

Is Integrated Reporting Really the Superior Mechanism for the Integration of Ethics into the Core Business Model? An Empirical Analysis

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Abstract This paper examines the impact of integrated reporting (IR) on the integration of environmental, social, and governance (ESG) issues into the business model and the related economic and ESG performance changes. To investigate these internal and external transformational effects of IR, important differences between IR and alternative ESG reporting strategies are worked out. Using three matched samples of companies from around the world for the sample period 2002–2011, IR companies are matched with companies applying (a) no ESG reporting, (b) stand-alone ESG reporting, or (c) ESG reporting in the annual report. The results suggest that IR is a superior mechanism only for the integration of ESG issues into the core business model when comparing IR with the ESG reporting strategies of (a) no ESG reporting and (c) ESG reporting in annual reports. In comparison with (b), stand-alone ESG reporting, the results indicate that IR is negatively associated with the ESG integration level and with the economic and ESG performance. Moreover, this negative impact is lower for companies that have already implemented ESG management tools prior to the initiation of IR and is stronger for companies residing in countries with legal requirements for the disclosure of ESG information. A separate change analysis reveals that companies do not benefit from a switch from stand-alone ESG reporting to IR. Thus, this paper provides empirical evidence that contradicts the general notion of IR as a superior reporting mechanism, as the benefits of IR are driven by several factors.

Keywords Business model · Corporate social responsibility · ESG performance · Ethical accounting · Ethics · Integrated reporting · Integrated thinking · Integration of ESG issues · Non-financial disclosure · Reporting strategies · Sustainability reporting

Introduction

On December 9, 2013, the International Integrated Reporting Council¹ (IIRC) released the first internationally recognized integrated reporting (IR) framework. While IR is currently being applied in over 25 countries, the international IR framework is expected to accelerate the adoption of IR across the world even more (IIRC 2013a). IR is understood as “a process founded on integrated thinking that results in a periodic integrated report by an organization about value creation over time and related communications regarding aspects of value creation” (IIRC 2014). In 2011, 95 percent of the world’s 250 largest companies reported on their environmental, social, and governance (ESG) performance by issuing stand-alone ESG reports² or by publishing ESG information in

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¹ The International Integrated Reporting Council (IIRC) (previously the International Integrated Reporting Committee) was formed in August 2010 by the Prince’s Accounting for Sustainability Project (A4S) and the Global Reporting Initiative (GRI). The chairman and CEO of the IIRC are Professor Mervyn King and Paul Druckman, respectively. The IIRC brings together a cross section of representatives from civil society and the corporate, accounting, securities, regulatory, NGO, IGO, and standard-setting sectors (IIRC 2010).

² In line with previous literature (e.g., Eccles and Krzus 2010), the term stand-alone ‘ESG report’ is used as a synonym for stand-alone sustainability report, corporate social responsibility (CSR) report, triple bottom line report, corporate citizenship (CC) report or other similar terms.

traditional annual reports (KPMG 2011). However, such a disassociated reporting strategy disconnects financial and non-financial information,³ leading to an isolated approach to sustainability (Jensen and Berg 2012; Eccles and Krzus 2010). If the company really integrates ESG issues into its core business model, then what is the case for producing separate financial and non-financial reports instead of publishing just one integrated report (Eccles and Krzus 2010)? Pursuing this question implies a reverse causality: because the preparation of an integrated report can lead to the identification of any existing shortcomings in integrating ESG issues into a company's business strategy, the process of IR can set in motion transformational processes within the company to correct them (Eccles and Serafeim 2014; Serafeim 2014; Eccles and Krzus 2010). In this case, IR could be a superior mechanism for the integration of ethics into the core business model.

In the aftermath of the global economic and financial crisis of 2007–2008, the search for a suitable mechanism that integrates ethics in accounting has become an overarching priority in order to prevent unethical accounting practices of companies in the future. Ethical behavior in accounting is often equated with the obligation of companies to disclose a true and fair picture of their overall business performance. Telling the truth and disclosing a truthful picture of business operations therefore requires that financial and non-financial information is linked to each other. In this context, unethical accounting may result from conscious or unconscious misbehavior of companies during the process of identifying and preparing relevant ESG information. Because it is argued that the issuance of an integrated report leads to a re-evaluation of its ethics by the company itself (The IoDSA and the King Committee 2009), IR could function as a main driver for the creation of an ethically minded corporate culture of companies. By raising the awareness of the holistic nature of ESG aspects via IR, companies experience behavioral changes that could lead to a reduction of intentional and unintentional misconduct. According to Eccles and Krzus (EC Newsdesk 2010), the implementation of IR is therefore “an ethical obligation of a company in its role of corporate citizen.” However, this raises the question of how far the predicted ethical implications of IR go beyond those of other ESG reporting strategies. This paper sheds light on the internal and external ethical implications of IR by analyzing the

usefulness of IR as a superior mechanism for the integration of ethics into the core business model. Embedding ESG issues in the corporate culture of companies is therefore understood as a way to anchor ethical business practices.

The aim of this paper is to examine whether and to what extent IR initiates internal transformational effects that are being directed outwards at some point. In general, it is hypothesized that IR leads to change processes in- and outside the company that can be expressed in two different IR manifestations: *internalization* and *externalization*. In the sociological context, *internalization* is generally defined as the integration of values, beliefs, norms, attitudes, standards or patterns of culture into one's own identity as conscious or subconscious guiding principles through learning, socialization, or identification (Krippendorff 1995; Berger and Luckmann 1966). In this sense, IR can be understood as a process of internalizing new ethical norms manifested in more ethical reporting and management practices due to an increased focus on the integration of ESG issues into the company's business model. Because advocates promote IR as “a powerful practice with transformational effects not just on the way an organization reports, but on the way it thinks and acts” (IIRC 2013a), IR requires a company to experience a dynamic process of adaptation, learning, and action that can pave the way for a redesign of the internal reporting and management system (Churet and Eccles 2014; KPMG 2012; Eccles and Serafeim 2011; Braaksma 2010). *Externalization*, in a sociological sense, means that products created by individuals such as material or cultural products, social institutions, values, beliefs, or norms finally become external to those who have produced or adopted them (Berger and Luckmann 1966). In the context of IR, the company applying IR adapts and modifies its decisions, processes, strategy, business model, and activities and subsequently takes them outward, namely, outside the company's boundaries (e.g., by changing its performance levels). Thus, whether and to what extent changes in the economic and ESG performance levels occur depends on the internal integration level of ESG issues into the core business model.

To investigate these internalization and externalization effects of IR, this paper works out important differences between IR and alternative ESG reporting strategies. In the following, companies that publish an integrated report are referred to as ‘IR companies.’ Using three matched samples of companies from around the world for the sample period 2002–2011, IR companies (treatment group) are matched with companies applying (a) no ESG reporting, (b) stand-alone ESG reporting, or (c) ESG reporting in the annual report (in each case the control group). Moreover, the Heckman two-stage estimation is used to rule out self-selection biases. Company-level data about the application

³ The terms ‘non-financial information’ and ‘ESG information’ are often used interchangeably throughout this paper. Although (per definition) non-financial information additionally comprises information about intangible assets and key performance indicators (KPIs), it seems justified to equate ‘ESG information’ with ‘non-financial information’ because responsible and sustainable business management without the consideration of these two subcategories is not possible.

of the respective reporting strategy come from *CorporateRegister.com*, which hosts the world's most comprehensive directory of corporate non-financial reporting. ESG data are obtained from the well-established *Thomson Reuters ASSET4* database.

The findings suggest that the benefits of IR are driven by the respective control group. In the case of sample (a), IR is positively associated with ESG integration and the economic and ESG performance level. This comparison to non-ESG reporting companies clearly models the link between ESG management and improvements in performance. In contrast, the results under sample (b) indicate that IR is negatively related to the integration level of ESG issues and the economic and ESG performance. In this case, the findings do not support the view of IR as a superior reporting mechanism for the correction of internal failures in a company's ESG management. Rather, the application of IR represents major drawbacks to stand-alone ESG reporting. In sample (c), the findings suggest that IR is positively associated with ESG integration but does not have a strong impact on a company's performance. Thus, companies benefit more from IR than from ESG reporting in annual reports.

This paper makes several contributions to the literature. *First*, because the concept of IR is a relatively new one, there has been little related research. Research on IR is mainly limited to theoretical investigations (e.g., Eccles and Serafeim 2014; Adams 2013; Eccles and Krzus 2010), case studies (e.g., Eccles and Serafeim 2014) or surveys (e.g., KPMG 2012; IIRC 2012). There are only a few recently published empirical studies analyzing either its determinants (e.g., García-Sánchez et al. 2013; Jensen and Berg 2012) or IR's impact on the company's investor clientele (Serafeim 2014) and financial performance (Churet and Eccles 2014).⁴ For this reason, there is a

general call from several scholars (e.g., Cheng et al. 2014; Serafeim 2014) for future research on the internal and external benefits of IR for companies. To close the existing gap of empirical literature on the consequences of IR, this paper explicitly models the link between IR and the related internal and external transformational effects. As a result, conclusions about the ethical implications of IR can be drawn.

Second, this paper adds to the literature on alternative ESG reporting strategies. According to the current state of knowledge, there is no paper analyzing the internal and external consequences of companies that apply IR in comparison with companies publishing stand-alone ESG reports or ESG information in annual reports. Although stand-alone ESG reports provide relevant information to multiple stakeholders, it is widely argued that stand-alone ESG reporting has some large deficiencies compared to IR (e.g., Churet and Eccles 2014; Cheng et al. 2014; Eccles and Serafeim 2014; Serafeim 2014; Eccles and Serafeim 2011; Eccles and Krzus 2010). In this paper, the empirical findings do not support this view and contradict the general assumption of IR as a superior mechanism for integrating ESG issues into the core business model. Moreover, the results reveal that the benefits of IR compared to stand-alone ESG reporting depend on several factors. The impact of (1) changing from stand-alone ESG reporting to IR, (2) implementing ESG management tools (e.g., Key Performance Indicators, Balanced Scorecards) prior to the initiation of IR, and (3) legal requirements for the disclosure of ESG information on the results in this paper is examined by using additional tests and robustness checks. The findings suggest that (1) companies do not benefit from a switch from stand-alone ESG reporting to IR in the first reporting year, (2) ESG management tools that have been implemented prior to the initiation of IR mitigate the negative impact of IR on the integration of ESG issues into the business model but not on the ESG performance, and (3) residing in countries with ESG disclosure requirements amplifies the negative impact of IR on both the ESG integration and ESG performance of companies.

Third, this paper provides useful inputs to the current debate on the introduction of IR. Because further analyses reveal that the benefits of IR are driven by several factors, it can be concluded that the new mode of corporate reporting is neither a superior ethical accounting mechanism for integrating ESG issues nor an empty shell. IR is a complex mechanism that can generate significant advantages if it is used in the right way. Thus, both internal and

⁴ The recently published empirical study by Churet and Eccles (2014) analyzes the relationship between IR and both the quality of management and financial performance. Hence, their proxy for IR relies on a systematic search of RobecoSAM (asset manager) within annual reports (FY 2011 and 2012) for "management decisions to include, in the main section of the annual report, specific examples of sustainability initiatives and how they impact financial performance" (Churet and Eccles 2014, p. 57). Their findings suggest a significant and positive relationship between IR and the quality of management with regard to ESG issues, but no significant relationship between IR and financial performance. Therefore, their study is fundamentally different from this paper in several ways. *First*, in this paper, the most direct link is used to measure IR: the integrated report itself. *Second*, Churet and Eccles (2014) use an ESG score to measure the management quality. This does not constitute a direct internal management measure. This paper strongly differentiates between these two characteristics. Therefore, multiple internal and external proxies measure each of the two dimensions separately, namely the internal management and the ESG performance. *Third*, Churet and Eccles (2014) measure the financial performance via return on invested capital (ROIC), while the economic performance of the

Footnote 4 continued

company that is used in this paper represents a company's capacity to generate sustainable growth and a high return on investment through the efficient use of all its resources (ASSET4 database).

external stakeholders, such as managers, consumers, legislators, stock exchange commissions, and others who consider an integrated report as an important source of information, need to consider several factors when making decisions.

This paper is organized as follows. Section **Background** explains the background of IR. Section **Related Research and Hypothesis Development** reviews related research and develops hypotheses. Section **Research Design** describes the research design, illustrates the sample data selection process, and defines the main variables. Section **Empirical Result** presents the empirical regression results (descriptive statistics and multivariate regression results). Section **Additional Tests and Robustness Checks** presents additional tests and robustness checks. Section **Discussion** provides a discussion of the results, shows limitations, and concludes.

Background

On December 9, 2013, the International Integrated Reporting Council (IIRC) released the first internationally recognized IR framework. The IIRC is a global coalition of regulators, investors, companies, standard setters, the accounting profession, and NGOs (IIRC 2014). This coalition shares the long-term vision of “a world in which integrated management and thinking are embedded within mainstream business practice” (IIRC 2013a). Therefore, IIRC’s mission is the establishment of IR as corporate reporting norm to support companies in realizing integrated thinking within all its business activities. According to the IIRC (2013a), the cycle of integrated thinking and reporting leads to an efficient and productive capital allocation and will thus support the financial stability and sustainability performance of capital markets. For these reasons, the IIRC considers that IR “should be the next step in the evolution of corporate reporting” (IIRC 2014).

However, why is the integration of non-financial information so important these days, particularly with regard to ethical issues in accounting? How did the IR concept evolve? What is behind the term ‘IR’? What should an integrated report look like? And what is the international IR framework actually about? This section provides background knowledge on IR for a better understanding of its internal and external transformational effects.

The Importance of Non-financial Information

The past two decades have seen many recommendations, ideas, concepts, and other types of inspiration for improving corporate reporting. What all these approaches have in common is that “nearly all of them focus on the importance of companies providing more non-financial

information” (Eccles et al. 2011, p. 114). Neglecting the importance of non-financial information such that necessary non-financial information is not published or integrated in an overall context can result in a highly distorted picture of current and future business activities. The consideration of non-information in order to disclose a true and fair picture of the company’s business activities is essential for fostering ethical behavior in accounting for the following reasons.

Non-financial information can be divided into three subcategories: intangible assets, key performance indicators (KPIs), and ESG information (Eccles and Krzus 2010). *First*, intangible assets are nonphysical assets such as skilled workforce, patents and know-how, software, strong customer relationships, brands, unique organizational designs and processes that have enormous potential to create value (Eccles and Krzus 2010; Lev 2003). Currently, the book value is approximately 25–35 % of a company’s market value (Eccles and Krzus 2010). Thus, intangible assets explain more than half the market capitalization of public companies (Lev 2003). For this reason, non-financial information about these assets has to be a part of the company’s overall value creation story (IIRC 2014). Nonetheless, the differences that can be ascribed to intangible assets do not appear on a company’s balance sheet (Eccles and Krzus 2010; Eccles et al. 2001). *Second*, KPIs “are qualitative measures of results, achieved using tangible and intangible assets, which are regarded as leading indicators of financial performance” (Eccles and Krzus 2010, p. 89). Although KPIs are metrics, they have a non-financial character because they rely on operating metrics (e.g., product quality, employee turnover, new product development success rate) instead of being based on accounting rules (Eccles and Krzus 2010). Thus, KPIs enable a company’s management to implement and monitor its business strategies in a sustainable way. *Third*, the large and growing market interest in a company’s ESG performance and policies requires companies to disclose an appropriate level of ESG information (Eccles et al. 2011). This new market requirement for companies can be attributed to a number of factors, such as the increasing influence of multinational companies in a global market, the growing ruthless corporate behavior toward the environment and society, and the loss of trust as a consequence of several corporate scandals around the year 2001 as well as the global economic and financial crisis of 2007–2008 (e.g., Dhaliwal et al. 2011; Eccles and Krzus 2010).

For these reasons, it is argued that the disconnection of financial and non-financial information in the current separate reporting systems supports an isolated view and the evaluation of single pieces of information rather than an integrated and sustainable approach to sustainable business strategies and processes (Jensen and Berg 2012; Eccles and

Krzus 2010).⁵ In this paper, the terms ‘non-financial information’ and ‘ESG information’ are used interchangeably because all three non-financial information subcategories must be considered—as part of ethical accounting practices—to make responsible and sustainable business management possible.

