordance with the individual journal guidelines and hence may differ from the other parts of this dissertation.

1. Introduction

Integrated reporting (IR) is intended to summarize a firm's value creation over time by combining all material financial and nonfinancial information into one concise business report (IIRC, 2013). This new reporting medium has two goals: putting an end to the disconnected and heterogeneous corporate reporting environment, and delivering decision-useful information to a firm's various stakeholder groups (Eccles and Krzus, 2010, 2015). As stated in the International Integrated Reporting Council's (IIRC) <IR> Framework, one major content element in IR is governance. Although IR is increasingly gaining momentum in practice and academia (de Villiers et al., 2014, 2017a, 2017b; de Villiers and Sharma, 2017), empirical quantitative research on the impact of governance variables on IR is rare in comparison to research on sustainability reporting. The following literature review identifies, organizes and condenses the prevailing literature on firm-specific and country-related governance factors, and reveals factors that drive the decision to implement IR and affect IR quality. Subsequently, we stress the main limitations of current research and provide useful recommendations for future research.

2. Theoretical foundation and IR research framework

According to the IIRC Framework, IR aims to give a concise presentation of the firm's value creation over time for "all stakeholders interested in an organization" (IIRC, 2013, p.4). In line with the intention to provide decision-useful information by combining all material financial and nonfinancial information in one report, the underlying integrated thinking approach implies that integrated reports also contain all *material* information related to a firm's governance structure (e.g. de Villiers et al., 2014; Lai et al., 2016; Gerwanski et al., 2019).

Stakeholder-agency theory (Hill and Jones, 1992) has a central role in IR research (e.g., Frias-Aceituno et al., 2014; Gianfelici et al., 2018). The theory posits that the information disclosed in integrated reports should decrease information asymmetries and alleviate conflicts of interest between managers and different stakeholder groups (Eccles and Krzus, 2015). In order to conduct

effective IR procedures, firms need appropriate internal and external CG systems. Hence, different *internal CG mechanisms*, such as the composition of the board of directors and its committees, should reduce agency costs and increase the likelihood of compiling a (high quality) integrated report. Nevertheless, in the light of its narrative nature and the lack of specific guidelines, prior research has shown that the preparation of an integrated report is characterized by managerial discretion (Beattie, 2014; Higgins et al., 2014; Lai et al., 2018), which paves the way for corporate greenwashing and impression management. These circumstances emphasize the relevance of different *external CG institutions* (e.g., institutional investors, blockholders or an external IR assurer), which monitor management's sustainability-related activities and contribute to the credibility of integrated reports. Further, *country-specific governance factors* that relate to a firm's operating environment may influence its willingness to implement IR and disclose its value creation process to investors and other stakeholders. Factors such as a country's investor protection laws, degree of legal enforcement, legal origin and culture may affect IR preparation and presentation of information.

Despite governance factors being highly relevant to IR, and extensive consideration of governance in related literature reviews on corporate social responsibility (CSR) reporting (e.g., Velte, 2017), extant IR literature reviews do not focus on governance factors (e.g., de Villiers et al., 2014, 2017a, 2017b; de Villiers and Sharma, 2017). For this reason, the following review structures the existing IR literature according to firm-specific (internal and external CG) and country-specific governance factors, as shown in Figure 1. Specifically, with respect to the firm-specific dimension, we differentiate between a variety of board composition variables (e.g., diversity, independence, size and expertise) as well as shareholder and assurance-related variables (e.g., assurance of the integrated or CSR report). Regarding country-specific governance factors, we distinguish between investor protection, legal enforcement, legal origin and culture.

[insert Figure 1 here]

3. Method

Using a keyword search for “integrated reporting”, we searched multiple bibliographic databases, including Web of Science, Google Scholar, SSRN, EBSCO and Science Direct, for studies investigating IR in a CG context. Our selection was not limited to a specific country or time frame, but focused only on multivariate archival studies published in peer-reviewed literature, which were analysed using vote counting (Light and Smith, 1971). We deliberately discarded studies without an international journal ranking (ABS, Scimago, VHB Jourqual), to ensure the quality of the studies. In total, we identified 16 studies matching our sampling criteria. Table 1 provides an overview of the selected studies, arranged by publication year, region, journal and content.

[insert Table 1 here]

The selection of studies shows an increasing number of publications in high-ranked empirical literature over time, which is reflective of the accelerating awareness of IR in academic research. All but one study refer to an international setting. Overall, studies on the determinants of publishing an integrated report have investigated both firm-specific and country-specific factors, whereas the determinants for IR quality are predominantly analysed from a firm-specific angle. Table 2 summarizes the key results.

