Research in International Business and Finance 49 (2019) 13–40

Contents lists available at ScienceDirect

Research in International Business and Finance

journal homepage: www.elsevier.com/locate/ribaf

Integrated reporting: An accounting disclosure tool for high quality financial reporting

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ARTICLE INFO

JEL classification:
G32
G34
M40
M41
M42

Keywords:
Integrated reporting
Value relevance
Accounting disclosure quality
Firms' performance
Earnings quality

ABSTRACT

This study examines the association between the level of the quality of integrated reporting (IR) disclosure and a firm's market valuation. Employing data from IR firms during the years 2011 to 2015, we identify the association between firm performance and IR disclosure quality. Further, we examine the way in which the quality of IR disclosure improves the value relevance of summary accounting information (i.e., the market value of equity) and can create value. Specifically, we show the positive relation between firm performance and the quality of IR disclosure. Further, an examination shows that the level of the quality of IR disclosure is more significant when firms tend to exhibit a higher value relevance of summary accounting information (i.e., the book value of equity and earnings). Finally, more effective use of IR has resulted in abnormal stock returns being positively associated with earnings quality.

1. Introduction

Markets move on information and develop rapidly. The more forward-looking and detailed information organizations provide, the better markets operate (Ernst and Young, 2014). Although firms are producing more sustainability reports and corporate social responsibility reports, they do not provide financial information and non-financial information in an integrated manner that helps shareholders to become informed (IIRC, 2011a). There is a need for organizations to explain their business models and define the way that they create value over the short, medium and long term. Parallel to and independent of financial reporting, a new framework focuses on non-financial information and data, creating a motivation for long-term investments related to environmental, social, governance (ESG) and financial factors. Moreover, the fact that there is no standard format for IR shifts the responsibility to stakeholders to make more secure investment decisions and to determine and link sustainability and economic values by using the internet (CEccles and Saltzman, 2011).

According to the King III report, IR exhibits "a holistic and integrated representation of the company's performance in terms of both its finance and its sustainability" (IRCSA, 2011). The level of quality of IR disclosure better informs investors about the firms' strategy. IR clarifies a company's management strategy, which enables management to control various risks and identify investment

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https://doi.org/10.1016/j.ribaf.2019.02.007
Received 2 May 2018; Received in revised form 4 February 2019; Accepted 11 February 2019
Available online 14 February 2019
0275-5319/

opportunities more clearly (IIRC, 2015). Firms using IR empower the value of their brand and reputation by providing information relevant to the working conditions of both employees and workers in their supply chain, to the relationships with the communities in which plants and other facilities are located and to the structure of compensation plans (Krzus, 2011).

The International Integrated Reporting Council (IIRC) suggests that the short-term structure of the existing financial reporting framework does not help managers to make long-term predictions and organize their decisions about future strategies. Management often omits structural data, particularly that related to ESG information (KPMG, 2013). The mission of the IIRC is "to create a globally accepted IR framework that brings together financial and ESG information in a clear, concise, consistent and comparable format"[1] to "help business to take more sustainable decisions and enable investors and other stakeholders to understand how an organization is truly performing.".[2] Both financial and nonfinancial data are included in a single document. This document demonstrates how effective sustainability reporting contributes to the positive financial performance of a firm and vice versa: it also identifies the conciliatory decisions that the firm should make to balance its financial and nonfinancial performance. Although all listed firms are required to provide an annual report on their financial performance, reports related to non-financial information are not obligatory in the majority of countries. When firms apply IR, they provide both financial and nonfinancial information (Ioannou and Serafeim, 2010).

IR does not place undue emphasis on short-term financial performance. Using IR, the management can supervise business on a day-to-day basis (Eccles and Krzus, 2010, p.252; IIRC, 2013a; Potter and Soderstrom, 2014) and can inform investors and stakeholders regarding the firm's strategies (Abeysekera, 2013). The IIRC notes that IR demonstrates the linkages between an organization's strategy, governance and financial performance and the social, environmental and economic context within which it operates. IR not only addresses investors but also other stakeholders, such as customers, suppliers and banks (Krzus, 2011). Its main purpose is not to help business make more sustainable decisions but rather to encourage an alternative way of thinking about profit maximization and long-term corporate success. In addition, IR provides ESG information to investors and to other stakeholders to understand how a firm is actually performing (IIRC, 2011b; Adams, 2015).

Our study aims to enrich the understanding of IR by providing empirical evidence on whether the quality of IR disclosure positively affects firm performance and encourages firms to exhibit a higher value relevance of summary accounting information. We test the relation under IR between the abnormal stock returns and earnings quality. Earnings quality is an important indicator of financial performance and influences the firms' disclosure decisions (Francis et al., 2008). Further, this study attempts to investigate whether IR is more effective in creating high earnings quality for firms that use IR on a mandatory basis than it is for firms that use IR on a voluntary basis. IR can be a useful proxy to control the behaviour of discretionary accruals. It recognizes social trends that are likely to affect positive business developments, creating appropriate internal incentives that encourage a long term-view (Churet and Eccles, 2014).

Our sample consists of 82 international firms and investigates the period from 2011 to 2015. Based on the chapters of the King III report, the King III code (IoD, 2009, 2016) and the content elements in the IR framework, we construct a firm-specific integrated disclosure score index (DS) that captures a firm's degree of compliance with IR disclosures. Using our sample of international listed firms, we find that firm valuation is positively associated with IR disclosures.

This study focuses on the alignment between financial and non-financial information provided by firms and examines the level of accounting information provided by firms that enrich their annual reports with IR components. We interpret IR disclosure quality by applying two different estimated indexes based on all the nine content elements in the King III report and the King III code and that are confirmed by the IR framework. If IR can be used effectively to interpret the advantages of the King III report's principles and to explain to investors how an organization creates value over time, we expect the positive association between value creation and IR disclosure quality (both in DS and Dummy Disclosure Score Index (DDS)) to be stronger in firms with lower market capitalization and with a differentiation in the positions of CEO and chairman. Consistent with our prediction, we document that firms with a high IR disclosure quality tend to display high market value per share. Our findings suggest that higher market valuation appears in firms with high levels of leverage and liquidity.

We document certain results that support IR and our theory that the level of IR disclosures based on the King III report principles and the IIRC framework is a mediating variable in determining the effectiveness of IR in our capital markets context. Our results also provide support for the idea that in understanding future performance, specific IR disclosure aspects based on the King III report principles and the IIRC framework are more important than others for certain sets of firms. Our work joins a growing literature that uses survey data to explain abnormal stock returns under the IR regime. We show that the high levels of IR disclosure quality have resulted in abnormal stock returns being positively associated with earnings quality.

Based on an analysis of these results, we find that a motivation for adopting IR is to simplify and integrate the information regarding the firm's business to enable it to communicate in a complete and transparent way its capacity to create value in the present and the future. Therefore, the analysis confirms that a new era of reporting will be characterized by IR adoption, supported and accompanied by integrated thinking (IIRC, 2015). Further, this analysis also explains how IR implementation is linked and how it completes stakeholder theory.

The remaining sections of this study are as follows: Section 2 provides a literature review, explains the IR motivation and shows the research hypotheses. Section 3 describes the design of the sample selection and develops the Models. Section 4 discusses the empirical results, and Section 5 checks the robustness of our results. Finally, Section 6 presents the study's conclusions.

[1] See http://www.theiirc.org/the-iirc/,accessed February 2018.
[2] See http://www.theiirc.org/about/,accessed February 2018.

2. Research hypotheses

2.1. Quality of IR disclosure and firm performance

Using a sample of listed firms in South Africa, the existing literature has attempted to highlight the relation between integration reporting and firm valuation (Lee and Yeo, 2016; Bernardi and Stark, 2018; Zhou et al., 2017). Lee and Yeo (2016) examine the relation between cross-sectional variation in IR disclosures and firm performance in the period after the implementation of IR. They conclude that firm valuation is positively associated with IR disclosures. More specifically, they document that there is a positive and significant association between IR disclosure and firm performance in the firms with higher organizational complexity. They suggest that IR improves the information environment in complex firms, such as firms with high intangible assets, firms with multiple business segments and large firms.