The Evolution of Integrated Reporting

The first integrated reports were published by the Danish enzyme company Novozymes in 2002, the Brazilian cosmetics fragrance company Natura in 2003, and the Danish pharmaceutical company Novo Nordisk in 2004 (Eccles and Krzus 2010). Since that time, companies have applied the IR concept in different ways (Eccles and Serafeim 2014; Serafeim 2014). While some companies only combine financial and stand-alone ESG reports into one single report, others actually integrate financial and non-financial information in the best possible way. Many companies declare their reports as integrated, although their reports only follow a combined reporting strategy instead of an integrated one. Many more, however, completely integrate both information types but do not use the label integrated report (Eccles and Serafeim 2014; Serafeim, 2014). Consequently, there is often no clear way to determine the exact number of already published integrated reports (Eccles and Serafeim 2014).

This mixed picture of IR practices around the world is mainly due to a lack of common understanding of IR or of a uniform definition of it before the release of the international IR framework in 2013. In its simplest terms, an integrated report is often understood as “a single report that combines the financial and narrative information found in a company’s annual report with the non-financial [...] and narrative information found in a company’s [...] sustainability report” (Eccles and Krzus 2010, p. 10). According to KPMG (2011), such a basic approach must be classified as ‘combined reporting’ rather than ‘IR.’ Merging the two, namely, the financial statement and the ESG report, into the annual report can only constitute a first but valuable stepping stone toward IR, as it does not fully integrate ESG issues into the regular corporate reporting framework (KPMG 2011). Druckman (2014) even makes clear that an integrated report is more than just a summary of information already available in other

communications, such as financial statements, ESG reports, analyst calls, Web Sites, and corporate governance reports. The integrated report goes beyond traditional paper reports. Using the Internet, or rather the company’s Web site, the so-called ‘One Report’ can provide a conceptual platform from which stakeholders can seek much more detailed information that is exactly tailored to their individual information needs (Eccles and Krzus 2010). According to Eccles and Krzus (2010), this is the first (of two) and the narrowest meaning of an integrated report. A single documented integrated report (in paper or as a PDF file) communicates to stakeholders “that the company is taking a holistic view of their interests, both as they complement each other and as they compete against each other” (Eccles and Krzus 2010, p. 11). The second and much more extended meaning of an integrated report is the illustrated integration of financial and non-financial information by mapping their impact on each other (Eccles and Krzus 2010). Thus, an integrated report will constitute a full picture of a company’s overall business performance (KPMG 2011). By initiating continuous improvements in the degree of information integration, IR can be understood as a dynamic and never ending process. The development and presentation of ‘One Report’ is not possible without more IR that embeds ESG issues into a company’s strategy (Eccles and Krzus 2010).

The first formal, but not universally applicable (for the time being), guidance regarding the IR concept and the preparation of an integrated report regarding its theoretical and practical embedding in a national context was the South African discussion paper in 2011 prepared by the Integrated Reporting Committee (IRC)⁶ of South Africa (Serafeim 2014; IRC 2011). Because all companies listed on the Johannesburg Stock Exchange (JSE) are required to publish an integrated report or have to explain why they have not done so since 2010 (comply-or-explain approach), the discussion paper was the first document offering South African companies a principle-based approach to IR and the integrated report (IRC 2011).⁷ The King Report (King III) on Governance for South Africa 2009 (The IoDSA and

⁵ For example, Arnold (2012) analyzes in an experimental setting whether the disconnect between financial statements and ESG reports leads to an anchoring effect in the company valuation process. Therefore, participants either received financial and non-financial information separately and successively or simultaneously in an integrated report. They find that financial statement users asymmetrically anchor themselves on their financial value judgments provided that ESG information is given by a stand-alone report (Arnold 2012). Thus, an integrated report may correct distorted valuations.

⁶ The Integrated Reporting Committee (IRC) of South Africa was established in May 2010 to develop guidelines on good practice in IR. The founding organizations are the Association for Savings & Investment South Africa (ASISA), Business Unity South Africa (BUSA), the Institute of Directors in Southern Africa (IoDSA), JSE Ltd, and SAICA (The South African Institute of Chartered Accountants). The IRC is chaired by Professor Mervyn King.

⁷ In February 2010, the principles of the King Code of Governance of 2009 (King III) were incorporated into the Johannesburg Stock Exchange’s listings requirements. King III recommends that companies adopt IR and prepare an integrated report. Consequently, the obligation of JSE listed companies to apply the King III principles includes the call for companies to prepare an integrated report or explain their reasons for deviating from them for financial years starting on and after 1 March 2010 (Integrated Reporting Committee (IRC) of South Africa 2011).

the King Committee 2009, p. 54), which underlies JSE's listings requirements, defines IR as "a holistic and integrated representation of the company's performance in terms of both its finance and its sustainability." Because a company's business operations affect many different stakeholders, their interests and expectations should be considered by using an interactive communication process (IRC 2011). By enabling stakeholders to assess the ability of a company to create and sustain value over the short-, medium-, and long-term, an integrated report should be the primary report of the company (IRC 2011). The IRC states that IR "is not replacing financial reporting, rather it reflects the evolution of reporting and the company's role in society" (IRC 2010).

The International Integrated Reporting Framework

Although South Africa is leading the way toward IR, IR-related approaches are increasingly adopted by companies from around the world. Because the extent to which companies apply and effectively implement IR can vary significantly, IIRC's international IR framework is likely to standardize the information content and the way it is presented within integrated reports, which could lead to an increased level of reliability and comparability. Considering the unique position and the growing significance of IR, the international IR framework is described briefly below.

Although the integrated report is primarily addressed to capital providers of financial capital, it benefits all stakeholders interested in the company's value creation over time, including employees, customers, suppliers, business partners, local communities, legislators, regulators, and policy-makers (IIRC 2013b). Therefore, an integrated report tends to provide information about (1) the external environment affecting the company, (2) the resources and the relationships used and affected by the company (these are termed 'the capitals,' which are categorized as financial, manufactured, intellectual, human, social and relationship, and natural capital), (3) the company's interaction with the external environment and the capitals used to create value over the short, medium, and long term (IIRC 2013b). The value creation process of a company is largely dependent on its *business model*, that is, a "system of transforming inputs, through its business activities, into outputs and outcomes" (IIRC 2013b, p. 25). The *inputs* (various forms of capital) are converted by the company's *business activities* (e.g., the planning, design, and manufacture of products or the deployment of specialized skills and knowledge in the provision of services) into *outputs* (e.g., products, services, by-products, and waste) (IIRC 2013b). The *outcomes* are, in turn, effects on the capitals, or in other words, "internal and external consequences (positive and negative) for the capitals" (IIRC 2013b,

p. 14). Therefore, the company's ability to address changes (e.g., the availability, quality, and affordability of the inputs) can have a significant impact on the company's longer-term viability (IIRC 2013b). Furthermore, the company's business model is embedded within the *external environment* (e.g., legal, commercial, social, environmental, and political aspects) and the company's individual *mission and vision* statements regarding how the company addresses these significant external factors (e.g., culture, ethics, and values) (IIRC 2013b). Monitoring and analyzing the aspects mentioned above should identify *risks and opportunities* that need to be managed by an overarching company *strategy*. Setting out strategic objectives and strategies thus helps companies manage their *performance* (IIRC 2013b). Because the company's value creation is a dynamic process, the "regular review of each component and its interactions with other components, and a focus on the organization's outlook, lead to revision and refinement to improve all the components" (IIRC 2013b, p. 14).

The fundamental concepts described above underpin and reinforce the 'guiding principles' and 'content elements' established by the international IR framework for the preparation and presentation of an integrated report (IIRC 2013b).⁸ The international IR framework is the first guidance for companies around the world that strive to implement IR and to produce an integrated report. By providing a principles-based guidance, companies are left with both flexibility and the incentive to take account of individual circumstances during the IR process and the production of an integrated report. The international IR framework does not specify key performance indicators (KPIs), measurement methods, or datasets that need to be disclosed (IIRC 2013b). Consequently, the management of a company determines which aspects are material and need to be disclosed. Moreover, those who are charged with the integrated report preparation are likely to spark lively debates within the company during their material information collection process across departments.

⁸ The following guiding principles shall be applied individually and collectively for an integrated report's preparation and presentation: strategic focus and future orientation, connectivity of information, stakeholder relationships, materiality, conciseness, reliability and completeness, consistency, and comparability (IIRC 2013b). The following content elements shall provide a rough draft of how an integrated report could be structured: organizational overview and external environment, governance, business model, risks and opportunities, strategy and resource allocation, performance, outlook, basis of preparation and presentation (IIRC 2013b). Additionally, these content elements imply consideration of the underlying general reporting guidance. When the information is presented, the connection between the content elements should become apparent (IIRC 2013b). Consequently, the content of an integrated report depends on the individual information needs of the company, and they can therefore differ from each other (IIRC 2013b).

Related Research and Hypothesis Development

Corporate reporting serves two primary functions: information and transformation.⁹ However, the current corporate reporting system is not performing these two functions effectively (Eccles and Serafeim 2014). In the last few decades, companies around the world have started to publish non-financial information by either using a stand-alone report or by including such information in the annual report (KPMG 2011). The initiation of IR in recent years extends the choice of options even more. According to Eccles and Serafeim (2014), IR could be a superior mechanism to perform these two primary functions more effectively. Thus, the question arises as to what extent IR shows clear benefits compared to alternative non-financial reporting strategies. What are the major differences between IR and stand-alone ESG reporting or ESG reporting in annual reports? And does the selection of a respective non-financial reporting strategy influence the internal and external transformational effects of companies?

Integrated Reporting vs. Alternative Non-financial Reporting Strategies

Although stand-alone ESG reports provide relevant information to multiple stakeholders, it is widely argued that this type of reporting has some large deficiencies compared to IR (Eccles and Serafeim, 2014; IIRC 2014; Serafeim 2014; Eccles and Serafeim 2011; Eccles and Krzus 2010). Proponents of IR argue that separate financial and non-financial reporting is not sufficient for describing how a company creates value over time, as it does not place the non-financial data in the context of a company's strategy and business model (Serafeim, 2014; Jensen and Berg 2012; Eccles and Krzus 2010). Rather, the connectivity of information¹⁰ within IR communicates a company's value

⁹ Although external reporting tends to serve the information provision to external stakeholders in the first place, it can also have a great impact on the internal decision making. Revenue recognition and earnings management are common examples in financial reporting (Eccles and Serafeim 2014). For instance, new information from better corporate reporting strategies puts internal stakeholders (e.g., board members, executives, managers, employees) in the position to actively influence the daily business of the company and make internal transformational processes possible. In this paper, the focus is on this 'internally-driven transformation.'

¹⁰ The presentation of information in financial and annual reports is often very complex and therefore difficult to understand for stakeholders, especially for those who are not familiar with financial accounting measures and figures. For this reason, the impact of a company's economic strategies and activities on stakeholders could be misunderstood without a connectivity of information, as most of the financial information is presented on a historical basis. This backward-looking orientation of financial reporting can be understood

creation story, "including elements of sustainability reporting to the extent that is material to how an organization creates value over the long, medium and short term" (Druckman 2014, p. 19).¹¹ It is argued that in most ESG reports, the problem of materiality is often not effectively addressed, which has the potential for creating an 'information overload' for stakeholders (Serafeim 2014). Moreover, the information provided in ESG reports often lacks credibility, timeliness, and relevance (Eccles and Serafeim 2014). Because stand-alone ESG reporting is largely unregulated, companies are not obligated to have their ESG reports assured. Some companies even seek assurance on a voluntary basis, which introduces the problem of 'cherry picking' (Kolk and Perego 2010; Deegan et al. 2006a, b).¹² Furthermore, the information provided in ESG reports is often not up-to-date. Because stand-alone ESG reports are usually not published together with the financial statement, there is a great reporting lag between financial and non-financial information, which leads to a large drop in relevance (Serafeim 2014; Eccles and Serafeim 2014). In this paper, companies publish their stand-alone ESG reports 148 days on average after a company's fiscal year end. In comparison, integrated reports are published 18 days earlier after the end of the financial year.¹³

Research on the impact of stand-alone ESG reporting can be divided into internal and external consequences. Previous research on the role of ESG reporting as an internal management tool for organizational processes

Footnote 10 continued

as a 'rear-view mirror' of the company's performance (Serafeim 2014). In contrast, non-financial information "can provide insights into the company's expected future financial performance" (Serafeim 2014, p. 3).

¹¹ The international IR framework defines a matter as material "if it could substantively affect the organization's ability to create value in the short, medium or long term" (IIRC 2013b, p. 33). Therefore, an integrated report should be a communication tool that reflects relevant and material information in a superior conciseness.

¹² The problem of voluntary initiated and occupied assurance services is obvious: ESG reports receive almost exclusively negative assurance (e.g., 'nothing came to our attention...') rather than positive assurance (e.g., 'in our opinion...') that is more investor-useful (Eccles and Serafeim 2014; Serafeim 2014; Eccles and Krzus 2010). Third-party assurance of ESG reports largely varies in scope, depth, and frequency, so that "report readers would often have great uncertainty in understanding how the assurance provider undertook the engagement, what they reviewed, [and] what [...] the meaning of conclusion [was]" (Deegan et al. 2006b, p. 368). The results from Perego and Kolk (2012) support this view by finding great variability in the adoption of assurance practices. Thus, the diversity of assurance standards and the type of assurance provider seem to shape the quality of ESG assurance statements, limiting the effect of trust and credibility that an assurance statement should actually have (Perego and Kolk 2012).

¹³ This is in line with findings by Serafeim (2014). Serafeim (2014, p. 12) finds that "integrated reports are filed on average 22 days earlier after the end of the financial year than sustainability reports."

within the company primary relies on case and conceptual studies (Bebbington et al. 2008; Adams and Frost 2008; Adams and McNicholas 2007; O'Dwyer 2002, 2003; Larrinaga-Gonzalez et al. 2001). For example, Adams and Frost (2008) find that KPIs for measuring the company's sustainability performance are also used in internal decision making, strategic planning, performance measurement, and risk management. In addition, Adams and McNicholas (2007) show that the process of developing an ESG reporting framework can result in organizational change due to the integration of sustainability issues into management practices and an increased focus on KPIs that were previously not reported. Ioannou and Serafeim (2012) empirically examine the effect of mandatory stand-alone ESG reporting based on laws and regulations on a company's socially responsible management practices. Their findings indicate that the social responsibility of managers increases, companies implement more ethical practices, bribery and corruption decrease, and the corporate governance improves. Moreover, managers' credibility increases. Furthermore, empirical findings by Eccles et al. (2013) imply that companies that voluntarily adopt sustainability policies exhibit distinct organizational processes compared to companies that do not. They also provide evidence that highly sustainable companies (not synonymous with companies applying stand-alone ESG reporting) outperform their counterparts in terms of accounting performance over the long-term.¹⁴

Research on the external consequences of stand-alone ESG reporting primarily comprises empirical studies of capital market implications. Previous studies show that there is a large market interest in non-financial information because investors seek ESG data to adapt their investment decisions and to have analysts adjust their sell or buy recommendations (Ioannou and Serafeim 2014; Eccles et al. 2011; Dhaliwal et al. 2012, 2011). For example, Ioannou and Serafeim (2014) analyze the impact of sustainability ratings on sell-side analysts' assessments of companies' future financial performance. Their findings suggest that in the last few years, analysts have

progressively assessed companies with high sustainability ratings less pessimistically and, in some cases, even more optimistically. In contrast to Ioannou and Serafeim (2014), who do not find a significant relation between sustainability ratings and analysts' forecast errors, Dhaliwal et al. (2012) show that the publication of a sustainability report is associated with lower analyst forecast errors. Furthermore, Dhaliwal et al. (2011) demonstrate that companies with both sustainability reports and a superior sustainability performance attract more dedicated institutional investors and experience a higher level of analyst coverage. In addition, there is empirical evidence that these companies exhibit a reduction in the cost of capital (Dhaliwal et al. 2011; Richardson and Welker 2001) and an increase in their market value (Dhaliwal et al. 2011; Plumlee et al. 2008; Rodriguez et al. 2006). Moreover, the underlying disclosure literature follows the general notion that a well-regarded disclosure policy reduces information asymmetry and increases liquidity in equity markets (e.g., Welker 1995; Watts and Zimmermann 1978). However, the failure to publish CSR information may harm future investment opportunities (Watts and Zimmerman 1978). Hung et al. (2013) show that companies that are subject to mandatory ESG reporting experience a decrease in information asymmetry after the respective law or regulation has entered into force. Griffin and Sun (2013) find that the disclosure of greenhouse gas emissions through CSR Newswire produces positive stock returns to shareholders. Furthermore, Cheng et al. (2014) find that companies with a superior sustainability performance face lower capital constraints, mainly due to better stakeholder engagement and transparency.