[insert Table 2 here]

4. Firm-specific governance factors

In line with the expected relevance of a firm’s CG to IR, Lai et al. (2016) and Melloni et al. (2017) used the Bloomberg governance scores to investigate the effect of a firm’s governance performance on publishing integrated reports and IR quality, respectively. While Melloni et al. (2017) came to the conclusion that governance performance is not related to IR quality, Lai et al. (2016) showed that firms with higher governance performance are more likely to release an integrated report. The results indicate that governance performance seems to drive the likelihood of engaging in IR, but does not lead to differences in quality.

The following sections present the results of our review, concentrating on internal and external firm-specific CG determinants on IR.

4.1 Internal corporate governance

The board of directors is not only responsible for representing stakeholders' interests, but also has the duty of controlling management and overseeing CG practices (Ben-Amar and McIlkenny, 2015). Accordingly, different board characteristics that contribute to board efficiency and affect management's decision to both compile an integrated report and determine IR quality have been identified (Gerwanski et al., 2019). Since prior research has found that board diversity enriches corporate decisions with respect to financial and CSR reporting (e.g., Rupley et al., 2012; McGuinness et al., 2017), prior studies have investigated the effect of *gender diversity* (Frias-Aceituno et al., 2013b; Fasan and Mio, 2017; Garcia-Sanchez and Noguera-Gamez, 2018; Kilic and Kuzey, 2018; Gerwanski et al., 2019) and *foreign diversity* (Frias-Aceituno et al., 2013b) on IR practices. Given that female representation is argued to enrich corporate board decisions through different perspectives, skills, values and beliefs, Gerwanski et al. (2019) and Kilic and Kuzey (2018) found that gender diversity positively affects IR quality. Arguing that boards with higher female representation tend to show a higher willingness to adhere to ethics, transparency and sustainability, Frias-Aceituno et al. (2013b) expected and concluded that board diversity increases a firm's likelihood of compiling an integrated report. Fasan and Mio (2017) were surprised to find the opposite effect, which they described as "apparently counter-intuitive" (p.302). In line with legitimacy theory, the authors surmise that difficulties in implementing IR may lead to employing higher board diversity as a signal to markets, which is not followed by the expected actions.

Several studies investigate the effect of *board independence* on IR practices (Frias-Aceituno et al., 2013b; Stacchezzini et al., 2016; Fasan and Mio, 2017; Kilic and Kuzey, 2018). Stacchezzini et al. (2016) found a negative association between board independence and IR quality, which they argued to be related to managerial discretion in the preparation of the integrated report facilitating

opportunistic behaviour. In line with this reasoning, Garcia-Sanchez et al. (2019) showed that the board of directors constitutes a relevant control mechanism, which constrains managers to prepare an integrated report.

Building upon the reasoning that a larger board size and higher meeting frequency are associated with better exchange of views, more discourse and thus better decision quality, several scholars investigated whether *board size* (Frias-Aceituno et al., 2013b; Fasan and Mio, 2017; Garcia-Sanchez and Noguera-Gamez, 2018; Kilic and Kuzey, 2018) or *board meeting frequency* (Frias-Aceituno et al., 2013b; Fasan and Mio, 2017) affect corporate engagement in IR or IR quality. Although board meeting frequency seems not to affect IR, two studies found statistically significant results with respect to board size. Frias-Aceituno et al. (2013b) showed that firms with larger boards are more likely to issue an integrated report, Fasan and Mio (2017) showed that board size impairs IR quality. While the higher plurality of opinions in larger boards seems to be beneficial for the implementation of IR, many different views may lead to lower reporting quality.

The audit committee oversees the firm's IR process and is in charge of monitoring managers and the external auditor (Klein, 2002; Haji and Anifowose, 2016). Since an effective audit committee should incentivize management to implement IR that provides decision-useful information to addressees, it is assumed to play a central role in IR implementation and quality. Despite its relevance, only two studies focus on the audit committee in an IR context. Velte (2018) showed that both *audit committees' financial* and *sustainability expertise*, as well as their interaction, increase the readability and thereby quality of integrated reports. In a similar vein, Haji and Anifowose (2016) investigated whether *audit committee effectiveness, size, meeting frequency, independence, expertise* and *authority* contribute to IR quality. Their results indicate that audit committee effectiveness, meeting frequency and authority leverage the quality of integrated reports. Haji and Anifowose (2016) further argued that, if present, the sustainability committee has an essential role by supporting the audit committee in overseeing sustainability disclosures in the integrated report and thus should

lead to higher IR quality. The results confirm this reasoning and reveal that firms with a sustainability committee show a higher quality of reporting.