To evaluate the users' perceptions of the usefulness of IR, Bernardi and Stark (2018), for the period 2008–2012, study the impact in South Africa of the reporting regime change on analyst forecast accuracy. They conclude that linking ESG performance with future financial performance through an integrated report provides stakeholders with an improved understanding of the firm and its future. Moreover, they expect analyst forecast accuracy to improve after the implementation of IR. Zhou et al. (2017) test whether the degree to which South African financial reports are integrated affects analyst forecast accuracy, forecast dispersion, and the cost of capital. They document that the higher the degree of integration is, the higher the degree of forecast accuracy and the lower the cost of capital: they found that the latter is especially true for firms with small analyst followings.

Considering the previous literature, we highlight that the use of IR empowers and evolves stakeholder theory. Stakeholder theory can explain the accountability of the board not only to shareholders but also to other interested parts. The advocates of stakeholder theory argue that this theory colours the firm's portrait, providing both social and economic values and a consideration of ethics and morality, which is important for the estimation of a firm's value (Freeman, 1983, p. 248). The IIRC Framework states that stakeholders need to be informed about capital and non-capital investments, for example, expenditures for property, plant, and equipment, intellectual property, and people. Moreover, highlighting the elasticity of the business model, it explains to stakeholders how investments create a competitive advantage for the firms and organizations Finally, stakeholders should be provided with an analysis of the positive and negative impacts of investments on financial capital (funds available through operations, debt or equity financing), manufactured capital (plant, property, equipment), intellectual capital (patents, copyrights, licenses), human capital (the organization's people-their capabilities, experience, drive to innovate), social capital (shared organizational values, relationships with customers, suppliers, communities), and natural capital (air, water, land), including significant effects on the capital up and down the value chain (IIRC, 2013a, Framework: 2.14 and 4.31; Krzus, 2017).

We extend the examination of IR implementation by studying firms that apply IR either on a mandatory or a voluntary basis. We try to enrich the understanding on IR by providing empirical evidence on whether the quality of IR disclosure positively affects firm performance. Hence, our first hypothesis is the following:

Hypothesis 1. There is a positive association between firm performance and the level of IR disclosure quality.

2.2. Quality of IR disclosure and the value relevance of summary accounting information (i.e., the book value of equity and earnings)

Before the use of IR, accounting mechanisms did not consider non-financial information and failing to consider all the necessary factors that may have had a significant impact on value creation, corporate financial information faced similar shortfalls (Ernst and Young, 2014). Researchers have examined value relevance for many years (Beaver, 2002).The fundamental notion suggests that an accounting value is value-relevant when it is significantly associated with a dependent variable (Carnevale et al., 2012). The fact that there was no convergence between the market value of the firms' shares and their book value created the need for researchers to examine the relevance of non-financial information with regard to value (Lourenco et al., 2014).

Previous studies found a significant relation between the market value of equity and non-financial information. A significant number of studies applying a value-relevance test for the firms' environmental information (Al-Tuwaijri et al., 2004; Barth and McNichols, 1994; Clarkson et al., 2004; Cormier and Magnan, 1997, 2007; Moneva and Cuellar, 2009) found a positive relation between the firms' earnings valuation multiples and environmental reporting in firms from Canada, France and Germany. Other studies have focused on the corporate environmental reputation effects with regard to current annual stock returns and current and future annual earnings (Hussainey and Salama, 2010). A parallel study of Australian firms indicated a negative relation between a firm's value and its carbon intensity profile (Chapple et al., 2013).

Conversely, certain studies have shown an opposite relation between sustainability reporting and value relevance. The results were derived from a sample of European banks in which the disclosure level of sustainability information exhibited an opposite impact on the value relevance of net assets. Banks that did not apply sustainability reporting performed better with respect to value relevance (Carnevale and Mazzuca, 2014).

There are many reasons underlying the belief that firms with high IR disclosure quality will tend to exhibit a higher value relevance than their counterparts (IIRC, 2013a; Krzus, 2017): IR can benefit firms by attracting socially responsible investors and consumers who care about sustainable development issues; IR may be popular with activists and prevalent in non-governmental

organizations; firms can apply IR in order to attract socially responsible investors, who may be willing to pay a premium for their securities; IR can lead to material efficiency and energy and waste minimization (IIRC, 2013a; Lourenco et al., 2014).

Following stakeholder theory, firms are expected to provide more ESG principles to inform stakeholders. Hence, firms provide value-relevant information to investors about the firm's organizational effectiveness compared to that of competing firms (Hussainey and Salama, 2010). Nonfinancial information reduces investor uncertainty and influences the firm's share price (Ramchander et al., 2012; Lourenco et al., 2014).

In the application of the King III report principles, empirical studies suggest that firms, particularly those from South Africa, revealed sufficient information about the risks, challenges (Marx and Mohammadali - Haji, 2014) and uncertainties and suggested ways for improvement (Ernst and Young, 2014; Baboukardos and Rimmel, 2016). De Klerk and De Villiers (2012) examined the value relevance of ESG disclosures and concluded that the results of their study supported the business case advocating high-quality integrated reports and advanced by the IRCSA (2011b) and the IIRC (2013b). Moreover, after IR adoption, the valuation coefficients of earnings remain steadily higher than they were before. The improvement signals in the value relevance of earnings became visible after the first year of the King III report's adoption and became visible in the value relevance regarding the book value of equity after the second year (Baboukardos and Rimmel, 2016).The abovementioned assertions can be formally stated in the following hypothesis.

Hypothesis 2. *Firms with high IR disclosure quality tend to exhibit a higher value relevance of summary accounting information (i.e., the book value of equity and earnings).*

2.3. IR disclosure, earnings quality and abnormal stock returns

Previous studies in accounting and finance have documented stock return predictability by using variables such as market valuation ratios, short- and long-term interest rates and a firm's financing patterns (Chava et al., 2015). The partial equilibrium literature focuses on the time variation in future stock returns and asks how it affects the optimal asset allocation decisions (Wachter, 2010). Practitioners focus on future stock returns' predictability to develop market-timing portfolio strategies to enhance profits (Koijen and van Nieuwerburgh, 2013). Adrian et al. (2010) check the association between stock return predictability and several financial balance sheet variables and conclude that the annual growth rate of security broker-dealer leverage predicts future stock returns.

Barth et al. (2017) test and conclude a positive relation between IR quality and valuation models by examining two channels through which this association may arise: a capital market channel and a real effects channel. Their empirical models disaggregate firm value into three components: liquidity, cost of capital, and expected future cash flows. To the extent that IR disclosure increases the liquidity, stakeholder theory links the quality of IR disclosure with stock liquidity. Fang et al. (2009) find that the relation between liquidity and performance is stronger for firms with high business uncertainty. Since integrated reports deal with capital, Barth et al. (2017) document that higher integrated reporting quality may affect stock liquidity by stimulating additional trading by informed investors. Bernardi and Stark (2018), in a sample of South Africa firms over the period 2008–2012, examine how the implications of IR affect analyst forecast accuracy. They find a positive relation between the high level of ESG disclosures and the IR disclosure level, concluding that IR improves the analysts' estimations about the value and performance of the firm.

When the formation of an integrated report is aligned with stakeholder theory principles, the firm's performance is improved. This fact is demonstrated by firms that include IR in their annual reports and that behave differently, delivering more transparent financial and non-financial information to investors. The latter can help manage various risks and identify investment opportunities more clearly (De Villiers et al., 2017). In a mixed sample of firms that apply IR either on a mandatory or voluntary basis, we try to enrich the understanding of IR by providing empirical evidence that since the introduction of IR, firms with high levels of IR disclosure and earnings quality have had greater abnormal returns. Here, some similarities are found with previous studies because IR is a tool that empowers the level of accounting (financial and non-financial) information (Lee and Yeo, 2016; Maroun, 2017). Hence, our third hypothesis is:

Hypothesis 3. *Under IR, abnormal stock returns are positively associated with earnings quality.*

We continue our analysis to check the relation between earnings management and IR. Management actions that reduce the quality of the accounting information of the financial statements comprise the notion of earning management (Kinney et al., 2004). Earning management appears when managers manipulate the accounting numbers (Fields et al., 2001). Managers apply this practice when they believe that the users of accounting information cannot understand and estimate the effect of earnings management. Earnings management provides a lower quality of earnings. This results in the lower predictive ability of forecasted earnings and cash flows (Lev, 2003) and misleads investors into creating unethical practices (Kaplan, 2001).