In sum, prior literature on the consequences of stand-alone ESG reporting highlights one main point to which attention must be drawn: nearly all internal and external effects that have been found in some way to be positive come from better ESG performance rather ESG reporting (or are otherwise induced by legal obligations). Thus, it is questionable whether the stand-alone ESG report requires an effective management of ESG issues. Because the stand-alone ESG report is currently the most commonly used non-financial reporting instrument, the discussion of assets and drawbacks to IR has primarily been based on that reporting alternative. Nonetheless, most of the arguments for and against IR are transferable to ESG reporting in annual reports.¹⁵

¹⁴ In this sense, it is essential to highlight the difference between ESG reporting and ESG performance. As assurance on ESG reports can be chosen independently; the information contained in the reports does not necessarily need to be truthful (Simnett et al. 2009). Stand-alone ESG reports can be misused as 'advertising brochures' hiding the true ESG performance of the company. By creating a new picture via 'window-dressing' or 'cheap talk,' it is possible to influence, or rather manipulate, stakeholders' external perceptions and evaluations (Marquis and Toffel 2011, 2014). Building corporate reputation and gaining external legitimacy can be the primary reason for a company to engage in ESG issues and their reporting (Simnett et al. 2009; Bebbington et al. 2008; Cho and Patten 2007; O'Dwyer 2002, 2003). Empirical findings even indicate that ESG reporting can be coupled with an intent to negotiate and control the ESG agenda (Larrinaga-Gonzales et al. 2001).

¹⁵ Most of the following arguments can be transferred to the reporting strategy of including non-financial information in the annual report. For instance, because the non-financial information within annual reports is illustrated under certain sub-sections, the missing link between financial and non-financial information also promotes an isolated view and evaluation. Furthermore, the piece of non-financial information in the annual report is not subject to audit.

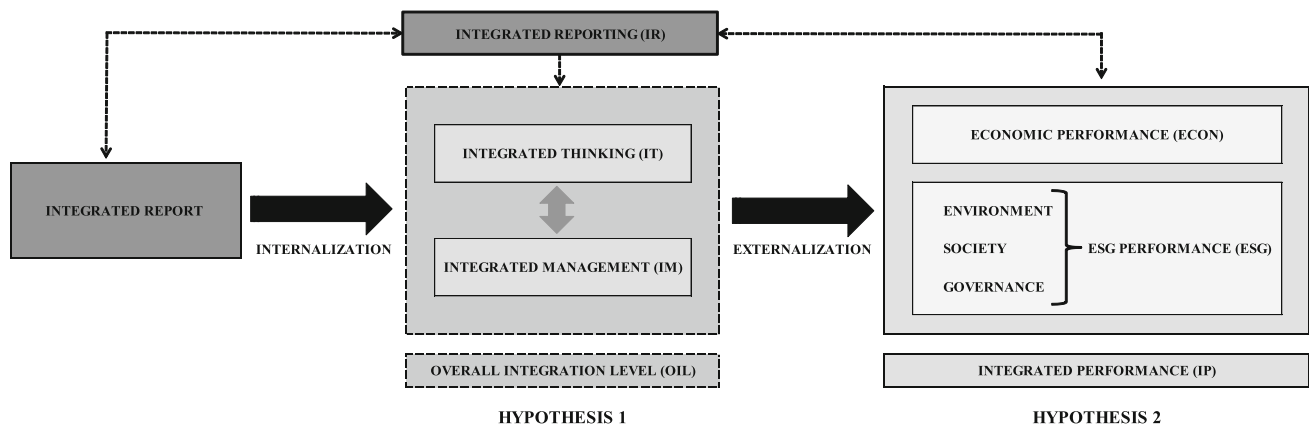


Fig. 1 Internalization and externalization process of integrated reporting

Integrated Reporting and Transformation

If a company truly considers ESG issues in its core business model, then what is the case for producing separate financial and non-financial reports (Eccles and Krzus 2010)? And will a company's commitment to IR identify any existing shortcomings in integrating ESG issues? If so, does IR initiate internal transformational processes to correct them? In this paper, it is hypothesized that IR sets in motion change processes in- and outside the company. These transformational effects are expressed in two different manifestations: *internalization* and *externalization*. Both manifestations of IR are strongly connected because they rely upon each other and are mutually dependent. The underlying assumption is that IR exhibits different internalization and externalization levels than alternative ESG reporting strategies. Figure 1 presents the internalization and externalization processes that can be initiated by IR. Both manifestation processes will be described below in more detail.

Based on the general notion that ethical accounting requires the consideration of both financial and ESG information to tell a true and fair picture of the company's overall business performance, both the internalization and externalization processes of IR influence the ethical behavior of the company with regard to accounting and business practices. While unethical behavior in accounting (e.g., the neglect of disclosing relevant ESG information) may result from conscious or unconscious misbehavior of companies in the way of using reporting and accounting systems not properly, unethical behavior in the company's daily business operations (e.g., damage to human health and environment) may result from intentional or unintentional misconduct in dealing with the information output of the implemented accounting and management tools. As long as an unethical preliminary decision is knowingly or unknowingly made within those decision-making processes, the final decision is

ethically sub-optimal. Thus, the search for a superior mechanism that integrates ethics into accounting must have priority in order to prevent unethical accounting and business practices. Because it is argued that the issuance of an integrated report leads to a re-evaluation of its ethics by the company itself (The IoDSA and the King Committee 2009), IR could function as a main driver for the creation of an ethically minded corporate culture of companies. Thus, both manifestation processes of IR reflect internal and external behavioral changes that a company run through in the process of developing a new corporate identity. Although it is argued that the implementation of IR represents "an ethical obligation of a company in its role of corporate citizen" (Eccles and Krzus, EC Newsdesk 2010), the question still remains how far the predicted ethical implications of IR go beyond those of other ESG reporting strategies. The following hypotheses are therefore subject to those ethical guiding principles.

Internalization

In the sociological context, internalization is defined as the integration of values, beliefs, norms, attitudes, standards, or patterns of culture into one's own identity as conscious or subconscious guiding principles through learning, socialization, or identification (Krippendorff 1995; Berger and Luckmann 1966). Internalization is a process through which individuals adopt external ideas, opinions, views or concepts as their own. The process starts with learning what the new respective notion is about and why its development makes sense. Individuals experience a process of understanding until they finally accept the new notion as their own point of view. Thus, internalization can be understood as a process of acceptance of a new set of norms established by society. This sociological understanding of internalization describes exactly the core

element of the internal transformation process of companies that is initiated by IR.

It is generally argued that IR aligns financial and non-financial reporting processes and consequently paves the way for a redesign of the internal reporting system (KPMG 2012; Eccles and Serafeim 2011; Braaksma 2010). Therefore, it requires companies to experience a dynamic process of adaptation, learning, and action. Advocates promote IR as “a powerful practice with transformational effects not just on the way an organization reports, but on the way it thinks and acts” (IIRC 2013a). Thus, IR incorporates an ethical concept into the core business model. Faced with IR, the company adapts to the underlying idea of managing sustainability issues more effectively. In more detail, it is argued that the production process of an integrated report itself ensures a discussion and reasonable reflection of the concept. The information collection process during the preparation of an integrated report combines both information strands and makes the management aware of new opportunities and risks (IIRC 2012). Consequently, the initiation of IR can raise the company’s understanding of how to use the link between economic and ESG aspects more effectively.

In this way, connecting financial and non-financial information through IR may spark integrated thinking (IT) that leads to a more effective integrated management (IM). By definition, IT reflects the active consideration of a company’s relationships between operating and functional departments or units (IIRC 2012). The cycle of IR and IT strengthens the connectivity of information. In practice, companies have already identified the need to link non-financial teams (e.g., human resources) with financial teams (e.g., management), for example, based on KPIs (IIRC 2012). By changing their approaches to work across departments, companies weave together information and therefore provide a more holistic picture of the company to improve the company’s own as well as the stakeholders’ business understanding (IIRC 2012). In other words, changes in the external reporting practice of a company also lead to internal changes. According to Eccles and Krzus (2010, p. 151), “the higher quality metrics required for external reporting provide higher quality internal information and this results in higher quality decisions.” Thus, IR also influences internal decision making, and hence, the level of IM. IM is generally defined as the implementation of an integrated strategy and integrated systems. While an integrated strategy implies and specifies the management’s dealing with ESG-related risks and opportunities, integrated systems, processes, and structures make the real-time flow of information and resources possible within a company (Rochlin and Grant 2010). It is argued that if the company is able to achieve both IT and IM in its business model, IR can function as a vital driver

of organizational change (KPMG 2012; Eccles and Serafeim 2011; Rochlin and Grant 2010). Therefore, the prediction is that IR initiates internal transformation processes within a company by influencing the integration of ESG issues into the core business model via IT and IM. Thus, the following hypothesis is derived:

Hypothesis 1 *Ceteris paribus*, companies applying IR exhibit higher ESG integration levels than companies using alternative ESG reporting strategies.

Externalization

In a sociological sense, externalization means that products created by individuals, such as material or cultural products, social institutions, values, beliefs, or norms, finally become external to those who have produced them (Berger and Luckmann 1966). The created product becomes independent of completion and is therefore no longer manageable for the individual, that is, it is out of their control. It generates its own considerable momentum and will eventually return and affect the individual in the future (but perhaps in another form). Translating this process to the economic setting, the created product constitutes an externality developed from a company’s business activity that is also experienced by unrelated third parties. In the context of IR, the internal transformation of a company leads to changes in terms of a company’s externalities that affect both related parties (stakeholders) and unrelated parties.¹⁶ In other words, the internal effects of IR are finally externalized as the reporting company modifies its decisions, processes, strategy, business model, and activities and subsequently takes them outward, namely, outside the company’s boundaries by, for example, changing its level of performance. Thus, whether and how changes in the level of the company’s external economic, environmental, social, or governance performance will occur depends on the extent of internal transformation through IR.

In general, it is argued that the management of ESG issues can improve the company’s reputation, which in turn increases product sales (e.g., Lev 2003; Bebbington et al. 2008), attracts more talented employees, or increases staff loyalty and motivation for a higher productivity rate (e.g., Roberts and Dowling 2002; Waddock and Graves 1997). It may also lead to higher visibility of the company (e.g.,

¹⁶ The economic definition of externality, namely, external effects, is very narrowly defined as “the activity of one individual [that] externally affects the utility of another individual” (Buchanan and Stubblebine 1962, p. 381). When the term externality is used in this paper, it refers to the product or consequences resulting from IR that can affect both related and unrelated parties. This extended understanding takes into account the general character of ESG issues.

Brown et al. 2006) among consumers, employees, suppliers, investors banks, and so on. Moreover, a superior ESG performance can attract long-term oriented investors with a special interest in socially responsible companies (Serafeim 2014), create new financing opportunities, or raise capital at a lower cost level (Cheng et al. 2014). These aspects illustrate that ESG management and performance “can affect financial performance through various channels, including sales, costs, and operational efficiency, financing, and litigation risk” (Dhaliwal et al. 2012, p. 725). Moreover, prior research on the relation between ESG performance and future financial performance generally finds a positive association (Margolis and Walsh 2003; Orlitzky et al. 2003; Waddock and Graves 1997). Thus, it can be assumed that the introduction of IR in its function of a new management tool for ESG issues leads to changes in the company’s external financial and non-financial performance. Because IR is assumed to raise companies’ understanding of how to use the link between financial and non-financial aspects more effectively, this more holistic reporting approach could directly and indirectly influence the economic and ESG performance. Therefore, it is hypothesized as follows:

Hypothesis 2 *Ceteris paribus*, companies applying IR display higher economic and ESG performance levels than companies using alternative ESG reporting strategies.

Research Design

Data and Sample

The financial data are from *Datastream/Worldscope* and the *Institutional Brokers’ Estimate System (I/B/E/S)*. Data about the application or non-application of IR at the company level come from *CorporateRegister.com*, which hosts the world’s most comprehensive directory of corporate non-financial reporting. It covers nearly 57,000 reports across nearly 11,300 companies around the world (as of May 2014). Prior research studies also have constructed their samples from *CorporateRegister.com* (e.g., Dhaliwal et al. 2011, 2012). The ESG data are obtained from the *Thomson Reuters ASSET4* database, which provides in-depth ESG information on 4000 + global companies and over 500 + data points (from the year 2002 on), including all exclusion criteria for ethical screening and all aspects of ESG performance. The primary ESG data (objective and available to the public) are collected and analyzed by experienced ASSET4 analysts, ensuring accuracy and comparability through standardized and quality controlled data. The ASSET4 database has been used in research to measure companies’ ESG performance (e.g., Serafeim

2014; Cheng et al. 2014; Eccles et al. 2013; Ioannou and Serafeim 2012).

After excluding firm-year observations from financially distressed companies and from the financial industry,¹⁷ data availability restricts the matched samples to approximately 200–300 companies from around the world for the period 2002–2011. The sample size varies depending on the respective treatment and control group. Using three different samples, companies that apply IR in the respective year (treatment group) are matched with companies applying (a) no ESG reporting, (b) stand-alone ESG reporting, or (c) ESG reporting in the annual report in that particular year (in each case the control group). This procedure enables the differences and similarities between IR and other ESG reporting strategies to be worked out according to the hypotheses.

Main Variables

The main variables used to measure the ESG integration effect of IR are *integrated thinking (IT)*, *integrated management (IM)*, and *overall integration level (OIL)*. The performance effects of IR are measured by *economic performance (ECON)*, *ESG performance (ESG)*, and *integrated performance (IP)*. The measurement of these variables is described below. Table 1 provides all variable definitions in more detail.

Integrated Thinking (IT)

IT captures whether and to what extent a company demonstrates IT using both financial and non-financial information in the strategic decision making. It is argued that the success of an integrated report is deeply dependent on the level of senior management engagement (IIRC 2012). The process of IR should lead to an increased focus on and awareness of the board and senior management, provided that the ESG issues identified are really discussed at these company levels. Therefore, the first IT measure, *PUBCOMM*, captures a company’s commitment to IR at the board and senior management level. Furthermore, the formulation of a clear vision and strategy, as well as setting targets and objectives, is part of the corporate identity. As such, it strongly influences the direction in which the company will develop. It is argued that IR supports a better articulation of the integrated strategy and business model, as it helps to internalize the link between material financial and non-financial aspects (IIRC 2012). Thus, a formulated

¹⁷ The business model of financial institutions such as banks, insurance companies, and finance companies is fundamentally different. Therefore, ESG reporting and management practices are not likely to be applicable or material to them (Eccles et al. 2013).