4.2 External corporate governance

As well as the aforementioned internal governance factors, the extant literature has also investigated the effect of different *external CG* variables on IR preparation and quality. Given that IR allows a large degree of managerial discretion in the reporting process (Garcia-Sanchez et al., 2019; Gerwanski et al., 2019), an external IR assurer in its gatekeeper function can mitigate conflicts of interest between management and stakeholders (e.g., Velte and Stawinoga, 2017b). Moreover, management's decision to have its CSR or integrated report assured should signal quality and transparency to stakeholders (Simnett and Huggins, 2015). Building on this consideration, Vaz et al. (2016) and Sierra-Garcia et al. (2015) investigated the effect of an *external assurance of the CSR report* on the firm's likelihood of compiling an integrated report. The idea behind this reasoning is as follows: first, firms that are willing to spend money for the assurance of their CSR report might be likewise willing to spend money for IR. Second, firms that have their CSR report assured attach importance to the credibility of their reporting, and thus might have a higher propensity to engage in IR that aims to provide transparent and decision-useful information to a firm's different stakeholders. Third, assurers of the CSR report might also recommend engagement in IR to increase overall reporting quality to stakeholders. While Sierra-Garcia et al. (2015) identified such an association, Vaz et al. (2016) could not confirm their hypothesis. Moreover, Gerwanski et al. (2019) and Rivera-Arrubla et al. (2017) found that an *IR assurance* (IRA) positively affects IR quality. Staying with the assurance/audit dimension, Rivera-Arrubla et al. (2017) evaluated whether the appointment of a *Big4 auditor* for the financial audit has an impact on a firm's IR quality, but found no significant association. In sum, the assurance-specific results are quite inconclusive with regard to their effect on IR preparation and quality.

Assuming that blockholders have both an increased information demand for IR as well as high bargaining power, a firm's ownership concentration may have an effect on either the preparation or the quality of integrated reports. The only corresponding study was conducted by Haji and Anifowose (2016), who found a positive effect of *ownership concentration* on IR quality. Staying with the ownership focus, and elaborating on Serafeim (2015), who showed that IR firms have less transient investors, Gerwanski et al. (2019) assumed that more sustainable firms have more socially responsible investors (SRI), who exert (sustainable) shareholder pressure on IR quality. Specifically, the authors investigated whether firms listed in the *Dow Jones Sustainability Index* (DJSI) compiled integrated reports of superior quality, but found no significant effect.

5. Country-specific governance factors

The impact of *country-specific governance* factors on either the publication or quality of an integrated report has received less academic attention. Assuming that a country's level of *investor protection* might lead to a higher managerial willingness to fulfil the information demand of their stakeholders, this may increase a firm's likelihood of preparing an integrated report. This possible association has been investigated by several scholars (Garcia-Sanchez et al., 2019; Garcia-Sanchez and Noguera-Gamez, 2018; Vaz et al., 2016; Frias-Aceituno et al., 2013a). Garcia-Sanchez et al. (2019) found that the level of investor protection (measured using a factorial analysis composed of an anti-self-dealing index, creditor rights index and market development) lowers munificence and increases the likelihood of preparing an integrated report. Further, they showed that the country's level of transparency enhances the likelihood to engage in IR. In a similar vein, Garcia-Sanchez and Noguera-Gamez (2018) found that the level of a country's judicial efficiency and index of law and order encourage IR, while Frias-Aceituno et al. (2013a) indicated that legal enforcement (i.e. efficiency of the legal system and an index of law and order) drives the publication of an integrated report.

Unlike Garcia-Sanchez and Noguera-Gamez (2018), who classified a country's orientation towards common or civil law as an element of investor protection, several studies have applied the civil law/common law variable to measure the effect of a country's *legal origin* (Mio and Fasan, 2017; Rivera-Arrubla et al., 2017; Vaz et al., 2016; Frias-Aceituno et al., 2013a). While case law regimes have a strong focus on shareholders, code law regimes are more oriented towards stakeholders. Despite Frias-Aceituno et al.'s (2013a) finding that firms operating in code law regimes are more likely to compile an integrated report, all other studies ubiquitously failed to achieve statistical significance.

With another country-specific focus, two studies investigated the effect of Hofstede's *cultural dimensions* on IR (Vaz et al., 2016; Garcia-Sanchez et al., 2013), assuming that a country's culture affects not only individuals, but also corporations, and determines their behaviour. Specifically, Vaz et al. (2016) and Garcia-Sanchez et al. (2013) came to the conclusion that integrated reports are more likely to be compiled in countries with a higher degree of collectivism, while Garcia-Sanchez et al. (2013) also identified firms operating in more feminist countries to be more likely to prepare an integrated report.