IR is expected to increase the reports' decisions usefulness for stakeholders. Some basic principles of management behaviour are that managers should be ethical, honest and transparent in their financial reporting and should be socially and environmentally responsible in their decisions. If stakeholders believe that earnings are being managed or that a firm is not being socially responsible, the firm concerned may lose value in the market. (Jordaan et al., 2018),

Pududu and De Villiers (2016) study the earnings quality in South Africa firms, which apply IR on a mandatory basis and conclude that there is no evidence of South African managers' earning management to avoid small losses or small decreases in earnings. Except for South Africa, integrated reporting is voluntary on an international level (Velte and Stawinoga, 2017).

In addition, firms can choose whether they prefer to provide IR assurance through external parties, such as professional accountants. Big auditors are associated with high reporting quality, e.g., lower absolute values of discretionary accruals (Becker et al., 1998) and higher earnings response coefficients (Teoh and Wong, 1993). A high quality of accounting disclosures is verified by good audit reports, reducing information asymmetry, leading to a lower cost of equity and creating better financing terms (Ashbaugh - Skaife et al., 2006; Botosan and Plumlee, 2002).

Regardless of the voluntary nature of IR assurance, audit and nomination committees are responsible to the investors for monitoring financial, non-financial and IR information. In line with stakeholder theory, audit and nomination committees have to fulfil the stakeholders' interests by providing decision-useful integrated reports that help decrease greenwashing and information overload (Velte, 2018). We extend our survey to test the following research hypothesis:

Hypothesis 3a. *In terms of generating high earnings quality, IR is more effective in firms that use IR on a mandatory basis than in firms that use IR on a voluntary basis.*

3. Research design

3.1. Design of sample selection

Our sample period extends from 2011 to 2015. This period was chosen to reflect the fact that the IIRC was established on August 2, 2010, the same year that a multi-organizational Integrated Reporting Committee (IRC) was established in South Africa to develop guidelines on IR and a framework for an integrated report for listed companies in the country[3] .

This analysis is structured on two levels. At the first level, an analysis of balance sheets and income statements was implemented to obtain numerical information about financial instruments. These data were downloaded from Datastream. A sample of 173 listed firms was collected from the official website of IIRC. However, of the 173 firms, a total of 34 firms did not provide adequate data in Datastream, and 57 firms were from the financial, insurance and real estate sectors and thus were removed from the sample[4] . The final sample consisted of 82 listed firms from 25 countries. As more countries adopt IR and as more companies implement IR on a voluntary basis, future research should examine the motivation and the effects of IR using larger samples. Due to different institutional characteristics, the level of compliance with IR requirements varies from country to country. Future research should also investigate the association between institutional background and IR adoption level.

The second level of analysis focuses on annual reports. On this level, the study codified certain quantitative and qualitative information into predefined categories and answers (Lopes and Rodrigues, 2007). Integrated reports of the firms were used in the research survey. The reports provided details about independent board members and independent directors on the nomination committee, non-executive board members on the nomination and audit committees, and whether the posts of CEO and chairman were separated. From the Thomson Reuters database, we obtained data regarding institutional ownership. The sample selection distribution development is illustrated in Table 1 below.

In Fig. 1, we present the sample distribution classified by primary industry. From the total sample of 82 firms, 21 firms come from the manufacturing industry, 15 firms from the mineral industry, 12 firms from the transportation and communication industry, 18 from the retail industry and 16 firms from the services industry. This classification is interpreted with averages in a pie chart. A total of 25.61% of the IR firms are from the manufacturing industry, 21.95% are from the detail industry, 19.51% are from the services industry, 18.29% are from the mineral industry and 14.63% of the IR firms are from the transportation and communication industry. Moreover, from the total sample of 382 observations, 69 observations were conducted in 2011, 74 observations in 2012, 76 observations in 2013, 81 observations in 2014 and 82 observations in 2015. In Fig. 2, this classification is illustrated in a histogram.

In Table 2, we observe that in the first two years of IR adoption, firms tended to provide basic IR information. In 2011, (2012), only 25 (27) firms had more than 20 observations in checklist scores. Moreover, in 2015, firms seemed to comply with the IR notion. A total of 41 firms had checklist scores of more than 20 observations.

3.2. Model specifications

3.2.1. Quality of IR disclosure and firm performance

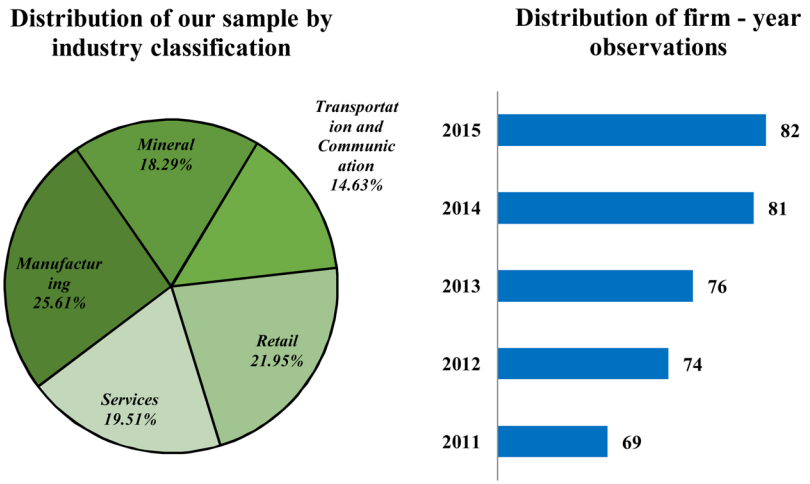
Studies vary in their assessment of which value driver (cash flows and accruals) performed better. Sloan (1996) suggests that it is better for financial analyses to be based on the cash flow component of profitability than on accruals. However, Ohlson (1995) and Felthman and Ohlson (1995) note that current profitability (return on assets) and growth in net operating assets better explain future profitability and provide a more accurate and less biased estimate of the intrinsic value of a firm. Growth in net operating assets is split into accruals and growth in long-run net operating assets. Accruals better indicate the quality of earnings because the GAAP reported that net income ignored information that was provided by accruals (Chan et al., 2006). We use profitability (return on assets

[3] See http://www.integratedreportingsa.org/IntegratedReporting/WhatisanIntegratedReport.aspx, 02/08/2018.

[4] These firms use accounting methods that are not comparable with those of industrial firms (Iatridis, 2012a).

Table 1
Sample Selection.

Selection Criteria	Number of Firms
Total number of firms listed in IR database	**173**
Less:	
Firms in financial, insurance and real estate industries	(57)
Firms without data available in Datastream	(34)
Total Sampled Firms	**82**



Figs. 1 and 2. Firms distribution by industry classification and by firm – year observations.

Table 2
Integrated Reporting Checklist Distribution per year.