Table 1 Variable definitions

Variable	Definition
Integrated reporting	
<i>INTEGRATED_REPORT</i>	Indicator variable that equals 1 if the company publishes an integrated report in the particular year, 0 otherwise. (<i>CorporateRegister.com</i>)
Alternative ESG Reporting	
<i>ESG_REPORT</i>	Indicator variable that equals 1 if the company publishes a stand-alone ESG report in the particular year, 0 otherwise. (<i>CorporateRegister.com</i>)
<i>ESG_ANNUAL</i>	Indicator variable that equals 1 if the company publishes ESG information in the annual report in the particular year, 0 otherwise. (<i>CorporateRegister.com</i>)
<i>NO_ESG</i>	Indicator variable that equals 1 if the company does not publish ESG information in any format of the three ESG reporting strategies, 0 otherwise. (<i>CorporateRegister.com</i>)
Internalization	
Integrated thinking (IT)	
<i>PUBCOMM</i>	Public commitment from a senior management and board member to integrate ESG issues into the company strategy and day-to-day decision making (Asset4 Mnemonic CGVSDP0041)
<i>TARGOB</i>	Breaking-down specific targets and objectives that have to be achieved on the integrated strategy (Asset4 Mnemonic CGVSD04S)
<i>POLICY</i>	Policy for maintaining an overarching vision and strategy that integrates financial and non-financial aspects of the business (Asset4 Mnemonic CGVSD01S)
<i>CHALLOPP</i>	Awareness of challenges and opportunities linked to the integration of financial and non-financial issues (Asset4 Mnemonic CGVSO01S)
Integrated Management (IM)	
<i>IMPLEM</i>	Transparent and comprehensible implementation of company's integrated strategy into the business model through the process description of a public comment or the establishment of a sustainability committee or team (Asset4 Mnemonic CGVSD02S)
<i>COMMUN</i>	Existence of appropriate communication tools (whistle blower, ombudsman, suggestion box, hotline, newsletter, website, etc.) to improve general business ethics (Asset4 Mnemonic SOCODP0109)
<i>MONITOR</i>	Company's self-monitoring of its integrated strategy through belonging to a specific sustainability index or through conducting external audits (Asset4 Mnemonic CGVSD03S)
<i>ENGAGE</i>	Company's stakeholder engagement policy (Asset4 Mnemonic CGVSO04S)
Overall integration level (OIL)	
<i>OIL</i>	The overall level of internal integration measures a company's management commitment and effectiveness toward the creation of an overarching vision and strategy integrating financial and non-financial aspects. It reflects a company's capacity to convincingly show and communicate that it integrates the economic, social and environmental (ESG) dimensions into its day-to-day decision-making processes. (Asset4 Mnemonic CGVS)
Externalization	
Economic performance (ECON)	
<i>ECON</i>	The economic pillar measures a company's capacity to generate sustainable growth and a high return on investment through the efficient use of all its resources. It is a reflection of a company's overall financial health and its ability to generate long-term shareholder value through its use of best management practices. (Asset4 Mnemonic ECNSCORE)
ESG Performance (ESG)	
<i>ENV</i>	The environmental pillar measures a company's impact on living and non-living natural systems, including the air, land and water, as well as complete ecosystems. It reflects how well a company uses best management practices to avoid environmental risks and capitalize on environmental opportunities in order to generate long-term shareholder value. (Asset4 Mnemonic ENVSCORE)
<i>SOC</i>	The social pillar measures a company's capacity to generate trust and loyalty with its workforce, customers and society, through its use of best management practices. It is a reflection of the company's reputation and the health of its license to operate, which are key factors in determining its ability to generate long-term shareholder value. (Asset4 Mnemonic SOCSORE)
<i>GOV</i>	The corporate governance pillar measures a company's systems and processes, which ensure that its board members and executives act in the best interests of its long-term shareholders. It reflects a company's capacity, through its use of best management practices, to direct and control its rights and responsibilities through the creation of incentives, as well as checks and balances in order to generate long-term shareholder value. (Asset4 Mnemonic CGVSCORE)

Table 1 continued

Variable	Definition
<i>ESG</i>	The average of the environmental, social, and corporate governance scores measure the overall ESG performance. (Average of Asset4 Mnemonic ENVSCORE, SOCScore, CGVSCORE)
Integrated performance (IP)	
<i>IP</i>	Using an equal-weighted rating, the overall integrated performance reflects a balanced view of a company's performance in all four areas, economic, environmental, social, and corporate governance. (Asset4 Mnemonic A4IR)
Control variables	
<i>MTB</i>	The stock price over book value of equity per share at the end of the year
<i>ROA</i>	The income before extraordinary items scaled by total assets at the end of the year
<i>IFRS</i>	Indicator variable that equals 1 if the company applies the international financial reporting standards (IFRS), 0 otherwise
<i>BIG4</i>	Indicator variable that equals 1 if the company is audited by one of the big four audit companies, 0 otherwise
<i>SIZE</i>	The natural logarithm of the market value of equity at the end of the year
<i>ANALYSTS</i>	The total number of analysts following the company during the year (I/B/E/S)
<i>LISTINGS</i>	The number of stock exchanges at which the company is listed
<i>ADR</i>	Indicator variable that equals 1 if the company cross-lists in the U.S. American Depository Receipts (ADR), 0 otherwise
<i>VOLATILITY</i>	The natural logarithm of the standard deviation of daily returns over the year
<i>CLOSELYHELD</i>	The percentage of a company's shares that are closely held
<i>LEVERAGE</i>	The ratio of debt to total assets of the company at the end of the year
<i>MEDIA</i>	Indicator variable that equals 1 if the country has a higher media penetration than the mean in a respective year. Similar to Lang et al. (2011), the media penetration score is calculated based on newspaper circulation, internet connections, and mobile phone user (<i>World Bank Indicators</i>)
<i>PUBLIC_PRESSURE</i>	The number of non-governmental organizations (NGOs) originated in the country (<i>Worldwide NGO Directory</i> by the <i>World Association of Non-Governmental Organizations</i>)
<i>BUSINESS_AWARE</i>	The number of stand-alone sustainability reports published in the country during the respective year
<i>INSTITUTION_OWN</i>	The percentage of a company's shares that are held by institutional investors
Additional	
<i>CHANGE</i>	Indicator variable that equals 1 if the company has changed from stand-alone ESG reporting to Integrated Reporting in the respective year, 0 otherwise
<i>KPI_BSC</i>	Indicator variable that equals 1 if the company used either Key Performance Indicators (KPIs) or Balanced Scorecards (BSCs) prior to the application of IR
<i>LEGAL_ESG</i>	Indicator variable that equals 1 if the company resides in countries with legal ESG disclosure requirements, 0 otherwise

This table shows all definitions of variables used in this study

vision and strategy regarding the integration of ESG aspects into the business model is needed to realize, drive, and control IR effects in the broadest sense. This relationship is captured by the second IT measure, *POLICY*. In the narrow sense, the specification of ESG-related targets and objectives is required to guide the company's actions (though executed by individuals) in an ethical way. Hence, the third IT measure, *TARGOB*, indicates whether a company has set specific targets and objectives for achieving an integrated strategy. According to the IIRC (2012, p. 13), "the journey towards Integrated Reporting also provides opportunities for the Board and senior management to gain a more holistic understanding of their organizations." It is generally argued that IR leads to a better internal understanding of how the company creates value (IIRC 2012).

Moreover, a greater awareness of the whole facilitates the identification of new risks and opportunities that need to be managed. Therefore, the fourth IT measure, *CHALLOPP*, captures a company's awareness of challenges and opportunities that are linked to the integration of ESG aspects.

Integrated Management (IM)

IM captures whether and to what extent a company demonstrates an integrated management approach. In contrast to IT, IM records the degree of IR realization within the company: In what way is the company actually achieving an integrated management approach? Has an integrated strategy been established? How is it implemented and actually lived out within the company? In general, IM is defined as the

implementation of an integrated strategy and integrated systems. While an integrated strategy implies and specifies the management's dealing with ESG-related risks and opportunities, integrated systems, processes, and structures make the real-time flow of information and resources possible within a company (Rochlin and Grant 2010). Therefore, the first IM measure, *IMPLEM*, indicates whether a transparent and comprehensible implementation of the company's integrated strategy into its business model actually took place. Moreover, it is argued that "working across departments to connect information in order to develop Integrated Reporting can help break down 'silos' and lead to stronger cross-functional communications" (IIRC 2012, p. 5). Thus, IR can lead not only to improvements in the external communication process but also to improvements in the internal communication processes of a company. Thus, the second IM measure, *COMMUN*, indicates whether appropriate communication tools within a company exist to improve general business ethics (e.g., whistle blower, ombudsman, suggestion box, hotline, newsletter, website). The implementation of such arrangements can be viewed as a proxy for the company's efforts to improve and integrate ethical practices in the overall internal communication processes. However, an effective IM of ESG also requires an appropriate monitoring system. Therefore, the third IM measure, *MONITOR*, captures a company's self-monitoring efforts with regard to its integrated strategy. For internal decision making, it is useful for companies to benefit "from higher levels of external collaboration through stakeholder engagement in order to better understand their expectations" (Eccles and Krzus 2010, p. 151). Companies applying IR should therefore exhibit a strong commitment to stakeholder engagement. The fourth IM measure, *ENGAGE*, thus indicates whether a company has a policy for how to engage with its stakeholders.

Overall Integration Level (OIL)

The overall level of internal integration, *OIL*, captures a company's management commitment and effectiveness toward the creation of an overarching 'integrated' vision and strategy. It reflects a company's capacity to convincingly show and communicate that it integrates ESG aspects into its daily decision-making processes.

Economic Performance (ECON)

The economic performance, *ECON*, measures a company's capacity to generate sustainable growth and a high return on investment through the efficient use of all its resources. It is a reflection of a company's overall financial health and its ability to generate long-term shareholder value through its use of best management practices. Using this definition instead of other financial performance measures (e.g., ROA) makes a more future- and long-term oriented view

and assessment of a company's resources possible in a way that meets the special requirements of ESG aspects in the context of IR more adequately.

ESG Performance (ESG)

The average of the environmental, social, and corporate governance scores measures the overall ESG performance, *ESG*. Therefore, the environmental pillar, *ENV*, reflects how well a company uses best management practices to avoid environmental risks and capitalize on environmental opportunities in order to generate long-term shareholder value. The social pillar, *SOC*, is a reflection of the company's reputation and the health of its license to operate, which are key factors in determining its ability to generate long-term shareholder value. The corporate governance pillar, *GOV*, measures a company's systems and processes, thus ensuring that its board members and executives act in the best interests of its long-term shareholders. It reflects a company's capacity, through its use of best management practices, to direct and control its rights and responsibilities through the creation of incentives as well as checks and balances to generate long-term shareholder value.

Integrated Performance (IP)

Using an equal-weighted rating, the overall integrated performance, *IP*, reflects a balanced view of a company's performance in all four areas: economic, environmental, social, and corporate governance. In the view of the newly established IR term, it is absolutely necessary to introduce a companion term regarding performance that considers both a company's economic and ESG performance capacity.

Methodology

To investigate hypotheses H1–H2, the Heckman two-stage estimation procedure is used to rule out self-selection biases that come along with IR (Heckman 1976). Because it is unobservable whether companies that publish an integrated report also have better additional financial and non-financial disclosures, better internal financial or non-financial reporting figures, or exhibit other characteristics that are associated with better internal and external management of economic and ESG aspects, the method of adding the inverse-Mills-ratio (*IMR*) from the first-stage regression to the second-stage regression model best addresses the selection bias coming from unobservable factors (Tucker 2010). Information about the first-stage regression is given in more detail at the end of this section. In the second stage, multiple regressions are carried out by estimating the following baseline model:

$$\begin{aligned}
 \text{Internalization} / \text{Externalization}_{i,t} = & \\
 & \alpha_0 + \alpha_1 \text{INTEGRATED_REPORT}_{i,t} \\
 & + \alpha_k \text{Control Variables}_{i,t} + \text{IMR} \\
 & + I, Y, C \text{ Fixed Effects} + \varepsilon_{i,t}
 \end{aligned} \quad (1)$$

*Internalization*_{*i,t*} comprises the main internal integration variables, *IT*_{*i,t*}, *IM*_{*i,t*}, and *OIL*_{*i,t*}, and *Externalization*_{*i,t*} refers to the main external performance variables, *ECON*_{*i,t*}, *ESG*_{*i,t*}, and *IP*_{*i,t*}, of company *i* during the year *t*. *INTEGRATED_REPORT*_{*i,t*} indicates whether a company published an integrated report in that particular year (treatment group) or did not (control group). The control group varies in terms of companies that apply (a) no alternative ESG reporting, (b) stand-alone ESG reporting, or (c) ESG reporting within the annual report. Performing a lexicographical matching without replacement and closest neighbors, each company publishing an integrated report is matched with a control company that has the same country and industry affiliation (12-industry classification by Fama–French) as well as a similar market capitalization.

To test hypothesis H1, a multitude of control variables is included in the baseline model. Companies achieving a high level of IT and IM should be systematically different from companies with low integration levels. The stock price over book value of equity per share at the end of the year, *MTB*, is a proxy for growth opportunities (Eccles et al. 2013). Rapidly growing companies are less able to monitor internal developments, and hence, the effective implementation of an integrated strategy is unlikely. It is controlled for profitability, *ROA*, which is measured as the income before extraordinary items scaled by total assets at the end of the year. For managers working in companies with low profitability, it is more difficult to allocate resources efficiently and to manage financial and non-financial issues effectively because of their limitations in terms of additional costs for internal management tools. Furthermore, an indicator variable, *IFRS*, is added to the model that equals 1 if the company applies the international financial reporting standards (IFRS), and 0 otherwise. After the adoption of IFRS, companies exhibit improvements in accounting quality (e.g., Barth et al. 2008; Hung and Subramanyam 2007; Barth et al. 2006). Thus, IFRS has an impact on internal reporting methods (e.g., management accounting practices and techniques) and therefore implies changes in the internal decision making. Although it seems as if IFRS provides managers with more high-quality information, its application can lead to a separate view of financial and non-financial aspects. Because IFRS constitutes a framework for financial reporting, its financial focus can prevent managers from integrating ESG issues into its business considerations. Thus, it is unclear in which way the external financial

reporting strategy will interact with internal management reporting. Moreover, an indicator variable, *BIG4*, is included that equals 1 if the company is audited by one of the big four audit companies, and 0 otherwise. On the one hand, large audit companies have more resources to monitor their clients effectively. Companies with poor internal management control tend to hire large auditors to improve their internal processes. Effective internal control systems require the consideration of any risks that are material to the company, such as ESG-related risks. It is likely that large audit companies have more access to specialist knowledge for implementing new strategies and processes, such as the new concept of IR. On the other hand, companies with internal weaknesses may prefer small audit companies with the intention of hiding their deficits. The integration of ESG issues into the company's internal management processes is therefore likely to be associated with big four audit companies in some way. Furthermore, the variable *SIZE*, measured as the natural logarithm of the market value of equity at the end of the year, is used to control for size effects. Larger companies have to face increasing public pressure to meet stakeholders' requirements of managing their business activities in an ethical manner. Thus, it is likely that large companies are the first to apply new prestigious and reputation increasing management approaches, such as IR. In addition, these companies often do have better qualified or more experienced staff, which can influence the implementation of new concepts in a positive way.

In testing hypothesis H2, the selection of control variables differs from H1 because the focus is now on the impact of IR on the economic and ESG performance of companies. Companies with a superior ESG performance should be characterized in a different way than companies whose performance on ESG issues low or on average. It is controlled for analysts' involvement in the process of information demand and mediation by using the variable *ANALYSTS*, measured as the number of analysts following the company during the year. By seeking information from companies, analysts' behavior reflects the informational need of investors. The more analysts require ESG information (indicating the need for more ethical business behavior) from companies, the more pressure is on them to meet the needs of investors, leading to better financial and non-financial performance. Ioannou and Serafeim (2014) find that larger companies with broader analyst coverage have better ESG scores. Furthermore, the control variable *LISTINGS*, measured as the number of stock exchanges on which the company is listed, is added to the empirical baseline model. More stock exchange listings means more disclosure requirements the company has to fulfill, which in turn influences the internal information processes. For example, the

Johannesburg Stock Exchange (JSE) of South Africa requires an integrated report from listed companies on a yearly and 'report-or-explain' basis from 2010 on. Other stock exchanges, such as the Brazilian Stock Exchange (BM&FBOVESPA), the Singapore Exchange (SGX), or the Bursa Malaysia (formerly known as the Kuala Lumpur Stock Exchange KLSE) call for the application of IR. Many more stock exchanges require or recommend the publication of specific ESG information from listed companies or even a stand-alone ESG report (e.g., NASDAQ OMX, the Istanbul Stock Exchange ISE, or the Egyptian Exchange EGX). Such stock exchange initiatives lead to an increased focus on ESG aspects and can thus initiate changes in external and internal reporting practices, which finally results in performance changes. Furthermore, the indicator variable *ADR*, which equals 1 if the company cross-lists in U.S. American Depository Receipts, is used to control for the visibility of the company. Companies cross-listed in the U.S. have better information environments, leading to higher market valuations (Lang et al. 2003), and they can exhibit higher ESG performance levels (Ioannou and Serafeim 2014). Another variable to control for company's visibility is *CLOSELY-HELD*, measured as the percentage of the company's shares that are closely held. Companies closely held by investors may lose the incentive to engage in ESG activities because they have to follow the will of a few investors instead of meeting general ethical requirements. For example, Ioannou and Serafeim (2014) find that the dispersion of equity ownership is, on average, linked to better social performance. Furthermore, the variable *VOLATILITY*, measured as the natural logarithm of the standard deviation of daily returns over the year (Leuz and Verrecchia 2000; Daske et al. 2008), is included. Orlitzky (2013) hypothesizes that companies giving signals about their social responsibility make greater noise in financial markets, which in turn leads to higher market volatility. Companies informing their stakeholders about their existing or non-existing ethical behaviors can increase uncertainty about the real company value, which in turn leads to a more volatile trading behavior. In addition, it is controlled for the effect of leverage by using the variable *LEVERAGE*, defined as the ratio of debt to total assets of the firm at the end of the year, as companies with high leverage are less able to afford additional and long-term oriented investments to improve their ESG performance. Moreover, highly leveraged companies do not perform well financially. Because fixed effect models generate unbiased estimates, assuming that unobservable company characteristics are constant over time, fixed effects on the industry, year and country levels, subsumed under *I, Y, C Fixed Effects*, are also used.