6. Implications and recommendations

6.1 What is integrated reporting (quality)?

Earlier research in the domain of IR critically invoked the absence of IR-specific guidance in the presence of high managerial discretion (e.g., definition, assessment and information of the firm's 'capitals' or the materiality of information (Gerwanski et al., 2019)). This absence leads to reporting heterogeneity and entails the risk of managerial greenwashing and impression management through 'rebranding' the annual report as an integrated report (Haji and Hossain, 2016; Rivera-Arrubla et al., 2017). In response to this lack of clarity, most studies defined different criteria; for example, IR-specific principles or adherence to the IIRC Framework (Gerwanski et al., 2019) in order to qualify whether the underlying report was a 'real' *integrated report* or not. Building on this consideration, future research should refine existing ways to identify a 'real' integrated report. This could be done, for example, through the application of an

IR scoring scheme, which should take into account both IR content elements (such as the focus on capitals or a firm's stakeholder dialogue (e.g., Lee and Yeo, 2016; Haji and Anifowose, 2016)), and guiding principles (e.g., materiality, conciseness, and connectivity).

Further, the academic approaches applied to operationalize the abstract term IR quality lead to the basic question: how is IR quality defined and what distinguishes a high-quality integrated report from one of inferior quality? While outside the CG context, several studies operationalized IR quality by means of the 'EY Excellence in Integrated Reporting Awards' score (e.g., Barth et al., 2017), three within the scope of our review (Lai et al., 2017; Fasan and Mio, 2017; Gerwanski et al., 2019) proxied IR quality based on a firm's *materiality disclosure*, which has a central role in IR.

In line with the intention of the narrative reporting medium to apply "plain language over the use of jargon or highly technical terminology" (IIRC, 2013, p.21; Beattie, 2014; Higgins et al., 2014; Lai et al., 2018), several scholars referred to the *readability* of the integrated report to assess its quality (Velte, 2018; Melloni et al., 2017; du Toit, 2017). In the light of the various measures of IR quality, future research should develop further measures to evaluate IR quality. For example, in line with the basic idea of IR, future studies might proxy IR quality with a score that captures the degree of interconnection of the firm's capitals, which would simultaneously allow a differentiation from managerial impression management.

6.2 *Internal CG perspective*

Starting with the *internal CG perspective*, there should be more research specific to the board of directors as a key player in the further process of IR, as it decides on both the voluntary implementation of IR and its quality. Given that extant studies provide contrasting results (e.g., gender diversity, board size, board meeting frequency), the diverse findings might be driven by hitherto unobserved effects, which should be investigated in future research. Building on different studies in the domain of *behavioural accounting*, which show that managers'

educations and professional backgrounds (Lewis et al., 2014), along with personality and preferences (Gibbins et al., 1990) and sustainability-related attitudes (Helfaya and Moussa, 2017), drive their voluntary disclosure behaviour, it should be investigated how far different CEO and CFO demographics (e.g., gender, age, experience, education) or behavioural characteristics (e.g., altruism, narcissism, overconfidence) affect engagement in IR. Moreover, in line with the increasing relevance of non-financial components in a firm's *management compensation* (e.g., Davila and Venkatachalam, 2004; O'Connell and O'Sullivan, 2014), there should be specific research on whether sustainability goals or long-term incentives, such as stock options, increase willingness to compile high-quality integrated reports.

While Haji and Anifowose (2016) and Velte (2018) focused on the effect of several characteristics specific to the composition of the *audit committee* (e.g., effectiveness, size, expertise, and independence) on IR quality, many questions about the association between the audit committee and IR remain unanswered and should be addressed in further research. These include how the audit committee addresses technical challenges arising during the internal assurance of the IR and how, in practice, a sufficient degree of quality is ensured in the absence of corporate IR experience and the lack of IR-specific guidelines (IIRC, 2015). Further, following Feng et al. (2017) who argued that IR-applying "organizations intend to improve the reporting process year by year by learning from prior year experiences" (p.347), future research should consider a) how far learning effects affect the work performed by the audit committee; b) how these learning effects are themselves affected by the audit committee; and c) the effect of the audit committee on IR quality, which should be re-assessed over time.