IR Questions' Classification on the Checklist	Years				
	2011	2012	2013	2014	2015
[12,16)	20	20	14	13	13
[16,20)	37	35	32	27	27
[20,24)	12	14	20	26	26
[24,28]	13	13	16	16	16
Total	**82**	**82**	**82**	**82**	**82**

(ROA)) as a control variable because the quality of IR disclosure is expected to increase with firm performance. We examine the relation between IR disclosure quality and the subsequent profitability of our sample. Specifically, we test whether the quality of IR disclosure positively affects the ROA. Following Lee and Yeo's (2016) and Jermias and Gani's (2014) methodology, we estimate the following Equation:

$$ROA_{i,t} = a_0 + a_1 DISCLOSURE\_QUALITY_{i,t} + a_2 DUALITY_{i,t} + a_3 BSIZE_{i,t} + a_4 BOARDIND_{i,t} + a_5 INST_{i,t} + a_6 GROWTH_{i,t} + a_7 FIRM\_SIZE_{i,t} + a_8 DEBT\_RATIO_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t} \quad (1)$$

We create two Sub-Models, Model 1(a) and 1(b), in which we test the IR disclosure quality in two different ways. In Model 1(a), we use the independent variable DDS, and in Model 1(b), we use the independent variable DS.

$$ROA_{i,t} = a_0 + a_1 DDS_{i,t} + a_2 DUALITY_{i,t} + a_3 BSIZE_{i,t} + a_4 BOARDIND_{i,t} + a_5 INST_{i,t} + a_6 GROWTH_{i,t} + a_7 FIRM\_SIZE_{i,t} + a_8 DEBT\_RATIO_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t} \quad (1a)$$

$$ROA_{i,t} = a_0 + a_1 DS_{i,t} + a_2 DUALITY_{i,t} + a_3 BSIZE_{i,t} + a_4 BOARDIND_{i,t} + a_5 INST_{i,t} + a_6 GROWTH_{i,t} + a_7 FIRM\_SIZE_{i,t} + a_8 DEBT\_RATIO_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t} \quad (1b)$$

The variable explanations are provided in the Table below.

Variable Explanations of Equation (1)

Variable	Description
ROA	is the ret urn on assets in fiscal year t calculated as net income during year t scaled by total assets at the beginning of the year.
DDS	Is a dummy variable equal to 1 if a firm has gathered an IR disclosure score which is equal or greater than the median price notifications percentage of all sampled firms and 0 if otherwise. For more details see Section 3.3.1
DS	Is derived from the scale of total received score of each firm to the maximum score (equals to 28 observations based on KING III checklist).
DUALITY	Is a dummy variable which takes 1 if a firm's CEO is also the chairman of the board of directors and 0 if otherwise.
BSIZE	is the number of directorsss on the Board.
BOARDIND	is the board independence ratio measured as the number of independent directors divided by total board size.
INST	is the ratio of number of shares owned by institutional shareholders to total outstanding common shares.
GROWTH	is the growth in total assets from the beginning to the end of year t.
TURNOVER	is a measure of asset utilization that captures how efficiently the firm's assets are used and is estimated as the ratio of annual sales to total assets at the end of fiscal year t.
SIZE	is the natural logarithm of total assets at the end of fiscal year t-1.
LEVERAGE	is another proxy for firm's leverage calculated as the ratio of total debt at the end of fiscal year t to total assets at the end of fiscal year t-1
STDEVΔOI	is the standard deviation of the annual change in operating income.

A significant and positive coefficient of DS (DDS) would suggest a positive relation between the quality of IR disclosure and the firm's performance (ROA). Board size, board independence, and separation of the CEO and chair positions to improve overall oversight are basic issues that affect the board of directors (Dalton et al., 1998; Coles and Hesterly, 2000; Daily et al., 2003). We expect all of these three coefficients to be positive. A higher number of non-executive directors on the board can improve firm performance. A board should consist of a large number of outside independent directors and have a separate position of chairman and CEO to increase shareholder value (Fama and Jensen, 1983; Jensen and Meckling, 1976; Shleifer and Vishny, 1997). However, a disproportionately high number of inside directors has a negative association with firm performance (Jermias and Gani, 2014).

As Iatridis (2012c) suggests, the domination of company boards by non-executive and independent directors, the presence of nomination and internal audit committees, a firm's size, a firm's leverage, and its managerial and institutional ownership improve firm performance (Singh and Davidson, 2003; Weir et al., 2002). Hence, we expect positive coefficients for these variables, except for leverage. The presence of independent members on boards of directors will enhance the boards' ability to monitor management (Young et al., 2008). Institutional investors play an active role in controlling managerial discretion and improving the efficiency of information in capital markets because these investors are sophisticated and have certain advantages in processing information (Gonzalez and Garcia - Meca, 2014; Balsam et al., 2003; Koh, 2003; Ferreira and Matos, 2008; Ferreira et al., 2010).

The concept of "integrated thinking" has been introduced to explain the relation between IR and firm performance. This concept attempts to find an optimal balance between managing short-term business imperatives and ongoing value creation (Churet and Eccles, 2014).It is also important to resolve agency problems by aligning management's interests with the objectives of shareholders (Demsetz and Lehn, 1985). Moreover, the opportunistic behaviour of managers can be aligned through the contribution of external auditing. External auditors can be used as another important monitoring system. Auditors have the responsibility to provide reliable accounting information and to effectively question management (Cohen et al., 2008). A firm that is audited by independent, high-quality external auditors exhibits low earnings management, better accounting information and improved performance (Frankel et al., 2002; Krishnan, 2003).

3.2.2. Quality of IR disclosure and value relevance

Similar to other studies (Baboukardos and Rimmel,2016; Berthelot et al., 2012; Hassel et al., 2005; Johnston, 2005; Lourenco et al., 2014; Sinkin et al., 2008), a linear price-level Model that associates a firm's market value of equity (MVPS) with its book value of equity (BVPS) and earnings (EBITPS) is employed as follows:

$$\boldsymbol{MVPS_{i,t} = \lambda_0 + \lambda_1 DISCLOSURE\_QUALITY_{i,t} + \lambda_2 BVPS_{i,t} + \lambda_3 EBITPS_{i,t} + \lambda_4 LEVERAGE_{i,t} + \lambda_5 ROE_{,t} + \lambda_6 CASH_{i,t} + \lambda_7 PPE_{i,} + \lambda_8 SIZE_{i,t} + \lambda_9 DUALITY_{i,t} + \lambda_{10} PERIDAU_{i,t} + \lambda_{11} LN\_EMPLOY_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + e_{it}} \quad (2)$$

Because we use two proxies for the DISCLOSURE_QUALITY, namely, DDS and DS, we estimate the following two Sub-Models:

$$\boldsymbol{MVPS_{i,t} = \lambda_0 + \lambda_1 DDS_{i,t} + \lambda_2 BVPS_{i,t} + \lambda_3 EBITPS_{i,t} + \lambda_4 LEVERAGE_{i,t} + \lambda_5 ROE_{,t} + \lambda_6 CASH_{i,t} + \lambda_7 PPE_{i,} + \lambda_8 SIZE_{i,t} + \lambda_9 DUALITY_{i,t} + \lambda_{10} PERIDAU_{i,t} + \lambda_{11} LN\_EMPLOY_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + e_{it}} \quad (2a)$$

$$\boldsymbol{MVPS_{i,t} = \lambda_0 + \lambda_1 DS_{i,t} + \lambda_2 BVPS_{i,t} + \lambda_3 EBITPS_{i,t} + \lambda_4 LEVERAGE_{i,t} + \lambda_5 ROE_{,t} + \lambda_6 CASH_{i,t} + \lambda_7 PPE_{i,} + \lambda_8 SIZE_{i,t} + \lambda_9 DUALITY_{i,t} + \lambda_{10} PERIDAU_{i,t} + \lambda_{11} LN\_EMPLOY_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + e_{it}} \quad (2b)$$

The three basic variables (MVPS, BVVS and EBITPS) are scaled by the number of common shares at the end of a firm's fiscal year (Lourenco et al., 2014). In their study, Barth et al. (2001) mention that, "an accounting amount is defined as value relevant if it has a

predicted association with equity market values" (Barth et al., 2001, pg. 79). Hence, BVPS and EBITPS are regarded as value relevant as long as their respective coefficients λ_2 and λ_3 are found to be significantly different than zero. We expect positive signs to coefficients λ_2 and λ_3 in the period after the adoption of King III. A significant and positive coefficient λ_1 for the quality of IR disclosure index DS (or DDS) would suggest a significant improvement in the value relevance of the accounting information. Hence, the focus of our test is on coefficient λ_1: If this coefficient is found to be positive and significantly different than zero, then it can be argued that firms with a high level of IR disclosure quality have enhanced the relevance of summary accounting information. Further, a number of control variables are included in the Model as described in the Table below.