The Heckman two-stage estimation is applied to rule out the potential self-selection bias due to unobservables (Heckman 1976). Therefore, the underlying first-stage

estimation is to explain a company's decision to produce and publish an integrated report (probit regression). Following the recommended econometric practice of imposing one or more exclusion restrictions in the second stage (Lennox et al. 2012), both the well-established literature about determinants of stand-alone ESG reporting and the new literature stream about IR are used to select reasonable variables. Jensen and Berg (2012) find that companies applying IR are fundamentally different from companies applying stand-alone ESG reporting with regard to several country-level determinants (e.g., investor and employment protection laws, ownership concentration, the degree of national corporate responsibility, and the value system of the country of origin). In addition, findings by García-Sánchez et al. (2013) suggest that companies located in societies with stronger collectivist and feminist values, as measured by the Hofstede's national cultural system (Hofstede 2001), are more likely to integrate information and apply IR. The stand-alone ESG reporting literature also highlights the role of the 'country of origin' (e.g., Chen and Bouvain 2009) and legal requirements (e.g., Ioannou and Serafeim 2012). Consequently, the first-stage regression comprises the following country-level variables: *MEDIA*, *PUBLIC_PRESSURE*, *BUSINESS_AWARE*, and *LEGAL_ESG*. *MEDIA* is an indicator variable that equals 1 if the country has a higher media penetration than the mean. Similar to Lang et al. (2012), the media penetration score is calculated based on newspaper circulation, Internet connections, and mobile phone users (Data Source: *World Bank Indicators*). Thus, companies in countries with lower media penetration, indicating greater opacity, may tend to publish more qualified information by using an integrated report for information environment improvements. *PUBLIC_PRESSURE* is included because it measures a country's awareness of ESG aspects. The public pressure variable represents the number of non-governmental organizations (NGOs) that originated in the country (Data Source: *worldwide NGO directory* by the *World Association of Non-Governmental Organizations*). Furthermore, the variable *BUSINESS_AWARE* is used to control for the overall ESG awareness of companies within a country. Therefore, the number of stand-alone ESG reports that have been published in the country during the respective year serves as a measure. These last two variables control for the general awareness of the country regarding sustainability as well as for the sensibility and openness of trying out new reporting and management tools such as IR. *LEGAL_ESG* is an indicator variable that equals 1 if the country requires specific ESG information from companies. Laws, standards or other regulations are only taken into account if the requirement is mandatory for companies and thereby implemented and enforced by national regulators, such as the government itself or stock exchanges

(Data Source: *Hand-collected data* about requirements regarding non-financial information around the world; KPMG 2013).¹⁸ Thus, it is more likely that companies will produce and publish an integrated report if it is required directly (e.g., companies listed on the JSE of South Africa) or indirectly by the requirement of ESG information.

Research about the adoption of stand-alone ESG reporting indicates that the most frequent determinants of ESG reporting are company size, profitability, media exposure, and ownership structure (e.g., Hahn and Kühnen 2013; Brammer and Pavelin 2006; Cormier and Magnan 2007). Consequently, the following company-level variables are included: *ROA*, *LISTINGS*, *ADR*, *SIZE*, and *INSTITUTION_OWN*. Following the well-established literature, it is expected that profitable, more visible, and larger companies are more likely to apply IR. *INSTITUTION_OWN* controls for the company's ownership concentration, measured as the percentage of the company's shares that are held by institutional investors. Because, for example, Brammer and Pavelin (2006) find a negative association between the adoption of stand-alone ESG reporting and concentrated ownership, it is likely that this association also applies to IR. Institutional investors often have access to relevant information (Hahn and Kühnen 2013). In contrast, a dispersed ownership means more public pressure for the company to meet the needs of many different stakeholders. Untabulated results of the first-stage probit-model regression reveal that most variables have the predicted sign.

Empirical Results

Descriptive Statistics

Table 2, Panel A provides summary statistics for the ESG integration variables (internalization variables). Consistent with the notion that IR companies are fundamentally different from non-IR companies, IR companies receive higher mean scores for all IT and IM measures than non-IR companies. On average, the *OIL* score for non-IR companies ranks approximately 20 points lower than for IR companies, suggesting that companies applying IR are more able to internalize the effects of integrating ESG issues into their business models. IR companies have an average *ROA* of zero and an *MTB* of approximately four, suggesting that they have significant growth opportunities.

¹⁸ In the matched samples, the countries with mandatory ESG reporting are Brazil, France, Ireland, Malaysia, Netherlands, South Africa, and the United Kingdom. Countries without mandatory ESG disclosure requirements in the sample are Australia, Austria, Belgium, Hong Kong, Japan, Mexico, Portugal, Singapore, South Korea, Spain, and Switzerland.

On average, approximately 97 % of IR companies seek assurance from Big 4 audit companies compared to 92 % of non-IR companies. However, IFRS is applied by approximately 84 % of non-IR companies and nearly 81 % of IR companies.

Table 2, Panel B shows the summary statistics for the performance variables (externalization variables). In the individual analysis, IR companies have, on average, higher scores for their respective economic, environmental, social, and corporate governance performance than non-IR companies. While IR companies receive an average ESG performance score of approximately 70 points, non-IR companies rank at approximately 57 score points. The *OIL* for non-IR companies is, on average, approximately 16 score points lower than for IR companies. Furthermore, the average number of analysts following IR companies is nearly 15 and for non-IR companies 14. Together with the finding that IR companies are, on average, larger, this suggests that IR companies are also more visible. On average, the percentage of shares that are closely held is significantly lower for IR companies (approximately 29 %) than for non-IR companies (34 %). This supports the hypothesis that companies with high ownership concentration do not have to meet many different stakeholder requirements and thus abstain from publishing an integrated report, as they already fulfill their key stakeholders' wishes by private information provision.

Table 3, Panel A reports the correlations for the internalization variables. Consistent with hypothesis H1, the main variable of interest, *INTEGRATED_REPORT*, is positively associated with all IT and IM measures. While only one IT measure, *POLICY*, is statistically significant, all IM measures (*IMPLEM*, *COMMUN*, *MONITOR*, and *ENGAGE*) are highly correlated with the main IR variable. In addition, nearly all IT and IM proxies are highly correlated with one another (with the only exception being *TARGOB*). However, the *OIL* is highly statistically significant and positively associated with IR, *BIG4*, and *SIZE* but negatively associated with *MTB* and *ROA*, supporting the view that fast-growing and more profitable companies are interested in and focus more on short-term gains and investment opportunities than on a sustainable and long-term orientation toward business.

Table 3, Panel B shows the correlations for the externalization variables. The positive relation between *INTEGRATED_REPORT* and all performance measures is consistently statistically highly significant, suggesting that companies applying IR exhibit better economic and ESG performance levels than companies without IR application. In addition, the number of analysts is positively and significantly correlated with IR companies. While *SIZE*, *ANALYSTS*, *ADR*, and *VOLATILITY* are positively associated with *IP*, there is a negative relation between

Table 2 Descriptive statistics (summary)

Variable	N	Mean	Std dev	25 %	50 %	75 %
Panel A: Internalization (IT, IM, OIL)						
If <i>INTEGRATED_REPORT</i> = 0						
<i>PUBCOMM</i>	140	0.364	0.483	0.000	0.000	1.000
<i>TARGOB</i>	140	47.651	0.263	47.490	47.610	47.810
<i>POLICY</i>	140	61.563	30.065	22.600	78.990	80.890
<i>CHALLOPP</i>	140	51.938	28.039	33.280	34.770	98.130
<i>IMPLEM</i>	140	53.300	32.205	17.050	55.250	90.940
<i>COMMUN</i>	140	0.429	0.497	0.000	0.000	1.000
<i>MONITOR</i>	140	55.711	31.694	26.930	30.420	88.430
<i>ENGAGE</i>	140	52.287	32.071	28.860	28.930	94.240
<i>OIL</i>	140	57.969	30.623	23.530	61.785	88.435
<i>MTB</i>	140	3.878	20.192	1.175	2.822	6.381
<i>ROA</i>	140	0.062	0.063	0.029	0.053	0.080
<i>IFRS</i>	140	0.843	0.365	1.000	1.000	1.000
<i>BIG4</i>	140	0.921	0.270	1.000	1.000	1.000
<i>SIZE</i>	140	103000	540000	3443	7933	20200
If <i>INTEGRATED_REPORT</i> = 1						
<i>PUBCOMM</i>	140	0.450	0.499	0.000	0.000	1.000
<i>TARGOB</i>	140	48.400	6.240	47.490	47.610	47.810
<i>POLICY</i>	140	71.796	24.165	78.990	80.140	80.890
<i>CHALLOPP</i>	140	52.920	28.408	33.280	36.270	98.130
<i>IMPLEM</i>	140	64.550	28.583	55.250	61.180	90.940
<i>COMMUN</i>	140	0.543	0.500	0.000	1.000	1.000
<i>MONITOR</i>	140	68.526	31.150	27.330	79.340	98.210
<i>ENGAGE</i>	140	70.137	32.480	28.930	94.240	96.360
<i>OIL</i>	140	77.605	20.851	67.060	87.695	91.875
<i>MTB</i>	140	4.263	24.281	1.252	2.310	6.232
<i>ROA</i>	140	0.064	0.064	0.031	0.050	0.082
<i>IFRS</i>	140	0.807	0.396	1.000	1.000	1.000
<i>BIG4</i>	140	0.971	0.167	1.000	1.000	1.000
<i>SIZE</i>	140	105000	581000	3299	9872	18400
All						
<i>PUBCOMM</i>	280	0.407	0.492	0.000	0.000	1.000
<i>TARGOB</i>	280	48.026	4.424	47.490	47.610	47.810
<i>POLICY</i>	280	66.680	27.705	78.990	80.140	80.890
<i>CHALLOPP</i>	280	52.429	28.178	33.280	35.520	98.130
<i>IMPLEM</i>	280	58.925	30.911	24.060	61.180	90.940
<i>COMMUN</i>	280	0.486	0.501	0.000	0.000	1.000
<i>MONITOR</i>	280	62.119	32.017	26.930	76.620	98.210
<i>ENGAGE</i>	280	61.212	33.436	28.860	34.480	96.150
<i>OIL</i>	280	67.787	27.938	47.940	80.850	91.300
<i>MTB</i>	280	4.070	22.291	1.203	2.505	6.291
<i>ROA</i>	280	0.063	0.063	0.030	0.052	0.081
<i>IFRS</i>	280	0.825	0.381	1.000	1.000	1.000
<i>BIG4</i>	280	0.946	0.226	1.000	1.000	1.000
<i>SIZE</i>	280	104000	560000	3355	8804	19200

Table 2 continued

Variable	N	Mean	Std dev	25 %	50 %	75 %
Panel B: Externalization (ECON, ESG, IP)						
If <i>INTEGRATED_REPORT</i> = 0						
<i>ECON</i>	140	58.109	27.634	35.610	59.480	83.040
<i>ENV</i>	140	58.948	29.533	31.265	62.310	88.670
<i>SOC</i>	140	61.914	30.487	36.340	68.665	89.760
<i>GOV</i>	140	49.568	27.348	27.775	49.005	78.055
<i>ESG</i>	140	56.810	25.715	33.297	58.637	79.888
<i>IP</i>	140	58.827	30.330	32.325	66.795	87.115
<i>ANALYSTS</i>	140	14.029	8.342	8.000	13.000	19.500
<i>LISTINGS</i>	140	1.571	1.094	1.000	1.000	2.000
<i>ADR</i>	140	0.357	0.481	0.000	0.000	1.000
<i>VOLATILITY</i>	140	4.848	2.162	3.400	4.918	6.544
<i>CLOSELYHELD</i>	140	33.844	29.693	6.690	28.769	52.658
<i>LEVERAGE</i>	140	0.248	0.171	0.129	0.235	0.343
<i>SIZE</i>	140	103000	540000	3443	7933	20200
If <i>INTEGRATED_REPORT</i> = 1						
<i>ECON</i>	140	68.669	27.299	47.915	75.835	92.505
<i>ENV</i>	140	75.035	20.043	64.170	83.420	90.910
<i>SOC</i>	140	78.986	20.540	70.375	89.010	94.475
<i>GOV</i>	140	56.954	25.979	37.685	61.485	78.880
<i>ESG</i>	140	70.325	16.738	58.997	73.170	84.917
<i>IP</i>	140	75.512	20.631	63.120	81.975	92.375
<i>ANALYSTS</i>	140	14.921	7.298	10.000	14.000	20.000
<i>LISTINGS</i>	140	1.700	1.227	1.000	1.000	2.000
<i>ADR</i>	140	0.343	0.476	0.000	0.000	1.000
<i>VOLATILITY</i>	140	4.825	2.078	3.380	4.569	6.251
<i>CLOSELYHELD</i>	140	28.727	29.244	4.309	16.097	48.518
<i>LEVERAGE</i>	140	0.250	0.158	0.135	0.228	0.362
<i>SIZE</i>	140	105000	581000	3299	9872	18400
All						
<i>ECON</i>	280	63.389	27.923	41.550	70.570	89.950
<i>ENV</i>	280	66.991	26.450	51.590	75.010	90.125
<i>SOC</i>	280	70.450	27.320	54.020	81.345	92.475
<i>GOV</i>	280	53.261	26.880	30.590	57.740	78.820
<i>ESG</i>	280	63.567	22.690	50.293	68.817	83.257
<i>IP</i>	280	67.170	27.207	48.330	75.205	90.735
<i>ANALYSTS</i>	280	14.475	7.836	8.000	13.500	20.000
<i>LISTINGS</i>	280	1.636	1.162	1.000	1.000	2.000
<i>ADR</i>	280	0.350	0.478	0.000	0.000	1.000
<i>VOLATILITY</i>	280	4.836	2.117	3.395	4.783	6.393
<i>CLOSELYHELD</i>	280	31.295	29.525	5.960	23.180	49.268
<i>LEVERAGE</i>	280	0.249	0.164	0.131	0.232	0.355
<i>SIZE</i>	280	104000	560000	3355	8804	19200

This table shows summary statistics for all variables of the internalization (Panel A) and externalization (Panel B) baseline models, separated by IR companies and non-IR companies. All continuous variables are winsorized at the 1st and the 99th percentiles. All variables are defined in Table 1

Table 3 Descriptive statistics (Pearson/Spearman correlations)