6.3 External CG perspective

Similarly, the *external CG perspective* offers various opportunities for further research. Unlike the audit committee, which focuses on internal assurance, there are numerous academic calls for research on the as yet under-investigated external IRA, which is quite common in the related domain of CSR assurance (e.g., de Villiers et al., 2014; Casey and Grenier, 2015; Simnett and Huggins,

2015) and led to, in parts, inconclusive results in our review. In parallel with the discussion about the choice of the assurer for the corporate social responsibility assurance (CSRA), future studies should assess whether appointing a Big 4 auditor rather than a specialized consultant (or vice versa) leads to differences in IR quality. Specifically, while Big 4 auditors refer to international auditing and assurance standards and are governed by different quality mechanisms, specialized consultants are frequently assumed to possess superior subject-specific knowledge (Simnett et al., 2009). Moreover, we know very little about the effects of the assurance level on IR quality. Since a higher assurance level is often argued to accompany a higher reliability for report users and thus presumably coincides with higher reporting quality (Hasan et al., 2003; Fuhrmann et al., 2017), the underlying assurance level might affect IR quality. Nevertheless, assurers' lack of IR-related experience and firms' insufficient implementation of adequate IR reporting infrastructures in the absence of an IRA-specific standard may impair the value of an IRA and reinforce the discussion about the necessity of such a standard (de Villiers et al., 2014; Maroun, 2017).

Although there is a strong emphasis on investors in the concept of IR (IIRC, 2013; Flower, 2015) and different scholars have shown its capital market relevance (e.g., Lee and Yeo, 2016; Barth et al., 2017; Zhou et al., 2017), so far, there is little evidence on the association between investors and the publication of an integrated report, or its quality, respectively. Assuming that IR alleviates information asymmetries and discloses relevant information to investors, outside investor pressure may convince management to compile an integrated report of high quality. Accordingly, different measures of shareholder activism may affect the preparation and quality of an integrated report and need to be investigated (e.g., Gillan and Starks, 2000). Specifically, future studies should examine factors such as foreign investors, government investors and managerial ownership, and re-assess the effect of concentrated ownership on IR reporting and quality. Despite the increasing importance of sustainable investors to corporations (Renneboog et al., 2008) and the assumption that SRI investors are more engaged in a firm's (sustainability) monitoring, only one study has investigated the effect

of sustainable index listing (Dow Jones Sustainability Index) on IR quality, but the results did not achieve statistical significance (Gerwanski et al., 2019). In the light of the low research density, future studies should re-assess the effect of SRI investors or examine whether there is an association between firms' signing of the Principles for Sustainable Investors (PRI) and the publication of an integrated report.

6.4 Country-specific governance factors

Shifting from the firm-specific to a macro perspective, there are also several *country-specific governance factors*, which remain under-investigated in an IR context. Specifically, so far, no study discriminates between one-tier (e.g., UK) and two-tier (e.g., Germany) regimes. Given that two-tier systems are supposed to limit managerial leeway and thus provide higher independence (e.g., Maassen and van den Bosch, 2002), and are related to the degree of information asymmetry (Belot et al., 2014), it would be worth investigating the implications of the system on IR (e.g., in France where legislation allows firms to choose between a one-tier and a two-tier system). Further, while most of the recent studies have focused on an international sample in order to increase the sample size of IR adopters, there is also a need to conduct empirical studies on the impact of CG on IR on a national level or region, for example, in South Africa (where IR is mandatory) or a special regime like the EU (as IR and non-financial reporting is especially relevant there). This would allow exploration of whether determinants and implications vary between countries; cross-country studies show only aggregated effects, which may hide off-setting or opposing effects. Future studies should expand the range of factors in the country's legal system beyond those already investigated (e.g., case and common law, indices of judicial efficiency and law and order) to include regulatory and legal aspects that may affect the diffusion and implementation of IR. For instance, an event study in a European context could assess the effect of the recent EU directive (2014/95/EU), which obliges large capital-market oriented firms to disclose non-financial information in either their management report or a separate (integrated) report, and thereby may encourage IR in Europe.

6.5 Methodological issues

From a *methodological* point of view, future studies should cover several shortcomings in extant studies. While on the one hand, further research should address potential endogeneity concerns (e.g., reversed causality), on the other hand, it is presumable that an optimal level, rather than a maximum, of governance will lead to increased IR implementation and IR quality; this potentially indicates that the association might be non-linear (indicating a U-shape or inverted U-shaped curve). Different analytical approaches, including dynamic regression models (GMM estimation), instrumental variable approaches (2SLS or 3SLS) or simultaneous equations models (SEM), might be applied in future research. Further, while many studies measure the *publication* of an integrated report with a dummy variable, we encourage the usage of individual disclosure scores, which account for both IR quantity and quality, and thus should have more explanatory power. Besides, as is common for cross-country samples and country-specific research, the comparability of the studies may be limited due to differing underlying contextual factors (Adhariani and de Villiers, 2018). Further, organizations are likely to be at different stages with regard to their IR implementation (Beck et al., 2015), which may lead to differing applications of the integrated thinking process and IR (summary report versus ‘one report’). Staying with the firm-specific perspective, further factors such as organizational complexity (Lee and Yeo, 2016) or corporate culture, which have not yet been included in CG-related studies, should be a part of future research. Moreover, returning to the assumption that an effective CG structure should lower the incentives for earnings management (Garcia-Sanchez et al., 2019; Gerwanski et al., 2019), the association between IR and earnings manipulation should be reassessed not only by using the commonly applied Jones or Kothari models, but also while accounting for differing reporting policies by measuring real earnings management (Roychowdhury, 2006).