Variable Explanations of Equation (2)

Variable	Description
MVPS	Market Value of Equity scaled by the number of common shares.
DDS	Is a dummy variable equal to 1 if a firm has gathered an IR disclosure score which is equal or greater than the median price notifications percentage of all sampled firms and 0 if otherwise. For more details see Section 3.3.1
DS	Is derived from the scale of total received score of each firm to the maximum score (equals to 28 observations based on KING III checklist).
BVPS	Book Value of Equity scaled by the number of common shares.
EBITPS	Earnings before interest and taxation scaled by the number of common shares.
LEVERAGE	is another proxy for firm's leverage calculated as the ratio of total debt at the end of fiscal year t to total assets at the end of fiscal year t-1
ROE	Return on Equity in fiscal year t, calculated as net income during year t scaled by total equity at the beginning of the year.
CASH	Is cash and short – term investment at the end of fiscal year t scaled by total assets at the beginning of the year.
PPE	Is net properties, plant and equipment divided by total assets at the end of fiscal year t (Clarkson et al., 2008)
SIZE	is the natural logarithm of total assets at the end of fiscal year t-1.
DUALITY	Is a dummy variable which takes 1 when firm's CEO is also the chairman of the board of directors and 0 if otherwise.
PERIDAU	Is the percentage of independent auditors on the audit committee.
LN_EMPLOY	Is the natural logarithm of the number of the employees.

3.2.3. Quality of IR disclosure, earnings quality and abnormal stock returns

IR accounting information contained in earnings announcements plays an important role in the determination of stock prices. Despite its importance, there are studies that show that stock prices do not immediately and fully incorporate the information in earnings announcements and that various accounting-based measures and financial statements components have the ability to predict future stock returns (Balakrishnan et al., 2010). However, the greater sophisticated shareholder presence creates the ability to share prices, to quickly absorb the information contained in earnings announcements and to smooth the post-earnings announcement tendency (Omri, 2017; Bartov et al., 2000; Doyle et al., 2006).

La Porta (1996) checks and verifies that the expectations of stock market analysts regarding the long-term earnings growth of the firms they cover have strong predictive power for these firm's abnormal stock returns. Based on his conclusions, we show that the high levels of IR disclosure quality and earnings quality have predictive power for abnormal stock returns and that this predictive ability is due to high IR implementation. In a mixed sample of firms that apply IR either on a mandatory or voluntary basis, we try to enrich the understanding on IR by providing empirical evidence that since the introduction of IR, firms with high levels of IR disclosure and earnings quality have grater abnormal returns.

Following Burgstahler et al. (2006) and based on prior accounting research (e.g., Healy and Wahlen, 1999; Dechow and Skinner, 2000; Leuz et al., 2003), we compute two different proxies that capture a range of earnings management activities, such as the magnitude of total accruals, the smoothness of earnings relative to cash flows and the association between accounting accruals and operating cash flows (e.g., Lang et al., 2003, 2006; Wysocki, 2004). These two proxies are used as important indicators of financial performance and the influence of the firms' disclosure decisions (Francis et al., 2008). Recognizing social trends that are likely to affect positive business developments and creating appropriate internal incentives that encourage a long term-view, IR can be a useful proxy to control the behaviour of discretionary accruals (Churet and Eccles, 2014). We therefore estimate the following Model:

$$AR_{i,t} = \varphi_0 + \varphi_1 DS_{i,t} + \varphi_2 EPS_{i,t} + \varphi_3 LAGEPS_{i,t-1} + \varphi_4 (DS_{i,t} * EPS_{i,t}) + \varphi_5 (DS_{i,t} * LAGEPS_{i,t}) + \varphi_6 LNMV_{i,t} + \varphi_7 (DS_{i,t} * LNMV_{i,t}) + \varphi_8 (EPS_{i,t} * LNMV_{i,t}) + \varphi_9 (DS_{i,t} * EPS_{i,t} * LNMV_{i,t}) + \varphi_{10} BMR_{i,t} + \varphi_{11} (DS_{i,t} * BMR_{i,t}) + \varphi_{12} PERINBB_{i,t} + \varphi_{13} (DS_{i,t} * PERINBB_{i,t}) + \varphi_{14} (DS_{i,t} * PERINBB_{i,t} * EPS_{i,t}) + \varphi_{15} DEBT\_RATIO_{i,t} + \varphi_{16} FIRM\_SIZE_{i,t} + \varphi_{17} EARNINGS\_QUALITY_{i,t} + \varphi_{18} (DS_{i,t} * EARNINGS\_QUALITY_{i,t}) + \varphi_{19} (DS_{i,t} * EARNINGS\_QUALITY_{i,t} * LNMV_{i,t}) + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t} \quad (3)$$

Because we use two proxies for the EARNINGS_QUALITY, namely, SMOOTHNESS and DAC, we estimate the following two Sub-Models:

$$AR_{i,t} = \varphi_0 + \varphi_1 DS_{i,t} + \varphi_2 EPS_{i,t} + \varphi_3 LAGEPS_{i,t-1} + \varphi_4 (DS_{i,t} * EPS_{i,t}) + \varphi_5 (DS_{i,t} * LAGEPS_{i,t}) + \varphi_6 LNMV_{i,t} + \varphi_7 (DS_{i,t} * LNMV_{i,t}) + \varphi_8 (EPS_{i,t} * LNMV_{i,t}) + \varphi_9 (DS_{i,t} * EPS_{i,t} * LNMV_{i,t}) + \varphi_{10} BMR_{i,t} + \varphi_{11} (DS_{i,t} * BMR_{i,t}) + \varphi_{12} PERINBB_{i,t} + \varphi_{13} (DS_{i,t} * PERINBB_{i,t}) + \varphi_{14} (DS_{i,t} * PERINBB_{i,t} * EPS_{i,t}) + \varphi_{15} DEBT\_RATIO_{i,t} + \varphi_{16} FIRM\_SIZE_{i,t} + \varphi_{17} SMOOTHNESS_{i,t} + \varphi_{18} (DS_{i,t} * SMOOTHNESS_{i,t}) + \varphi_{19} (DS_{i,t} * SMOOTHNESS_{i,t} * LNMV_{i,t}) + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t} \quad (3a)$$

$$AR_{i,t} = \varphi_0 + \varphi_1 DS_{i,t} + \varphi_2 EPS_{i,t} + \varphi_3 LAGEPS_{i,t-1} + \varphi_4 (DS_{i,t} * EPS_{i,t}) + \varphi_5 (DS_{i,t} * LAGEPS_{i,t}) + \varphi_6 LNMV_{i,t} +$$

$$\varphi_7(DS_{i,t}*LNMV_{i,t}) + \varphi_8(EPS_{i,t}*LNMV_{i,t}) + \varphi_9(DS_{i,t}*EPS_{i,t}*LNMV_{i,t}) + \varphi_{10}BMR_{i,t} + \varphi_{11}(DS_{i,t}*BMR_{i,t}) + \varphi_{12}PERINBB_{i,t} + \varphi_{13}(DS_{i,t}*PERINBB_{i,t}) + \varphi_{14}(DS_{i,t}*PERINBB_{i,t}*EPS_{i,t}) + \varphi_{15}DEBT\_RATIO_{i,t} + \varphi_{16}FIRM\_SIZE_{i,t} + \varphi_{17}DAC_{i,t} + \varphi_{18}(DS_{i,t}*DAC_{i,t}) + \varphi_{19}(DS_{i,t}*DAC_{i,t}*LNMV_{i,t}) + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t} \quad (3b)$$

Variable Explanations of Equation **(3)**

Variable	Description
AR	Is the abnormal return equals to expected return minus actual return at the end of the year. Expected return estimated according to CAPM Model.
DS	Is derived from the scale of total received score of each firm to the maximum score (equals to 28 observations based on KING III checklist),
EPS	Is the earnings per share scaled by the stock price at the beginning of the year,
LAGEPS	Is one year lagged earnings per share scaled by the stock price at the beginning of the year,
LNMV	Is the natural logarithm of market value of equity,
BMR	Is book – to – market ratio in fiscal year t. It is calculated as the book value of equity divided by the market value of equity at the end of the year,
PERINBB	Is the percentage of nomination committee members who are independent from the Board,
LEVERAGE	Is another proxy for firm's leverage calculated as the ratio of total debt at the end of fiscal year t to total assets at the end of fiscal year t-1
FIRM_SIZE	Is the natural logarithm of total assets at the end of fiscal year t-1
DAC	Are the residuals that derived from the estimation of the normal accruals equation {DeFond and Subramanyam, 1998; Bartov et al., 2001; Kothari et al., 2004; Garza-Gomez et al., 2006}.
SMOOTHNESS	Is the standard deviation of the operating income to standard deviation of the operating cash flows. Both measures are standardized with total assets.