Variable	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)	(X)	(XI)	(XII)	(XIII)	(XIV)	(XV)
Panel A: Internalization (IT, IM, OIL)															
<i>PUBCOMM</i>	(I)	-0.076	0.168	0.229	0.793	0.315	0.342	0.143	0.540	0.087	0.011	0.003	-0.001	0.133	0.175
<i>TARGOB</i>	(II)	0.007	-0.009	0.105	-0.059	-0.132	0.017	0.167	-0.040	0.014	0.072	0.031	-0.019	-0.043	-0.012
<i>POLICY</i>	(III)	0.397	0.033	0.390	0.341	-0.001	0.368	0.340	0.489	0.176	-0.189	-0.080	-0.062	0.143	0.137
<i>CHALLOPP</i>	(IV)	0.386	0.138	0.424	0.406	0.045	0.411	0.319	0.476	0.021	-0.283	-0.090	0.081	0.001	0.125
<i>IMPLEM</i>	(V)	0.784	0.040	0.424	0.406	0.285	0.547	0.370	0.734	0.177	-0.045	-0.007	-0.066	0.164	0.271
<i>COMMUN</i>	(VI)	0.315	0.074	0.144	0.201	0.289	0.211	0.216	0.271	0.114	0.016	-0.062	-0.098	0.200	0.116
<i>MONITOR</i>	(VII)	0.418	0.089	0.418	0.405	0.581	0.480	0.751	0.751	0.176	-0.231	-0.138	0.069	0.158	0.291
<i>ENGAGE</i>	(VIII)	0.251	0.082	0.286	0.260	0.407	0.466	0.562	0.562	0.259	-0.045	0.023	0.028	0.141	0.240
<i>OIL</i>	(IX)	0.518	0.075	0.673	0.441	0.722	0.748	0.593	0.313	-0.182	-0.137	0.056	0.056	0.183	0.351
<i>INTEGRATED_REPORT</i>	(X)	0.087	0.085	0.185	0.182	0.114	0.201	0.267	0.352	-0.019	0.007	-0.047	0.111	-0.004	-0.004
<i>MTB</i>	(XI)	-0.012	-0.016	0.055	-0.113	0.007	-0.058	0.009	-0.022	0.009	0.381	-0.269	0.068	0.391	0.391
<i>ROA</i>	(XII)	-0.020	-0.053	-0.110	-0.162	-0.100	-0.118	0.025	-0.098	0.015	-0.033	0.025	0.053	0.053	-0.023
<i>IFRS</i>	(XIII)	-0.001	0.040	-0.089	0.070	-0.054	0.088	0.028	0.001	-0.047	-0.336	0.053	-0.026	-0.314	-0.314
<i>BIG4</i>	(XIV)	0.133	0.019	0.184	-0.004	0.165	0.183	0.166	0.162	0.111	0.014	0.055	-0.026	0.053	0.053
<i>SIZE</i>	(XV)	0.027	-0.015	0.055	-0.099	0.022	-0.006	-0.012	-0.009	0.002	0.959	-0.041	-0.343	0.004	0.004
Variable	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)	(X)	(XI)	(XII)	(XIII)	(XIV)	(XV)
Panel B: Externalization (ECON, ESG, IP)															
<i>ECON</i>	(I)	0.530	0.583	0.306	0.545	0.762	0.205	0.405	0.034	0.143	0.134	-0.074	-0.065	0.188	0.188
<i>ENV</i>	(II)	0.509	0.757	0.455	0.854	0.850	0.295	0.450	-0.032	0.091	0.245	-0.060	0.046	0.259	0.259
<i>SOC</i>	(III)	0.569	0.793	0.458	0.850	0.858	0.322	0.420	0.003	0.251	0.153	-0.108	0.045	0.352	0.352
<i>GOV</i>	(IV)	0.301	0.462	0.470	0.785	0.689	0.194	0.479	-0.006	0.157	0.244	-0.173	0.003	-0.028	-0.028
<i>ESG</i>	(V)	0.544	0.888	0.893	0.759	0.952	0.305	0.545	-0.025	0.201	0.267	-0.153	0.033	0.242	0.242
<i>IP</i>	(VI)	0.729	0.870	0.899	0.667	0.960	0.309	0.564	-0.013	0.192	0.256	-0.130	0.020	0.253	0.253
<i>INTEGRATED_REPORT</i>	(VII)	0.192	0.335	0.339	0.194	0.342	0.337	0.149	0.063	0.014	-0.009	-0.076	0.022	0.059	0.059
<i>ANALYSTS</i>	(VIII)	0.397	0.421	0.392	0.488	0.512	0.144	0.144	-0.008	0.094	0.322	-0.022	0.014	0.155	0.155
<i>LISTINGS</i>	(IX)	0.073	0.054	0.051	0.058	0.064	0.052	0.094	0.094	0.116	-0.014	-0.029	-0.020	0.092	0.092
<i>ADR</i>	(X)	0.120	0.115	0.234	0.150	0.197	0.014	0.113	0.147	0.147	-0.174	-0.197	0.067	0.259	0.259
<i>VOLATILITY</i>	(XI)	0.141	0.222	0.163	0.275	0.242	0.011	0.328	0.020	-0.168	0.048	-0.033	-0.106	-0.106	-0.106
<i>CLOSELYHELD</i>	(XII)	-0.084	-0.064	-0.140	-0.192	-0.138	-0.073	-0.073	-0.098	-0.210	0.027	-0.016	-0.425	-0.425	-0.425
<i>LEVERAGE</i>	(XIII)	-0.104	-0.017	-0.045	-0.037	-0.039	-0.004	-0.033	-0.031	0.051	-0.064	0.055	0.024	0.024	0.024
<i>SIZE</i>	(XIV)	0.000	0.066	-0.071	-0.275	-0.110	0.007	-0.254	-0.075	-0.099	-0.358	-0.187	0.004	0.004	0.004

This table shows the correlations for the internalization variables (Panel A) and externalization variables (Panel B). The Pearson (Spearman) correlations are below (above) the diagonal. A correlation coefficient in bold indicates that the correlation is statistically significant at better than 10 percent level. All continuous variables are winsorized at the 1st and 99th percentiles. All variables are defined in Table 1

CLOSELYHELD and *IP*, indicating that more dispersed ownership leads to better integrated performance.

Regression Results

Internalization

Table 4 presents the empirical results of the model estimation tests for hypothesis H1, which indicate that IR companies exhibit higher ESG integration levels, measured via *IT*, *IM* and *OIL*, than companies using the following alternative ESG reporting strategies: no alternative ESG reporting (Panel A), stand-alone ESG reporting (Panel B), or ESG reporting in the annual report (Panel C). In Panel A, the main variable of interest, *INTEGRATED_REPORT*, has a significantly positive coefficient for two IT measures (*PUBCOMM*, *POLICY*), three IM measures (*IMPLEM*, *MONITOR*, *ENGAGE*), and *OIL*. These results suggest that companies applying IR can achieve more IT and manage ESG issues more effectively than companies not having implemented ESG reporting mechanisms. This supports the view of IR as a superior accounting mechanism for the integration of ethics into the core business model.

In contrast, the regression results in Panel B show that *INTEGRATED_REPORT* is significant and negatively associated with two IT measures (*PUBCOMM*, *POLICY*), one IM measure (*IMPLEM*), and *OIL*. Only *TARJOB* has a significant positive coefficient. These results indicate that companies with stand-alone ESG reports are more likely to communicate that they integrate ESG issues into their business model than IR companies. This can be the result of the ESG report's 'stand-alone position' and the related 'over-evaluation' of ESG aspects. Moreover, the significant and negative associated coefficient of one IM measure (*IMPLEM*) indicates that companies with stand-alone ESG reporting are more able to implement an overall integrated strategy into the core business model. Furthermore, the negative association between *INTEGRATED_REPORT* and *OIL* is highly statistically significant, suggesting that IR companies do not exhibit as high an integration of ESG issues into their business model as stand-alone ESG reporting companies. Thus, stand-alone ESG reporting seems to be a more suitable accounting mechanism for raising ethical awareness within companies than IR.

In Panel C, the main variable of interest, *INTEGRATED_REPORT*, has a highly significant and positive coefficient for two IT measures (*PUBCOMM*, *CHALLOPP*) and two IM measures (*IMPLEM*, *ENGAGE*). The positive association is lower but still statistically significant for *OIL*. These results indicate that IR companies are more likely to commit to the integration of ESG issues and to consider ESG aspects in their challenge and opportunity analyses. Moreover, IR companies are more committed to

stakeholder engagement policies than companies only providing ESG information in the annual report.

Externalization

Table 5 presents the empirical results of testing hypothesis H2. The results indicate that IR companies display higher economic (*ECON*) and ESG (measured via *ENV*, *SOC*, *GOV*, *ESG*, *IP*) performance levels than companies using one of the alternative ESG reporting strategies. In Panel A, the main variable of interest, *INTEGRATED_REPORT*, is highly statistically significant and positively associated with all performance measures (with a lower effect for the variable *GOV*), suggesting that IR companies exhibit a significantly higher level of economic and ESG performance than non-ESG reporting companies. This is additionally supported by the positive and highly significant association of the IR variable with *IP*. Thus, the results show clear benefits from IR in terms of performance improvements compared to non-ESG reporting companies.

Panel B provides the regression results for IR companies compared with stand-alone ESG reporting companies. *INTEGRATED_REPORT* is negatively and significantly related to *ENV* and *GOV* as well as to the total ESG performance variable *ESG*. These findings suggest that companies with stand-alone ESG reports have better environmental and corporate governance performance levels than IR companies. For this reason, it can be assumed that the ESG performance is managed more effectively when the company uses stand-alone ESG reports instead of integrated reports. The results show no differences between the two reporting strategies concerning the management and performance of social issues. Moreover, IR is negatively and significantly associated with *IP*. This contradicts the hypothesis that IR leads to positive economic and ESG performance changes in an integrated way when contrasting it with stand-alone ESG reporting.

In Panel C, the regression results reveal that *INTEGRATED_REPORT* has only one statistically significant and positive coefficient for *SOC*. This suggests that IR companies and companies providing ESG information in the annual report consider social issues in a different way. The higher social performance level of IR companies indicates that the publication of an integrated report can improve the management of social factors that affect the company in a significant way.

Additional Tests and Robustness Checks

Additional tests and robustness checks are used to test whether the results are driven by confounding factors. Following Serafeim (2014), potential confounding factors

Table 4 Internalization model regressions (HI)

	Integrated thinking (IT)			Integrated management (IM)			Overall integration level		
	<i>PUBCOMM</i>	<i>TARGOB</i>	<i>POLICY</i>	<i>CHALOPP</i>	<i>IMPLEM</i>	<i>COMMUN</i>		<i>MONITOR</i>	<i>ENGAGE</i>
Panel A: Integrated reporting vs. no ESG reporting									
<i>INTEGRATED_REPORT</i>	0.088*	0.787	9.210*	1.037	11.077***	0.089	10.722**	14.836***	18.802***
	(1.65)	(1.37)	(1.79)	(0.28)	(3.41)	(1.56)	(2.44)	(3.87)	(5.06)
<i>MTB</i>	0.000	-0.001	-0.037	-0.019	0.080	0.001*	0.031	0.078***	0.022
	(0.65)	(-0.99)	(-1.50)	(-0.91)	(1.60)	(1.70)	(0.98)	(3.44)	(1.09)
<i>ROA</i>	0.294	-4.749	-46.450	-26.178	14.656	-1.082***	-48.704	-5.544	-30.591
	(0.44)	(-1.43)	(-1.08)	(-0.93)	(0.38)	(-3.76)	(-1.47)	(-0.15)	(-1.11)
<i>IFRS</i>	-0.281**	0.811	-9.453	-10.998	-20.264**	-0.091	-3.884	-12.369	-11.494**
	(-2.24)	(0.94)	(-0.77)	(-1.18)	(-2.05)	(-0.86)	(-0.50)	(-1.11)	(-2.05)
<i>BIG4</i>	0.219*	0.051	21.213	-8.270	13.517***	0.178*	18.123***	10.536	10.352*
	(1.91)	(0.11)	(1.55)	(-0.81)	(2.77)	(1.80)	(2.69)	(1.54)	(1.84)
<i>SIZE</i>	0.084**	0.360	5.632**	10.526***	8.402***	0.118***	11.155***	11.098***	10.917***
	(2.24)	(1.15)	(2.11)	(8.13)	(2.83)	(3.56)	(2.88)	(4.00)	(3.97)
<i>IMR</i>	0.329***	-1.310	4.580	-5.371	23.731***	-0.254*	-15.136**	-6.507	3.951
	(2.74)	(-0.89)	(1.01)	(-0.61)	(4.08)	(-1.92)	(-2.37)	(-1.08)	(0.83)
Intercept	-2.047***	43.113***	-59.590**	-116.396***	-154.112***	-1.462***	-123.408**	-153.653***	-151.160***
	(-3.48)	(9.82)	(-2.13)	(-4.53)	(-3.09)	(-2.97)	(-2.05)	(-3.26)	(-4.16)
Fixed effects (Country, Industry, Year)	Included	Included	Included	Included	Included	Included	Included	Included	Included
No. of observations	280	280	280	280	280	280	280	280	280
Adj. R ²	0.073	-0.056	0.115	0.086	0.160	0.206	0.227	0.332	0.364
Panel B: Integrated reporting vs. stand-alone ESG reporting									
<i>INTEGRATED_REPORT</i>	-0.104**	0.670*	-5.109***	-0.688	-8.116**	0.017	-3.860	5.786	-4.822***
	(-2.12)	(1.76)	(-3.17)	(-0.20)	(-2.40)	(0.37)	(-1.29)	(1.11)	(-3.35)
<i>MTB</i>	-0.000	0.001	-0.047	-0.016	-0.037**	-0.000	0.141***	-0.009	0.008
	(-1.23)	(1.28)	(-1.05)	(-0.86)	(-2.18)	(-0.68)	(8.61)	(-0.45)	(0.52)
<i>ROA</i>	-0.318	-1.483	-2.715	-21.853	-26.516	-0.273	9.808	2.025	-2.223
	(-0.61)	(-0.83)	(-0.17)	(-0.85)	(-1.07)	(-0.43)	(0.47)	(0.05)	(-0.17)
<i>IFRS</i>	0.364**	1.608	2.689	0.096	22.235***	-0.401***	-20.625***	-8.793	-8.454**
	(1.70)	(1.17)	(0.72)	(0.01)	(2.72)	(-2.69)	(-3.75)	(-0.63)	(-2.51)
<i>BIG4</i>	0.190	0.712	11.780	27.235***	24.820*	0.372**	15.748	36.421**	21.367*
	(0.86)	(0.67)	(0.72)	(4.74)	(1.69)	(2.13)	(0.88)	(2.05)	(1.91)
<i>SIZE</i>	0.043**	0.447	1.858	3.755	4.089***	0.028	7.058***	9.316***	4.368***
	(1.98)	(1.30)	(1.43)	(1.37)	(3.92)	(1.00)	(2.59)	(3.56)	(3.48)
<i>IMR</i>	0.469	-2.080	1.874	59.993**	28.944*	0.499**	23.329	45.976***	16.808*
	(1.36)	(-1.49)	(0.18)	(2.52)	(1.93)	(2.57)	(1.45)	(2.86)	(1.83)
Intercept	-0.875**	40.227***	59.562**	-105.809**	-61.759***	-1.591***	-131.588**	-142.17***	-16.686
	(-1.96)	(7.49)	(2.48)	(-2.52)	(-3.70)	(-3.69)	(-2.27)	(-3.39)	(-0.84)

Table 4 continued

	Integrated thinking (IT)				Integrated management (IM)				Overall integration level												
	PUBCOMM		TARGOB		POLICY		CHALLOPP		IMPLEM		COMMUN		MONITOR		ENGAGE		OIL				
	Included	280	Included	280	Included	280	Included	280	Included	280	Included	280	Included	280	Included	280	Included	280	Included	280	
Fixed effects (Country, Industry, Year)																					
No. of observations	0.058	-0.036	0.025	0.096	0.131	0.121	0.156	0.171	0.065	7.052	11.614***	4.096*	0.218								
Adj. R ²																					
Panel C: Integrated reporting vs. ESG reporting in the annual report																					
<i>INTEGRATED_REPORT</i>	0.193***	-0.394	-1.072	6.516***	9.530***	0.065	7.052	11.614***	0.065	7.052	11.614***	4.096*	0.218								
	(3.46)	(-0.45)	(-0.33)	(4.39)	(3.49)	(1.28)	(1.36)	(3.63)	(1.28)	(1.36)	(3.63)	(1.76)	0.218								
<i>MTB</i>	-0.010**	0.027	-0.742*	-0.391	-0.111	-0.008	-0.667*	0.372**	-0.008	-0.667*	0.372**	-0.635***	0.218								
	(-2.30)	(0.86)	(-1.70)	(-1.10)	(-0.37)	(-1.62)	(-1.70)	(2.51)	(-1.62)	(-1.70)	(2.51)	(-2.95)	0.218								
<i>ROA</i>	-0.566	-1.266	8.824	-88.419	-69.790*	-0.779*	-123.808***	-116.481***	-0.779*	-123.808***	-116.481***	-44.180***	0.218								
	(-0.72)	(-0.41)	(0.46)	(-1.56)	(-1.94)	(-1.79)	(-5.13)	(-3.15)	(-1.79)	(-5.13)	(-3.15)	(-3.52)	0.218								
<i>IFRS</i>	0.878***	5.395	19.898*	25.482*	39.571***	0.139	8.713	5.252	0.139	8.713	5.252	8.347	0.218								
	(3.44)	(1.48)	(1.73)	(1.88)	(3.12)	(1.41)	(0.70)	(0.75)	(1.41)	(0.70)	(0.75)	(1.34)	0.218								
<i>BIG4</i>	0.010	0.161	29.792*	8.927	1.932	-0.016	6.301	25.423*	-0.016	6.301	25.423*	15.520***	0.218								
	(0.14)	(0.11)	(1.74)	(0.85)	(0.22)	(-0.30)	(0.82)	(1.90)	(-0.30)	(0.82)	(1.90)	(2.59)	0.218								
<i>SIZE</i>	0.055	0.215	2.819	2.952	7.099**	-0.015	4.269	5.905*	-0.015	4.269	5.905*	5.713*	0.218								
	(1.40)	(0.88)	(0.79)	(1.39)	(2.08)	(-0.64)	(1.10)	(1.93)	(-0.64)	(1.10)	(1.93)	(1.70)	0.218								
<i>IMR</i>	-0.098	-10.910***	-22.665	-23.566	-0.474	-0.382	-62.725***	-43.024**	-0.382	-62.725***	-43.024**	-18.827	0.218								
	(-0.26)	(-2.73)	(-1.17)	(-0.81)	(-0.02)	(-1.22)	(-4.23)	(-2.38)	(-1.22)	(-4.23)	(-2.38)	(-1.16)	0.218								
Intercept	-1.328	49.566***	-3.864	4.737	-93.274	0.418	3.450	-63.365	0.418	3.450	-63.365	-44.963	0.218								
	(-1.40)	(9.93)	(-0.05)	(0.09)	(-1.03)	(0.85)	(0.04)	(-0.95)	(0.85)	(0.04)	(-0.95)	(-0.60)	0.218								
Fixed effects (Country, Industry, Year)																					
No. of observations	218	218	218	218	218	218	218	218	218	218	218	218	218								
Adj. R ²	0.137	0.022	0.054	0.057	0.092	0.184	0.300	0.266	0.184	0.300	0.266	0.219									