7. Conclusion

As a firm's CG reporting is part and parcel of IR and governance mechanisms are indispensable to both the success and quality of IR, we have provided a systematic literature review on the association between governance and IR. By examining the existing academic literature on the topic, we aimed to reveal the underlying trends, thereby identifying and addressing prevailing research gaps for future studies. During the course of this investigation, we identified different firm-specific (internal and external factors) and country-specific governance determinants for the implementation and quality of IR. With regard to internal CG determinants, we identified a distinct academic focus on board composition, and we recommend more studies to focus on the role of its committees, particularly the audit and sustainability committees. With regard to external corporate governance factors, the effect of an external CSR assurance or IRA has been investigated by several studies, which came to mixed conclusions. Further, investor-specific factors (e.g., institutional investors) are very scarce in the research so far. With respect to country-specific governance determinants, as yet, the scope of the prevailing studies is limited to investor protection, legal origins and a country's culture. Building upon our analysis of the extant literature, at the core of our review, we discussed various recommendations for future studies.

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Firm-specific governance factors		Country-specific governance factors
Panel A: Publication year		
Total: 16	<ul style="list-style-type: none"> • 2019: 2 • 2018: 3 • 2017: 3 • 2016: 4 • 2015: 1 • 2013: 1 	<ul style="list-style-type: none"> • 2019: 1 • 2018: 1 • 2017: 2 • 2016: 1 • 2013: 2
Panel B: Region		
Total: 16	<ul style="list-style-type: none"> • International: 13 • South Africa: 1 	<ul style="list-style-type: none"> • International: 7
Panel C: Journal		
Total: 16	<ul style="list-style-type: none"> • Australian Accounting Review (1) • Business Ethics (1) • Business Strategy and the Environment (3) • Corporate Social Responsibility and Environmental Management (3) • Journal of Accounting and Public Policy (1) • Journal of Cleaner Production (1) • Managerial Auditing Journal (2) • Problems and Perspectives in Management (1) • Social Responsibility Journal (1) 	<ul style="list-style-type: none"> • Australian Accounting Review (1) • Business Ethics (1) • Business Strategy and the Environment (1) • Corporate Social Responsibility and Environmental Management (1) • International Business Review (1) • Journal of Cleaner Production (1) • Social Responsibility Journal (1)
Panel D: Content		
Total: 16	<ul style="list-style-type: none"> • Publication of an integrated report: 6 • Integrated reporting quality: 7 	<ul style="list-style-type: none"> • Publication of an integrated report: 5 • Integrated reporting quality: 2