Where scaling by the cash flows is a control for differences in the variability of economic performance (Dechow et al., 2010).

Previous studies used discretionary accruals as a proxy for earnings management (Cohen and Zarowin, 2010; Kim et al., 2012; Zang, 2012; Jordaan et al., 2018). Similarly, we use discretionary accruals as the first proxy for earnings management, as accruals may be used by managers to manage earnings either upwards or downwards. Following Ball and Shivakumar (2006, 2008), we estimate normal accruals by using the Jones Model (1991) and use a piecewise linear variant to capture the role of accruals in noise reduction and in timely loss recognition:

$$\frac{ACCRUALS_{i,t}}{TA_{i,t-1}} = \lambda 0 + \lambda 1\left(\frac{\Delta SALES_{i,t}}{TA_{i,t-1}}\right) + \lambda 2\left(\frac{PPE_{i,t}}{TA_{i,t-1}}\right) + \lambda 3\left(\frac{CFO_{i,t}}{TA_{i,t-1}}\right) + \lambda 4\left(\frac{\Delta CFO_{i,t}}{TA_{i,t-1}}\right) + \lambda 5\left(\frac{DCFO*CFO_{i,t}}{TA_{i,t-1}}\right) + \text{vit} \quad (5)$$

Here,

$$\text{Accruals} = \{\Delta(\text{Current Assets}) - \Delta(\text{Cash})\} - \{\Delta(\text{Current Liabilities}) - \Delta(\text{Current maturities of long – term debt}) - \Delta(\text{Income Taxes Payable})\} - \{\text{Depreciation and Amortization Expense}\} \quad (4)$$

where change (Δ) is computed as the difference in values from year t to year t – 1.

Further,

Variable Explanations of Equation (5)

Variable	Description
ΔSALES	Is the change in revenues during period t.
PPE	Is net properties, plant and equipment divided to total assets at the end of year t.
CFO	Is cash flow from operations at the end of year t.
DCFO	Is an indicator variable that takes the value one if CFO $<$ 0 and zero otherwise.
DCFO*CFO	An interaction term between DCFO and CFO.
TA	Is book value of total assets at the beginning of year t.

As the second proxy of earnings management, we use the earnings smoothness. As the earnings smoothness measure, we use the ratio of the standard deviation of the operating income to the standard deviation of the operating cash flows (Dechow et al., 2010). A stable earnings stream is capable of supporting a higher level of dividends than a more variable earnings prospect can support. Earnings variability is interpreted as an important measure of the overall riskiness of the firm and has a direct effect on the investors' capitalization rates; thus, it has an adverse effect on the value of a firm's shares and the investors' subjective expectations for possible outcomes of future earnings and dividends (Burgstahler and Eames, 2003).

A significant and positive coefficient of DS x EPS would suggest a significant improvement in earnings informativeness as a result of the IR disclosure quality. The coefficient of DS x EPS x LNMV would be significantly positive if the firm's market value of equity is positively associated with the informativeness resulting from the IR disclosure quality. A significant and negative coefficient of DS x DAC (or DS x SMOOTHNESS) would suggest a significant improvement in earnings quality as a result of the IR disclosure quality. The

coefficient of DS x DAC x LNMV (or DS x SMOOTHNESS x LNMV) would be significantly negative if the firm's market value of equity is positively associated with the earnings quality under IR. A positive coefficient on the association between the increase of the percentage of nomination committee members who are independent from the board of directors and the informativeness from the IR disclosure quality, i.e., DS x PERINBB x EPS, would be expected. Moreover, a positive coefficient on the association between the increase of the percentage of independent directors on the nomination committee and the informativeness from the IR disclosure quality, i.e., DS x PERIDNC x EPS, would be expected. The coefficients of DS x LAGEDEPS, DS x LNMV and DS x BMR are expected to be positive (Klein, 2002; Tucker and Zarowin, 2006; Iatridis, 2018).

In addition to the above Eq. (3) and based on Velte (2018); Pududu and De Villiers (2016) and Jordaan et al. (2018) we create the following Model that tests the direct relation between earnings quality and the IR disclosure quality. Eq. (6) tests whether in terms of high earnings quality, IR is more effective for firms that use IR on a mandatory basis than for firms that use it on a voluntary basis. Eq. (6) is employed as follows:

$$DS_{i,t} = \kappa_0 + \kappa_1 MANDATORY_{i,t} + \kappa_2 EARNINGS\_QUALITY_{i,t} + \kappa_3 (MANDATORY_{i,t} * EARNINGS\_QUALITY_{i,t}) + \kappa_4 SIZE_{i,t-1} + \kappa_5 MBR_{i,t} + \kappa_6 BIG\_4_{i,t} + \kappa_7 ROE_{i,t} + \kappa_8 DUALITY_{i,t} + \kappa_9 INST_{i,t} + \kappa_{10} CGC_{i,t} + \kappa_{11} DIV_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + \nu_{i,t} \quad (6)$$

Because we use two proxies for the EARNINGS_QUALITY, namely, SMOOTHNESS and DAC, we estimate the following two Sub-Models:

$$\mathbf{DS_{i,t} = \kappa_0 + \kappa_1 MANDATORY_{i,t} + \kappa_2 DAC_{i,t} + \kappa_3 SIZE_{i,t-1} + \kappa_4 MBR_{i,t} + \kappa_5 BIG\_4_{i,t} + \kappa_6 ROE_{i,t} + \kappa_7 DUALITY_{i,t} + \kappa_8 INST_{i,t} + \kappa_9 CGC_{i,t} + \kappa_{10} DIV_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + \nu_{i,t}} \quad (6a)$$

$$\mathbf{DS_{i,t} = \kappa_0 + \kappa_1 MANDATORY_{i,t} + \kappa_2 SMOOTHNESS_{,t} + \kappa_3 SIZE_{i,t-1} + \kappa_4 MBR_{i,t} + \kappa_5 BIG\_4_{i,t} + \kappa_6 ROE_{i,t} + \kappa_7 DUALITY_{i,t} + \kappa_8 INST_{i,t} + \kappa_9 CGC_{i,t} + \kappa_{10} DIV_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + \nu_{i,t}} \quad (6b)$$

$$\mathbf{DS_{i,t} = \kappa_0 + \kappa_1 MANDATORY_{i,t} + \kappa_2 DAC_{i,t} + \kappa_3 (MANDATORY_{i,t} * DAC_{,t}) + \kappa_4 SIZE_{i,t-1} + \kappa_5 MBR_{i,t} + \kappa_6 BIG\_4_{i,t} + \kappa_7 ROE_{i,t} + \kappa_8 DUALITY_{i,t} + \kappa_9 INST_{i,t} + \kappa_{10} CGC_{i,t} + \kappa_{11} DIV_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + \nu_{i,t}} \quad (6c)$$

$$\mathbf{DS_{i,t} = \kappa_0 + \kappa_1 MANDATORY_{i,t} + \kappa_2 SMOOTHNESS_{,t} + \kappa_3 (MANDATORY_{i,t} * SMOOTHNESS_{i,t}) + \kappa_4 SIZE_{i,t-1} + \kappa_5 MBR_{i,t} + \kappa_6 BIG\_4_{i,t} + \kappa_7 ROE_{i,t} + \kappa_8 DUALITY_{i,t} + \kappa_9 INST_{i,t} + \kappa_{10} CGC_{i,t} + \kappa_{11} DIV_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + \nu_{i,t}} \quad (6d)$$