This table shows the empirical results (second stage of the Heckman estimation model) for testing the internalization hypothesis H1 (IT,IM,OIL) along the three matched sample variations that compare IR companies with companies that apply no alternative ESG reporting (Panel A), stand-alone ESG reporting (Panel B), or ESG reporting in the annual report (Panel C). *INTEGRATED_REPORT* is the main variable of interest that indicates if the company publishes an integrated report in the particular year. The four IT measures are: (1) *PUBCOMM* indicates if there is a public commitment from the company to integrate ESG issues into the company strategy, (2) *TARGOB* indicates if the company has specific targets and objectives to achieved an integrated strategy, (3) *POLICY* indicates if the company has a policy for maintaining an overarching integrated vision and strategy, (4) *CHALLOPP* indicates if challenges and opportunities consider ESG issues. The four IM measures are: (1) *IMPLEM* indicates if the integrated strategy is implemented into the business model in a transparent and comprehensible manner, (2) *COMMUN* indicates if appropriate communication tools exist within the company (whistle blower, ombudsman, suggestion box, hotline, newsletter, website, etc.), (3) *MONITOR* measures a company's self-monitoring of its integrated, (4) *ENGAGE* measures a company's stakeholder engagement. *OIL* measures a company's management commitment and effectiveness of integrating ESG issues. For a description of the remaining control variables see Table 1. The intercepts as well as country-, industry-, and year-fixed effects are included. *, **, and *** indicate that the estimated coefficients are statistically significant at the 10, 5, and 1 % levels, respectively, in two-tailed t-tests based on robust standard errors. *t* values are presented in parentheses. All continuous variables are winsorized at the 1st and 99th percentiles

Table 5 Externalization model regressions (H2)

	<i>ECON</i>	<i>ENV</i>	<i>SOC</i>	<i>GOV</i>	<i>ESG</i>	<i>IP</i>
Panel A: Integrated reporting vs. no ESG reporting						
<i>INTEGRATED_REPORT</i>	7.397** (2.29)	14.987*** (6.28)	15.466*** (6.40)	5.248* (1.85)	12.011*** (6.49)	14.329*** (6.51)
<i>ANALYSTS</i>	9.331*** (3.28)	0.950*** (3.44)	0.874** (2.43)	1.146*** (4.25)	8.905*** (4.21)	1.248*** (5.17)
<i>LISTINGS</i>	0.049 (0.02)	0.201 (0.22)	-1.160 (-1.02)	1.214 (1.24)	-0.238 (-0.22)	-0.185 (-0.12)
<i>ADR</i>	-2.754 (-0.47)	3.885 (1.45)	4.576* (1.67)	5.294 (1.25)	5.753 (1.42)	2.938 (0.96)
<i>VOLATILITY</i>	0.669 (0.93)	1.142 (1.34)	-0.473 (-0.72)	-0.550 (-0.84)	-0.110 (-0.24)	0.442 (0.89)
<i>CLOSELYHELD</i>	-0.084 (-0.93)	0.082* (1.85)	0.014 (0.23)	-0.139** (-2.00)	-0.020 (-0.53)	-0.004 (-0.07)
<i>LEVERAGE</i>	-31.250*** (-2.57)	0.045 (0.00)	-9.963 (-0.96)	-0.307 (-0.03)	-0.987 (-0.11)	-16.962 (-1.43)
<i>SIZE</i>	7.634*** (3.18)	5.261*** (3.20)	8.149*** (2.88)	1.917 (0.80)	6.182*** (2.66)	7.130*** (2.78)
<i>IMR</i>	9.524 (0.29)	12.250*** (3.91)	1.699 (0.49)	5.452** (2.24)	-5.420 (-0.17)	8.631*** (2.84)
Intercept	-95.128** (-2.28)	-52.358* (-1.88)	-69.869 (-1.29)	-31.975 (-0.96)	-68.782 (-1.09)	-75.979* (-1.74)
Fixed effects (Country, Industry, Year)	Included	Included	Included	Included	Included	Included
No. of observations	250	256	256	256	256	250
Adj. R^2	0.278	0.377	0.382	0.323	0.422	0.429
Panel B: Integrated reporting vs. stand-alone ESG reporting						
<i>INTEGRATED_REPORT</i>	-3.063 (-1.23)	-4.318* (-1.87)	-1.824 (-1.08)	-3.697* (-1.87)	-3.442** (-2.30)	-4.570** (-2.53)
<i>ANALYSTS</i>	0.006 (0.02)	0.271 (1.30)	0.827*** (4.41)	0.623** (2.09)	7.312*** (3.45)	0.544*** (3.30)
<i>LISTINGS</i>	-5.321* (-1.88)	3.536** (2.12)	-0.879 (-0.44)	1.923 (1.14)	1.686 (1.17)	-0.332 (-0.22)
<i>ADR</i>	29.708 (1.62)	-12.156** (-2.29)	8.133 (0.72)	-5.467 (-0.49)	-3.437 (-0.48)	5.267 (0.63)
<i>VOLATILITY</i>	-0.287 (-0.21)	0.596 (1.24)	-0.484 (-1.13)	-0.477 (-0.83)	-0.273 (-0.58)	-0.145 (-0.33)
<i>CLOSELYHELD</i>	-0.087 (-0.81)	-0.048 (-1.23)	-0.007 (-0.17)	-0.173*** (-4.15)	-0.068** (-2.33)	-0.080* (-1.64)
<i>LEVERAGE</i>	-26.698** (-2.49)	-6.072 (-0.94)	4.888 (0.57)	3.402 (0.49)	2.087 (0.38)	-10.236 (-1.39)
<i>SIZE</i>	5.779** (2.03)	0.849 (0.79)	0.707 (0.61)	2.441** (2.05)	1.645* (1.97)	2.561*** (3.32)
<i>IMR</i>	-87.207* (-1.78)	60.135** (2.50)	7.103 (-0.18)	29.263 (0.79)	29.634 (1.17)	-1.245 (-0.05)
Intercept	57.825 (0.91)	22.558 (0.98)	77.771* (1.88)	7.756 (0.22)	-13.893 (-0.43)	51.413* (1.71)
Fixed effects (Country, Industry, Year)	Included	Included	Included	Included	Included	Included
No. of observations	260	260	260	260	260	260
Adj. R^2	0.223	0.154	0.150	0.246	0.272	0.265

Table 5 continued

	<i>ECON</i>	<i>ENV</i>	<i>SOC</i>	<i>GOV</i>	<i>ESG</i>	<i>IP</i>
Panel C: Integrated reporting vs. ESG reporting in the annual report						
<i>INTEGRATED_REPORT</i>	−0.842 (−0.27)	6.140 (1.35)	4.201* (1.95)	−1.451 (−0.82)	3.072 (1.29)	2.275 (1.18)
<i>ANALYSTS</i>	0.285 (0.94)	0.657** (2.42)	0.263 (0.96)	1.104** (2.43)	5.580** (2.26)	0.697** (2.24)
<i>LISTINGS</i>	−6.439* (−1.86)	−0.028 (−0.02)	−4.356*** (−3.78)	3.533*** (3.14)	−0.538 (−0.59)	−2.350 (−1.41)
<i>ADR</i>	−4.056 (−0.55)	13.609*** (2.82)	0.175 (0.05)	7.493*** (2.87)	6.160** (2.38)	4.265 (0.94)
<i>VOLATILITY</i>	1.085 (1.35)	0.056 (0.06)	0.434 (0.50)	−0.410 (−0.44)	−0.134 (−0.15)	0.550 (0.60)
<i>CLOSELYHELD</i>	−0.080 (−1.52)	−0.104 (−1.59)	−0.093** (−2.08)	−0.147** (−2.00)	−0.120*** (−2.87)	−0.122** (−2.34)
<i>LEVERAGE</i>	−27.904*** (−3.42)	−10.627 (−0.97)	−2.139 (−0.16)	−18.611*** (−3.56)	−9.182 (−1.12)	−20.304*** (−2.70)
<i>SIZE</i>	4.562 (1.43)	3.438 (1.51)	3.350 (1.21)	3.850* (1.92)	3.662* (1.65)	4.831* (1.85)
<i>IMR</i>	−44.174 (−1.02)	28.651 (1.45)	−34.096** (−2.24)	35.091** (2.47)	0.950 (0.08)	−0.429 (−0.02)
Intercept	31.721 (0.35)	−18.974 (−0.39)	54.330 (1.02)	−30.260 (−0.69)	2.021 (0.04)	3.692 (0.06)
Fixed effects (Country, Industry, Year)	Included	Included	Included	Included	Included	Included
No. of observations	204	204	204	204	204	204
Adj. R^2	0.240	0.287	0.187	0.376	0.359	0.371

This table shows the empirical results (second stage of the Heckman estimation model) for testing the externalization hypothesis H2 (*ECON*, *ESG*, *IP*) along the three matched sample variations that allow compare IR companies with companies that apply no alternative ESG reporting (Panel A), stand-alone ESG reporting (Panel B), or ESG reporting in the annual report (Panel C). The main variable of interest *INTEGRATED_REPORT* indicates if the company publishes an integrated report in the respective year. *ECON* measures a company's capacity to generate sustainable growth and a high return on investment through the efficient use of all its resources. *ENV* measures a company's impact on living and non-living natural systems, including the air, land and water, as well as complete ecosystems. *SOC* measures a company's capacity to generate trust and loyalty with its workforce, customers, and society, through its use of best management practices. *GOV* measures a company's systems and processes, which ensure that its board members and executives act in the best interests of its long-term shareholders. *ESG* is the average of the environmental, social, and corporate governance (*ENV*, *SOC*, *GOV*) scores, measuring the overall ESG performance. *IP* represents the overall integrated performance, measured as an equal-weighted rating. It reflects a balanced view of a company's performance in all four areas, economic, environmental, social, and corporate governance. For a description of the remaining control variables, see Table 1. The intercepts as well as country-, industry-, and year-fixed effects are included. *, **, and *** indicate that the estimated coefficients are statistically significant at the 10, 5 and 1 % levels, respectively, in two-tailed t-tests based on robust standard errors. *t* values are presented in parentheses. All continuous variables are winsorized at the 1st and 99th percentiles

are differentiated from those conditional on the existence of stand-alone ESG reports (or ESG reporting in the annual report) and those irrespective of alternative non-financial reporting strategies. *First*, if an integrated report follows an ESG report (or an annual report that includes ESG information), it is likely that the company has already considered ESG issues in its business model to a certain degree. Consequently, this 'preliminary work' of alternative non-financial information provision can diminish the future internal and external effects resulting from IR. *Second*, it is likely that the company already used internal management tools for ESG issues (e.g., KPIs, Balanced Scorecard)

before the initiation of IR, meaning that the ESG management of IR does not necessarily represent added value. *Third*, legal requirements for the disclosure of non-financial information can force companies to report and manage ESG issues more effectively. Hence, the question is what type of format the respective law, standard, or regulation requires for the information provision. Depending on the type, non-financial requirements can either support IR and its intended benefits or can work against IR, not allowing companies to internalize the merits of IR.

However, additional analyses are performed within the matched sample (b) to gain more insight into how these

factors influence the internalization and externalization effects of IR. The sample (b) confronts IR companies with stand-alone ESG reporting companies. As such, tests within this sample best address the question of whether and to what extent IR is a superior mechanism for integrating ESG issues into the business model.

From Stand-Alone ESG Reporting to Integrated Reporting

Companies that switch from stand-alone ESG reporting to IR may already have a minimum level of reporting and management tools for ESG issues. If IR is interpreted as a ‘raising the bar’ management approach, then changers must exhibit a higher internal integration level of ESG aspects than before. However, this means that the internal and external effects of IR are lower for changers than for non-changers. To test this hypothesis, all companies are separated into two groups: changers and non-changers. Companies that fall into the group of changers did not have to publish an ESG report in the particular year before the IR initiation. It is assumed that the effect is sufficient once the company published at least one ESG report in any year (because many companies publish such reports in two- or three-year cycles) prior to the initiation of IR. Thus, a variable *CHANGE* is constructed that is an indicator variable equaling 1 if the company changes from stand-alone ESG reporting to IR in the respective year, and 0 otherwise. Using sample (b), the interaction term *INTEGRATED_REPORT*CHANGE*, indicating the year of change and, therefore, the first year of publishing an integrated report following an ESG report, is added to the regression model. During the sample period 2002–2011, 16 companies are classified as changers, while 73 companies are non-changers.

Untabulated results (internalization) show that *INTEGRATED_REPORT*CHANGE* is significantly and negatively associated with the IT measures *PUBCOMM* (−0.240, *t* value −3.04) and *CHALLOPP* (−18.457, *t* value −2.56), while the coefficients of the variable *INTEGRATED_REPORT* are not significant. This indicates that companies switching from stand-alone ESG reporting to IR are more likely to achieve less IT in the IR initiation year than companies sticking to stand-alone ESG reporting. The insignificance of the IR variable suggests that these negative associations do not hold for companies applying IR for the first time. The IT measure *TARGOB* (0.749, *t* value 1.71) is positively related and *POLICY* (−5.407, *t* value −3.42) negatively related to *INTEGRATED_REPORT*, while the coefficients of the interaction term are insignificant. Weighing out the positive and negative associations of IR gives no clear indications of a general trend in IT, and the switch seems to have no impact on IT. *OIL* (−4.306, *t* value −2.65) is highly significant and

negatively related with *INTEGRATED_REPORT*. There is no association with the interaction term. These findings are in line with the results of the main regression analyses.

Untabulated results (externalization) suggest that *INTEGRATED_REPORT* is negatively associated with *ECON* (−4.887, *t* value −1.95) and *ESG* (−2.902, *t* value −1.87), while the interaction term remains insignificant. Hence, *INTEGRATED_REPORT*CHANGE* is negatively related to *GOV* (−5.394, *t* value −2.03). These findings suggest that non-changing and IR initiating companies exhibit lower economic and ESG performance levels than companies publishing a stand-alone ESG report. In addition, changing companies do not seem to benefit more from IR in their first reporting year. Moreover, changers are more likely to exhibit low governance performance levels compared to companies using stand-alone ESG reporting. In summary, the results correspond to the findings in the main regressions of this paper in terms of sign and significance.