Table 1: Selection of studies

Year	Author (s)	Reference	Country Sample size Period	Independent variable(s)	Dependent variable(s)	Significant results
2019	Garcia-Sanchez et al.	Corporate Social Responsibility and Environmental Management	<ul style="list-style-type: none"> • International • 6,442 firm-year observations • 2006-2014 	<ul style="list-style-type: none"> • Board characteristics factor (independence, gender diversity, experience, expertise, external consultants) • Investor protection factor (anti-self-dealing index, creditor protection and capital market development) • Country transparency index (index of corruption perception) 	Publication of an integrated report	<ul style="list-style-type: none"> • Board as control mechanism (+) • Investor protection as control mechanism (+) • Country transparency (+) • Munificence * Board (+) • Munificence * Investor protection (+) • Munificence * Country transparency (+)
2019	Gerwanski et al.	Business Strategy and the Environment	<ul style="list-style-type: none"> • International • 359 firm-year observations • 2013-2016 	<ul style="list-style-type: none"> • Board gender diversity • IR assurance • Dow Jones Sustainability Index (DJSI) listing 	<ul style="list-style-type: none"> • IR quality (materiality disclosure quality) 	<ul style="list-style-type: none"> • Board gender diversity (+) • IR assurance (+)
2018	Garcia-Sanchez and Noguera-Gamez	Australian Accounting Review	<ul style="list-style-type: none"> • International • 3,294 firm-year observations • 2009-2013 	<ul style="list-style-type: none"> • Board size • Board gender diversity • Investor protection: <ul style="list-style-type: none"> • Common/civil law • Anti-director rights • Country's judicial efficiency • Country's index of law and order 	<ul style="list-style-type: none"> • Publication of an integrated report 	<ul style="list-style-type: none"> • Country's judicial efficiency (+) • Country's index of law and order (+)
2018	Kilic and Kuzey	Managerial Auditing Journal	<ul style="list-style-type: none"> • International • 55 firm-year observations • 2014 	<ul style="list-style-type: none"> • Board size • Board independence • Board gender diversity 	<ul style="list-style-type: none"> • IR quality (forward-looking disclosure index) 	<ul style="list-style-type: none"> • Board gender diversity (+)
2018	Velte	Problems and Perspectives in Management	<ul style="list-style-type: none"> • International • 215 firm-year observations • 2014-2016 	<ul style="list-style-type: none"> • Audit committee financial expertise • Audit committee sustainability expertise 	<ul style="list-style-type: none"> • IR quality (readability) 	<ul style="list-style-type: none"> • Audit committee financial expertise (+) • Audit committee sustainability expertise (+) • Audit committee financial expertise * sustainability expertise (+)
2017	Fasan and Mio	Business Strategy and	<ul style="list-style-type: none"> • International • 65 IIRC pilot 	<ul style="list-style-type: none"> • Board size • Board independence 	<ul style="list-style-type: none"> • IR quality (materiality) 	<ul style="list-style-type: none"> • Board size (-) • Board gender diversity (-)

		the Environment	program members • 2012-2013	<ul style="list-style-type: none"> • Board meetings • Board gender diversity • Legal origin 	disclosure quality)	
2017	Melloni et al.	Journal of Accounting and Public Policy	<ul style="list-style-type: none"> • International • 104 firm-year observations • 2013-2014 	<ul style="list-style-type: none"> • Governance performance 	<ul style="list-style-type: none"> • IR quality: <ul style="list-style-type: none"> • Conciseness (length, readability) • Completeness (ESG score) • Balance (tone) 	<ul style="list-style-type: none"> • No effect (+/-)
2017	Rivera-Arrubla et al.	Social Responsibility Journal	<ul style="list-style-type: none"> • International • 91 firm-year observations • 2011 	<ul style="list-style-type: none"> • Legal origin (code/case law) • Big four firm for financial audit • External assurance of the IR 	<ul style="list-style-type: none"> • IR quality (disclosure index) 	<ul style="list-style-type: none"> • External assurance (+)
2016	Haji and Anifowose	Managerial Auditing Journal	<ul style="list-style-type: none"> • South Africa • 246 firm-year observations • 2011-2013 	<ul style="list-style-type: none"> • Overall audit committee effectiveness • Audit committee size • Audit committee meetings • Audit committee independence • Audit committee financial expertise • Audit committee authority • Sustainability committee • Ownership concentration 	<ul style="list-style-type: none"> • IR Quality: <ul style="list-style-type: none"> • Extent of IR • Quality of IR (based on the IIRC's <IR> Framework guiding principles) 	<ul style="list-style-type: none"> • Extent of IR/IR Quality • Overall audit committee effectiveness (+) • Audit committee meetings (+) • Audit committee authority (+) • Sustainability committee (+) • Ownership concentration (+)
2016	Lai et al.	Business Strategy and the Environment	<ul style="list-style-type: none"> • International • 309 (matched) firm-year observations • 2009-2011 	<ul style="list-style-type: none"> • Governance performance 	<ul style="list-style-type: none"> • Publication of an integrated report 	<ul style="list-style-type: none"> • Governance performance (+)
2016	Stacchezzini et al.	Journal of Cleaner Production	<ul style="list-style-type: none"> • International • 54 firm-year observations • 2011-2013 	<ul style="list-style-type: none"> • Board independence 	<ul style="list-style-type: none"> • IR quality (sustainability action disclosure) 	<ul style="list-style-type: none"> • Board independence (-)
2016	Vaz et al.	Business Ethics: A European Review	<ul style="list-style-type: none"> • International • 1,449 firm-year observations • 2012 	<ul style="list-style-type: none"> • Legal origin (code/case law) • Investor protection • Collectivism (Hofstede) • Feminism (Hofstede) • IR assurance 	<ul style="list-style-type: none"> • Publication of an integrated report 	<ul style="list-style-type: none"> • Collectivism (+)