Variable Explanations of Equation (6)

Variable	Description
DS	Is derived from the scale of total received score of each firm to the maximum score (equals to 28 observations based on KING III checklist),
MANDATORY	Is a dummy variable which takes 1 when a firm mandatorily uses the IR and 0 when a firm voluntarily uses the IR
DAC	Are the residuals that derived from the estimation of the normal accruals equation {DeFond and Subramanyam, 1998; Bartov et al., 2001; Kothari et al., 2004; Garza-Gomez et al., 2006}.
SMOOTHNESS	Is the standard deviation of the operating income to standard deviation of the operating cash flows. Both measures are standardized with total assets,
SIZE	Is the natural logarithm of total assets at the end of fiscal year t-1,
MBR	Is market – to – book ratio in fiscal year t. It is calculated as the market value of equity divided by the book value of equity at the end of the year,
BIG_4	Is a dummy variable. When a firm is audited by a Big 4 accounting firm the dummy variable equal to 1 and 0 otherwise,
ROE	Is the return on equity in fiscal year t calculated as net income during year t scaled by total equity at the beginning of the year,
DUALITY	Is a dummy variable which takes 1 when a firm's CEO is also the chairman of the board of directors and 0 otherwise,
INST	Is the ratio of number of shares owned by institutional shareholders to total outstanding common shares,
CGC	Is a dummy variable equal to 1 if the firm has a corporate governance committee and 0 otherwise,
DIV	Is the dividend payout ratio equal to the cash common dividends to net income at the end of fiscal year t.

Where scaling by the cash flows is a control for differences in the variability of economic performance (Dechow et al., 2010).

The coefficient κ_2 is the first coefficient of interest that tests the association between earnings quality (through DAC or SMOOTHNESS) and the IR disclosure score. This coefficient would be significantly negative if DAC (or SMOOTHNESS) is negatively associated with the quality of IR disclosure. In Models 6(c) and 6(d), the coefficient κ_3 is the second coefficient of interest and checks the validity of the H_{3a} research hypothesis. A significant and negative coefficient on MANDATORY x DAC (or MANDATORY x SMOOTHNESS) would suggest that in terms of high earnings quality, IR is more effective for firms that use IR on a mandatory basis than for firms that use it on a voluntary basis.

3.3. Methodology

3.3.1. Construction of IR score DS and DDS

This section describes the construction of DS, which is a disclosure score index that measures the IR quality of the provided

information of IR firms. DS consists of all nine content elements in the King III report and the King III code that are confirmed by the IR framework. As further shown in Table A7, DS covers the following broad categories: 1) ethical leadership & corporate citizenship, 2) boards & directors, 3) audit committees, 4) the governance of risk, 5) governance of information technology, 6) compliance with laws, codes, rules and standards, 7) internal audit, 8) governing shareholder relationship, and 9) IR and disclosure. DS is derived from the proportion of the total scores received by each firm to the maximum score. It is implied that the accuracy of the DS would depend on the credibility of the reported financial information.

Based on Amiraslani et al.'s (2013) methodology, we expect that firms with high IR disclosure quality are firms whose proportional accounting disclosures (related to the level of IR compliance) are greater than or equal to the median value of this percentage. Therefore, if a firm has gathered an IR disclosure score equal to or greater than the median price notifications percentage of all sampled firms, the variable DDS, which is an independent variable for all Models of our study, takes a value of 1, indicating high IR information quality. If the accounting disclosure score is less than the median price, then the value of DDS for this firm is 0.

3.3.2. Methodology of econometric estimations

We applied a univariate analysis and created both Pearson and Spearman correlations matrixes to test hypotheses 1, 2 and 3. In the subsequent multivariate analysis, we used the fixed-effects OLS method[5] . In all the estimations, we implemented the Newey and West (1987) method that has been modified for use in a panel data set. Through this method, we created robust standard errors (Liang and Zeger, 1986; Moulton, 1986; Andrews, 1991; Rogers, 1993; Williams, 2000). The Newey-West approach was suitable for panel data, and the estimation results were consistent regarding heteroskedasticity and autocorrelation (Cecchetti et al., 1997 and Sun and Cui, 2014). Finally, the independent variables were standardized to mitigate multicollinearity issues (Kim and Park, 2010).

4. Results

4.1. Descriptive statistics

In Table 3, we report the descriptive statistics for all variables used in this research. In Panel A, we present the descriptive statistics for all the dependent variables of the Eqs. (1)–(9). The average ROA of the firms is 3.8% (st. dev. 6%). On average, the market value of the assets of the firms in our sample is four times larger than their assets' replacement cost (st. dev. 11.034). Furthermore, the average market value per share of our sample is 61.471 million Euros (st. dev. 5.816). The average market-to-book ratio is 4.349 (st. dev. 1.268), implying that the 82 firms of the sample exhibit high growth opportunities. On average, the abnormal stock return is 0.035 (st. dev. 0.3%).

In Panel B, we report the descriptive statistics for financial, corporate governance and other control variables. On average, 52.66% of the firms have independent board members on their audit committee (st. dev. 36.635). The average number of board members is approximately 11 in our sample (st. dev. 3.1). The degree of board independence in the sample firms is approximately 33.6% (st. dev. 20.6%). On average, in 56.5% of the firms, the CEO is also the chairman of the board of directors (st. dev. 49.6%). The proportion of the firms' equity held by institutional shareholders is on average 18.4% (st. dev. 14.4%). In our sample, the average volatility of the annual growth of the firms' operating income is 1.956 (st. dev. 16.145).

In Panel C, we report the descriptive statistics for the other independent variables of our Models. On average, 78.8% of the sample firms are audited by Big 4 auditors (40.9%). On average, the natural logarithm of the number of the firms' employees is 9.439 (st. dev. 1.726). The average beta of our sample firms is 0.778 (st. dev. 48.3%). Finally, the average size of the firms' annual integrated reports is approximately 131 pages (st. dev. 73.703).

In Table 4, we present the correlation matrix. Consistent with our first hypothesis that there is a positive association between IR disclosure quality and firm performance, there is a positive and significant (at the 5% level or better) correlation (by Spearman) between the variables DS (and DDS) with the ROA (and Tobin's Q index). Despite the fact that these individual results are interesting, they do not control for all other factors likely to influence the extent of the firms' performance variability. Consistent with our second hypothesis regarding a positive association between the value relevance of summary accounting information and IR disclosure quality, there is a positive and significant (at the 10% level or better) correlation (by Pearson) between the variables DS and DDS and the MVPS. Moreover, MVPS is significantly associated at a 10% level with LEVERAGE in the Spearman correlations. Consistent with our third hypothesis, there is a positive correlation at the 1% level (according to Pearson's approach) between the abnormal stock return (AR) and the IR disclosure quality metric (DS). Furthermore, we notice a positive and significant correlation (by Spearman) at the 5% level or better among the ROA and the DUALITY, GROWTH, INST, BOARDIND and TURNOVER. Despite the fact that these individual results are interesting, they do not control for all other factors likely to influence the extent of the firms' performance variability. Hence, we apply a multivariate analysis for making inferences (Kanagaretnam et al., 2011; Magnis and Iatridis, 2017).

4.2. Quality of IR disclosure and firm performance

Table 5 depicts the results of Eqs. (1a) and (1b). From that Table, we notice that H_1 holds. Both DS and DDS are positively and significantly associated at the 5% level with the ROA, implying that firms that exhibit higher IR disclosure quality are outperforming. Firms in which the CEO and the chairman are the same person tend to exhibit lower performance than do firms in which the CEO is

[5] Fixed-year effects and two-digit SIC industry fixed effects were included.

not simultaneously the chairman of the board. This result is based on the fact that DUALITY is associated significantly at the 1% level with the ROA, confirming the findings of Weisbach (1988) and Jermias and Gani (2014). We find that boards with a high percentage of independent directors tend to exhibit higher performance since BOARDIND and the ROA are associated positively and significantly at the 10% level or better. Moreover, similar to what we found from Models 1(a) and 1(b), we observe that institutional ownership (INST) is positive and significantly associated at the 5% level or better with the ROA, which suggests that our sample firms benefit from the monitoring activities of institutional shareholders. In Model 1(b), our results predict that firm size is associated positively and significantly at the 5% level with the ROA. Finally, firms with high growth opportunities and that are highly leveraged tend to display high performance because GROWTH is positively and significantly associated at the 10% level or better with the ROA and DEBT_RATIO is negatively and significantly associated at the 10% level with the ROA. Our results are consistent with the findings of previous studies (e.g., Lee and Yeo, 2016).