Key Performance Indicators and Balanced Scorecard

Companies that have already implemented ESG management tools prior to the initiation of IR (‘subsequent users’) are expected to exhibit lower effects from the application of IR than ‘new users’ that are able to benefit more from the IR initialization process. However, if ‘subsequent users’ experience a redesign of the internal reporting and management system due to IR, IR can also lead to a higher ESG integration level. For example, one company restructured its balanced scorecards (BSCs) system following the IR initialization process by developing one organizational scorecard that “replaced the two overlapping scorecards that [...] [the company] had previously for [...] [the] annual and sustainability reports.” (IIRC 2012, p. 23). On the one hand, this highlights the potential of IR to change internal processes and systems, as one scorecard reflects the integration of ESG into the business model at its best. On the other hand, the term ‘overlapping’ implies that BSCs were implemented before the initiation of IR, having already realized a certain level of ESG integration. Thus, the impact of the implementation of ESG management tools such as key performance indicators (KPIs) and BSCs on companies initiating IR is unclear. To test this effect, the sample is split up into two groups: companies that already used KPIs or BSCs prior to the initiation of IR and companies that did not. Therefore, the variable *KPI_BSC* indicates if the company used either KPIs or BSCs (or both) prior to the application of IR. In sample (b), 54 companies fall into the *KPI_BSC* group, while 226 companies do not.

Untabulated results show that *INTEGRATED_REPORT* is negatively associated with the internalization variables

POLICY (-5.510 , t value -3.17), *IMPLEM* (-7.914 , t value -2.01), and *OIL* (-6.263 , t value -3.30) for companies not falling within the *KPI_BSC* group. In addition, the IR variable is negatively related to *ESG* (-2.734 , t value -1.72). These results are consistent with the main regression results in this paper. In the *KPI_BSC* group, *CHALLOPP* (-7.121 , t value -5.05) and *MONITOR* (-10.707 , t value -6.94) are the only internalization variables that are associated with the IR variable. *INTEGRATED_REPORT* has a negative relation with the performance variables *GOV* (-5.074 , t value -6.28) and *ESG* (-2.474 , t value -1.65). The findings indicate that IR within the group of companies that have already used ESG management tools does not stand largely behind stand-alone ESG reporting with regard to the integration level of ESG issues. In contrast, the initiation of IR lowers the governance performance level of companies in the *KPIS_BSC* group but not of companies not belonging to that group, suggesting that restructuring ESG management tools is more likely to have a worse impact on the companies' corporate governance.

Legal Requirements for the Disclosure of ESG Information

Although the field of IR is largely unregulated around the world, requirements from national legislators (e.g., governments and stock exchanges) for the disclosure of ESG information are increasingly issued worldwide. For instance, France's Grenelle II Act, Art. 225 (2012) requires listed companies to disclose ESG information. Norway's revision of reporting requirements in the Accounting Act (2013) requires large companies to publish stand-alone ESG reports on a yearly basis. Spain requires companies that are state-owned and limited by the Spanish Sustainable Economic Law (2011) to disclose ESG information. In addition, the European Commission and European Parliament adopted a proposal for a directive enhancing the transparency of certain large companies on social and environmental matters (2013). Nevertheless, in all these cases, companies do not have to produce an integrated report to meet the requirements. Rather they can incorporate the required piece of information into other filings (e.g., Dhaliwal et al. 2012).

Nonetheless, legal requirements for ESG information support the fact that companies residing in such reporting regimes are forced to collect ESG information pieces that would also be included in integrated reports (e.g., Dhaliwal et al. 2012). On the one hand, companies that originate in a reporting regime with legal requirements for the disclosure of ESG information can be more likely to publish an integrated report than companies that do not have to consider ESG information requirements. On the other hand, if

the legal requirement demands specific ESG information from companies in a specific format, then this legal requirement can work against IR.

To examine whether legal requirements for the disclosure of ESG information have an impact on the main results in this paper, sample (b) is divided into two subsamples: companies located in countries with legal requirements for the disclosure of ESG information and companies located in countries without ESG requirements. Following Ioannou and Serafeim (2012), these legal requirements are defined as any mandatory laws, standards, codes, or regulations that cover all three ESG dimensions: environmental, social, and corporate governance aspects. In sample (b), countries with legal mandatory ESG disclosure requirements are Brazil, France, Ireland, Malaysia, Netherlands, South Africa, and the United Kingdom. Countries without any mandatory ESG disclosure requirements are Australia, Austria, Belgium, Hong Kong, Japan, Mexico, Portugal, Singapore, South Korea, Spain, and Switzerland. Thus, the variable *LEGAL_ESG* is an indicator variable that equals 1 if the company falls into the group of residents in countries with legal ESG requirements, and 0 otherwise. In sample (b), 178 companies fall into the *LEGAL_ESG* group, and 102 companies do not.

Untabulated results reveal that *INTEGRATED_REPORT* is negatively associated with *POLICY* (-4.222 , t value -1.93), *MONITOR* (-6.972 , t value -2.51), *ENV* (-3.938 , t value -2.24), *SOC* (-3.250 , t value -1.74), *GOV* (-3.857 , t value -1.93), *ESG* (-7.516 , t value -3.23), and *OIL* (-5.357 , t value -3.55) in the group of companies that reside in countries with ESG disclosure requirements. These findings suggest that companies subject to ESG disclosure requirements do not achieve IT and IM via IR. Moreover, these companies perform lower in economic and ESG issues than companies with stand-alone ESG reports.

Untabulated results for the group of companies not residing in countries with ESG disclosure requirements show that *INTEGRATED_REPORT* is positively associated with *TARGOB* (0.832 , t value 1.89) and negatively associated with *POLICY* (-5.871 , t value -2.40) and *IMPLEM* (-13.226 , t value -1.86). Moreover, the IR variable is negatively associated with *ECON* (-7.449 , t value -1.83) and *ESG* (-13.533 , t value -2.03), indicating that both the economic and ESG performances of non *LEGAL_ESG* companies are lower when companies publish an integrated report instead of a stand-alone ESG report. Hence, IR seems to have a positive impact on the integration of ESG issues into the targets and objectives of companies when there is no national guidance. However, stand-alone ESG reporting seems to influence the IM more positively.

Discussion

In this paper, the general notion that IR is superior to stand-alone ESG reporting (e.g., Churet and Eccles 2014; Cheng et al. 2014; Eccles and Serafeim 2014; Eccles and Serafeim 2011; Eccles and Krzus 2010) could not be confirmed. However, the negative internal and external impacts of IR can be the result of different factors, such as (1) a required ‘lead time,’ (2) an existing ‘time lag,’ (3) ‘divergent effects,’ (4) an ‘information overload,’ or (5) the respective ‘focus.’ These factors are shortly discussed in the following.

(1) In view of the lengthy lead time period preceding the establishment of a new management and reporting tool, IR may not have a desired effect that is immediately visible. Because IR is a relatively new concept, companies using IR may follow those processes by trial and error. Thus, IR can be understood as a far-reaching learning process that can ultimately result in a redefinition of the company’s core business model. Therefore, the adverse effects of IR compared to stand-alone ESG reporting can be traced back to an incorrect or incomplete implementation of IR into the business model. However, such pioneer activities will aim to establish a knowledge base for dealing adequately with future questions of IR.

(2) In addition to a lead time that is perhaps required to achieve the full potential of IR, the general long-term character of ESG aspects may play an important role. Achieving success with the integration of ESG issues into the business model is often a long-term process that can take several years to fully develop, demonstrate, and pay off financially and non-financially (Serafeim, 2014). Porter and Miles (2013) find that ESG longevity has a different impact on companies’ management and performance than short-term engagements. The longer the ESG commitment, the better the opportunity for fully integrating ESG issues into all aspects of business operations (Porter and Miles, 2013). These arguments may also apply to the findings in this paper. It is therefore most likely that the ‘payment period’ is only in the distant future. To consider this ‘time lag’ issue at least basically, additional tests within the matched sample (b) are performed by using a lagged IR variable in the regression models. The findings indicate that the lagged IR variable is negatively associated with one IM measure (*IMPLEM* -9.720 , t value -2.13) and the corporate governance performance (*GOV* -5.334 , t value -2.12) but is positively related to one IT measure (*TAR-GOB* 1.771 , t value 2.13). Compared with the results in the main regression model, these findings suggest that the negative relationship is lower in t_1 than in t_0 , as the two ESG integration variables cancel each other out. However, the results indicate that the company experiences a

redefinition of its targets and objectives after the initiation of IR but exhibits a lower corporate governance level. Thus, working with lagged IR variables over a much longer period could reveal a positive impact of IR on the integration of ESG issues and the economic and ESG performance.

(3) Divergent effects, such as the implementation of additional ESG management tools and legal requirements for the disclosure of ESG information, can dilute the basic benefits from IR. Prior to the initiation of IR, KPIs or BSCs may already have a focus on ESG aspects within the company’s environment. Thus, it seems reasonable that the added value of IR is lower for companies that have already implemented ESG management tools. However, it seems possible that the benefits from IR depend on the specific regulatory environment in which a company operates. Should companies be subject to the obligation of publishing ESG information in another format (e.g., stand-alone ESG reporting), they could forgo an effective implementation of IR because it is too costly for them to design, implement and monitor it. Moreover, the implementation of IR as a second (internal or external) reporting strategy that would be managed additionally to, for example, ESG reporting (if this format is exclusively required by legislation) could lead to excessive demands for companies that may result in negative effects for the company and society.

(4) One deficit of stand-alone ESG reporting that is often mentioned is the missing materiality of the ESG information covered in an ESG report, leading to an ‘information overload’ for stakeholders (e.g., Serafeim 2014). In more detail, an information overload can happen to both internal and external stakeholders. Transferring this ‘information overload’ argument now to the new concept of IR would mean that the internal restructuring due to the new process of information collection and its new evaluation for the preparation of an integrated report can also lead to internal confusion. In this paper, a stand-alone ESG report has 72 pages on average, but an integrated report has an average length of 193 pages. Because an integrated report should provide information about financial and non-financial aspects in an integrated way, the high number of pages may seem only natural. Hence, an annual report consists of 179 pages on average, from which 21 pages on average (ca. 11 %) account for ESG issues. The fact that an annual report accounts for 14 pages on average less than an integrated report suggests that the materiality principle for IR is not yet applied in the way it should. Thus, the problem of the material determination process leads back to the aforementioned arguments of ‘lead time’ and ‘time lag.’

(5) In addition to these factors, it also seems plausible that a stand-alone ESG report will highlight ESG aspects more than an integrated report. Consequently, financial

aspects could overlay non-financial aspects. Due to the ‘stand-alone position’ of ESG aspects in an ESG report, the qualitative nature and the associated low appreciation of such information may be compensated by the special focus of ESG reporting. However, this can lead to an over-evaluation of that kind of information (e.g., Arnold 2012). The results can thus be driven by such misinterpretations of internal and external stakeholders that lead to a disregard of ESG aspects within the IR implementation process and the performance evaluation.

The limitations of this paper calling for cautious interpretation of the results and future research to improve generalizability and validity are as follows. *First*, it is difficult to identify integrated reports as they strongly differ in terms of their ESG information content and presentation. Many companies declare their reports as integrated reports only following a combined reporting strategy. Many more, however, fully integrate both information types but do not use the label integrated report (Eccles and Serafeim 2014). This brings into question the reliability of the information about integrated reports provided by *CorporateRegister.com* because companies can upload their reports by themselves. Moreover, it is likely that companies will only publish a web-based integrated report that is not covered by *CorporateRegister.com*. Thus, it is possible that not all integrated reports are included in the samples, which is why the respective control groups could include IR companies. This misclassification of companies would introduce noise, leading to distortions in the findings.

Second, ESG data are provided by *Thomson Reuters ASSET4* database. The multitude of ESG ratings, such as ASSET4, Sustainalytics or FTSE4Good, often raises concerns about the usefulness and comparability of such ratings. Although it seems as if there is a substantial convergence at least between these well-known databases (Graafland 2013), doubts regarding the supportability remain. Thus, alternative measures (e.g., ESG performance ratings) for both internalization and externalization variables would contribute to the robustness of the results.

Third, because IR is a fairly new concept, empirical evidence for the long-term effects resulting from IR is difficult to obtain. Although this paper examines an international setting from 2002 to 2011 and works with multiple matched samples to support the stability of the results, data restrictions only lead to a small sample size. Therefore, further research could focus on solving the problem of data limitations.

Fourth, the Heckman two-stage procedure corrects for the potential endogeneity because it is unobservable whether companies that publish an integrated report also have better additional financial and non-financial disclosures, better internal financial or non-financial reporting figures, or exhibit other characteristics that are associated with

better internal and external management of economic and ESG aspects. According to Tucker (2011), the Heckman approach best addresses the selection bias due to unobservable factors. Nonetheless, other approaches such as the full information maximum likelihood estimation (FIML) or propensity score matching (PSM) could bring additional support for the main results in this paper.

Fifth, the issue of reverse causality can permeate the findings in this paper. To control for a potential reverse causality problem, additional tests using a lagged IR variable in the main regression models show the robustness of the main results. However, an instrumental variable approach could provide additional support.

Conclusion

This paper analyzes the internal and external consequences of IR. Is IR really the superior mechanism for the integration of ethics into the core business model? To answer this question, this paper shows the *internalization* and *externalization* ratio of IR companies to companies using alternative ESG reporting strategies. In this context, *Internalization* is defined as the integration of values, beliefs, norms, attitudes, standards, or patterns of culture stressing the importance of ESG issues into the corporate identity as conscious or subconscious guiding principles. Internalizing new ethical norms can be initiated by more ethical reporting practices and can foster ethical management and business practices. The internal transformation processes—leading to modified decisions, strategies and activities—are taken subsequently outward, namely, outside the company’s boundaries. This externalization process leads to changes in the economic and ESG performance levels of the reporting company. Only if the ethical implications of IR go beyond those of other ESG reporting strategies, it can represent a recommended approach to ethical accounting. Only then, the understanding of IR as “an ethical obligation of a company in its role of corporate citizen” is legitimized (Eccles and Krzus in EC Newsdesk, 2010). The results of this paper are going to shed light on the real internal and external effects IR can potentially have in comparison to other ESG reporting alternatives.

The results suggest that IR is only a superior mechanism for the integration of ESG issues into the core business model when comparing IR with the ESG reporting strategies of (a) no ESG reporting and (c) ESG reporting in annual reports. Compared with (b) stand-alone ESG reporting, the results even indicate that IR is negatively associated with the ESG integration level as well as with the economic and ESG performance. Moreover, this negative impact seems to be lower for companies that have

already implemented ESG management tools prior to the initiation of IR and stronger for companies residing in countries with legal requirements for the disclosure of ESG information. However, companies do not benefit from a change from stand-alone ESG reporting to IR.

Thus, the question of how far the ethical implications of IR go beyond those of other ESG reporting strategies can be answered in detail. The greater the importance of ethical issues in the individual accounting system of a company, the more ethical behavior is the company able to display in daily business operations. While the importance of integrating ESG issues into internal and external accounting practices is greatest for stand-alone ESG reporting and lowest for ESG reporting in annual reports (as well as non-ESG reporting), the reporting strategy of IR seems to emphasize ESG aspects more in a theoretical way than in a practical one. The equal treatment of financial and non-financial information is theoretically possible. However, once a company accounts via IR, the financial information seems to attract the full attention of all stakeholder and reduces the significance of the non-financial information package. Thus, the findings suggest that stand-alone ESG reporting leads more attention to ESG issues and increases the ESG awareness among managers, employees, and other stakeholders of the company. To integrate ethics into the core business model, IR seems not to be the most suitable accounting mechanism for the creation of ethically correct corporate cultures—at least until now.

This paper is the first to model the link between the initiation of IR and internal (IT and IM) and external (economic and ESG performance) effects in comparison with alternative ESG reporting strategies (e.g., stand-alone ESG reporting and no ESG reporting). Understanding transformational processes within the company resulting from IR is an important step to estimating external and side effects that can result from IR in the future. Because the results reveal that the benefits of IR are driven by several factors, it can be concluded that the new mode of corporate reporting is neither a superior mechanism for integrating ESG issues nor an empty shell. IR is a complex mechanism that can generate significant advantages if it is used in the right way. Thus, the results in this paper give initial indications of how to address IR and could be understood as first guidelines for researchers and practitioners on which IR aspects they need to focus in the future. Because IR is a relatively new reporting and management approach, we still do not know enough about the ethical impact of IR on a company's internal and external environment and its effect on current reporting regimes around the world in the medium and long term. For this reason, more research is needed that focuses on the long-term consequences of IR with a special focus on the role of IR as a vital driver for ethical business conduct.

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