2015	Sierra-Garcia et al.	Corporate Social Responsibility and Environmental Management	<ul style="list-style-type: none"> • International • 7,344 firm-year observations • 2009-2011 	<ul style="list-style-type: none"> • CSR assurance • Audit firm as CSR assurer 	<ul style="list-style-type: none"> • Publication of an integrated report 	<ul style="list-style-type: none"> • CSR assurance (+)
2013a	Frias-Aceituno et al.	Journal of Cleaner Production	<ul style="list-style-type: none"> • International • 2,129 firm-year observations firms • 2008-2010 	<ul style="list-style-type: none"> • Legal origin (code/case law) • Legal enforcement (efficiency of the legal system, index of law and order) 	<ul style="list-style-type: none"> • Publication of an integrated report 	<ul style="list-style-type: none"> • Code law (+) • Legal enforcement (+)
2013b	Frias-Aceituno et al.	Corporate Social Responsibility and Environmental Management	<ul style="list-style-type: none"> • International • 1,575 firm-year observations • 2008-2010 	<ul style="list-style-type: none"> • Board size • Board independence • Board meetings • Board gender diversity • Board foreign diversity 	<ul style="list-style-type: none"> • Publication of an integrated report 	<ul style="list-style-type: none"> • Board size (+) • Board gender diversity (+)
2013	Garcia-Sanchez et al.	International Business Review	<ul style="list-style-type: none"> • International • 3,042 firm-year observations • 2008-2010 	<ul style="list-style-type: none"> • Collectivism (Hofstede) • Feminism (Hofstede) • Tolerance of uncertainty (Hofstede) • Power distance (Hofstede) • Country's long-term orientation (Hofstede) 	<ul style="list-style-type: none"> • Publication of an integrated report 	<ul style="list-style-type: none"> • Collectivism (+) • Feminism (+)

Table 2: Key results of archival research on the impact of firm-specific and country-specific governance variables on IR

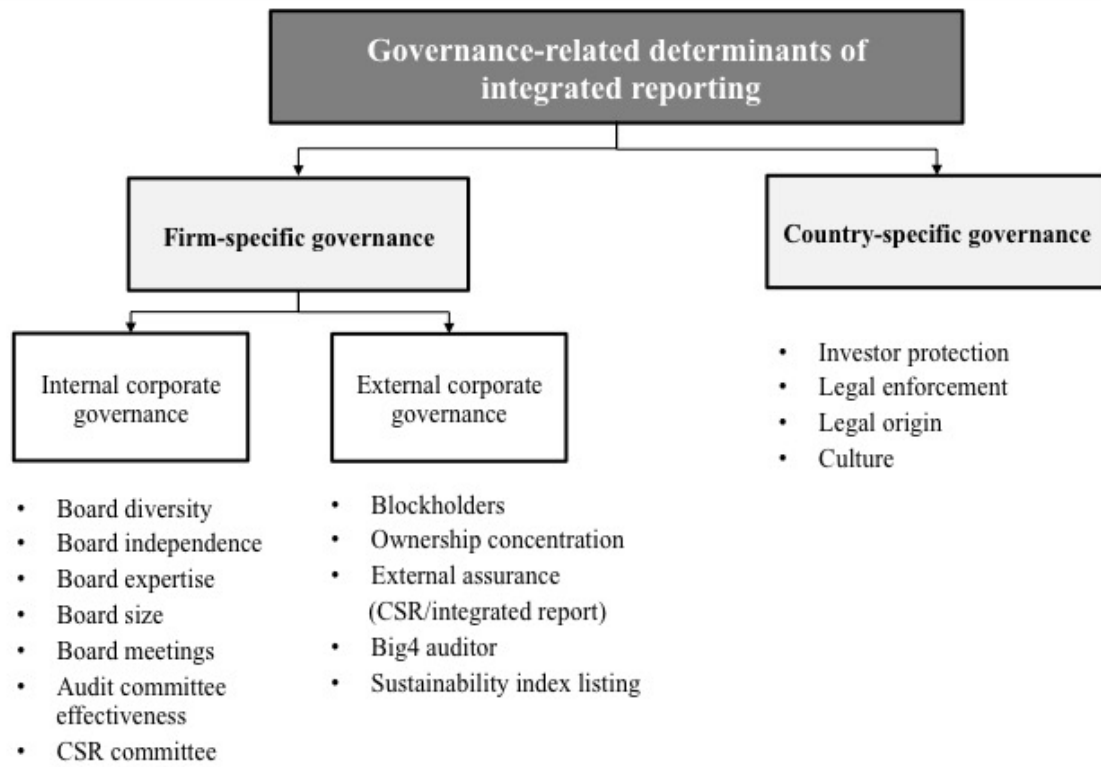


Figure 1: Governance-related determinants of integrated reporting