4.3. Quality of IR disclosure and value relevance

In Table 6, we illustrate the estimation results of the second research hypothesis. We create two Sub-Models, Model 2(a) and 2(b), in which we check the IR disclosure quality in two different ways. In Eq. (2a), we use the independent variable DDS, and in Eq. (2b), we use the independent variable DS. The dependent variable is MVPS. The coefficients of interest are λ_1–λ_3. Firms with a high IR disclosure quality tend to display high market value per share because DDS (or DS) and MVPS are associated positively and significantly at the 5% level or better. Furthermore, the basic summary information focuses on the accounting variables BVPS and

Table 3
Descriptive Statistics.

Variable Panel A: Depended Variables	Mean	Median	Std.Dev.	Max	Min	N
ROA	0.038	0.037	0.060	0.486	−0.329	389
TOBIN'S_Q	4.281	1.254	11.034	85.021	0.072	389
MVPS	8.076	3.239	5.816	61.471	0.666	297
MBR	4.349	1.268	11.123	85.021	0.156	382
AR	0.035	0.035	0.003	0.048	0.027	297
Panel B: Control Variables						
1. Financial Variables: vvvaVariables:						
DS	0.702	0.679	0.151	1.000	0.464	410
DDS	0.598	1.000	0.491	1.000	0.000	410
SIZE	9.711	9.659	2.365	15.963	3.737	297
FIRM_SIZE	9.883	9.660	2.435	1.597	2.397	307
ROE	0.035	0.094	1.152	0.877	−1.956	297
CFO	0.072	0.072	0.060	0.261	−0.288	389
CASH	0.112	0.089	0.109	0.883	0.000	297
TURNOVER	0.927	0.677	0.722	3.811	0.044	389
DEBT_RATIO	0.591	0.598	0.161	0.996	0.069	388
LDEBT_RATIO	1.058	1.040	0.163	1.858	0.414	306
LEVERAGE	0.461	0.465	0.211	1.130	0.000	297
BVPS	2.538	1.682	5.426	3.197	0.066	297
EBTPS	2.807	2.283	7.326	4.593	−2.246	297
PPE	0.313	0.260	0.224	0.890	0.005	297
GROWTH	0.025	0.028	0.486	1.000	−7.636	410
EPS	1.797	1.415	5.213	3.100	−2.170	384
LAGEPS	1.652	1.345	5.153	3.100	−2.170	302
LNMV	9.404	9.032	1.686	16.663	6.637	403
BMR	0.983	0.788	0.817	6.399	0.011	382
STDEVΔOI	1.956	2.024	16.145	76.364	0.082	379
DIV	0.631	0.422	1.317	12.500	−1.524	332
DAC	0.031	0.023	0.039	0.451	5.42E-05	388
SMOOTHNESS	1.877	0.787	6,025	79.262	0.015	365
2. Corporate Governance Variables:						
PERIDAU	52.663	50.750	36.635	100.000	0.000	410
PERINBB	24.485	17.245	9.721	100.000	0.000	410
PERIDNC	47.994	45.500	30.763	100.000	0.000	410
CGC	0.538	1.000	0.499	1.000	0.000	409
BSIZE	11.156	11.000	3.100	20.000	5.000	410
BOARDIND	0.336	0.286	0.206	0.889	0.000	410
DUALITY	0.565	1.000	0.496	1.000	0.000	297
INST	0.184	0.171	0.144	0.632	0.000	410
3. Other Control Variables:						
BIG_4	0.788	1.000	0.409	1.000	0.000	405
MANDATORY	0.268	0.000	0.444	1.000	0.000	410
LN_EMPLOY	9.439	9.602	1.726	12.427	4.094	410

(*continued on next page*)

Table 3 (*continued*)

Variable Panel A: Depended Variables	Mean	Median	Std.Dev.	Max	Min	N
BETA	0.778	0.697	0.483	2.739	−0.397	410
PAR (in pages)	130.681	127.000	73.703	346.000	14.000	410

This table presents descriptive statistics for our sample of firms. The period of interest is 2011–2015 and our sample consists of 82 international firms from around the world listed in the IR database (http://examples.integratedreporting.org/reporters?start=A). **ROA** is the ret urn on assets in fiscal year t calculated as net income during year t scaled by total assets at the beginning of the year. **TOBIN'S_Q** The ratio of the market value of assets to the replacement costs of assets. Market value of assets = the sum of the market value of equity + (book value of assets – book value of equity). Replacement cost of assets = book value of assets (Cheng, 2008; Jermias and Gani, 2014). **MVPS** is the market value of equity scaled by the number of common shares **MBR** is market – to – book ratio in fiscal year t. It is calculated as the market value of equity divided by the book value of equity at the end of the year**. AR** is the abnormal return equals to expected return minus actual return at the end of the year. Expected return estimated according to CAPM Model. **DDS** is a dummy variable equal to 1 if a firm has gathered an IR disclosure score which is equal or greater than the median price notifications percentage of all sampled firms and 0 if otherwise. For more details see Section 3.3.1. **SIZE** is the natural logarithm of total assets at the end of fiscal year t-1. **FIRM_SIZE** is the natural logarithm of total revenue at the end of fiscal year t-1. **ROE** is the return on equity in fiscal year t calculated as net income during year t scaled by total equity at the beginning of the year. **CFO** is the Operating cash flow in fiscal year t scaled by total assets at the beginning of the year. **CASH** are the cash and short – term investment at the end of fiscal year t scaled by total assets at the beginning of the year. **TURNOVER** is a measure of asset utilization that captures how efficiently the firm's assets are used and is estimated as the ratio of annual sales to total assets at the end of fiscal year t. **DEBT_RATIO i**s a proxy of leverage equals to total liabilities to total assets at the end of fiscal year t. **LDEBT_RATIO i**s a proxy of leverage equals to total liabilities at the end of fiscal year t to total assets at the end of fiscal year t-1. **BVPS** is the book value of equity scaled by the number of common shares. **EBTPS** is earnings before interest and taxation scaled by the number of common shares. **LEVERAGE** is another proxy for firm's leverage calculated as the ratio of total debt at the end of fiscal year t to total assets at the end of fiscal year t-1. **BVPS** is the book value of equity scaled by the number of common shares. **EBTPS** is earnings before interest and taxation scaled by the number of common shares. **PPE** is net properties, plant and equipment divided to total assets at the end of fiscal year t (Clarkson et al., 2008). **GROWTH** is the growth in total assets from the beginning to the end of year t.). **EPS** is the earnings per share scaled by the stock price at the beginning of the year. **LAGEPS** is one year lagged earnings per share scaled by the stock price at the beginning of the year. **LNMV** is the natural logarithm of market value of equity. **BMR** Is book – to – market ratio in fiscal year t. It is calculated as the book value of equity divided by the market value of equity at the end of the year. **STDEVΔOI** is the standard deviation of the annual change in the operating income. **DIV** is the dividend payout ratio equal to the cash common dividends to net income at the end of fiscal year t**. DAC** are the discretionary accruals. The normal proportion of accruals estimated by the Jones (1991) Model. DAC are the residuals that derived from the estimation of the normal accruals equation {DeFond and Subramanyam, 1998; Bartov et al., 2001; Kothari et al., 2004; Garza-Gomez et al., 2006}. **SMOOTHNESS** is the ratio of the standard deviation of operating income divided by the standard deviation of cash flow from operations. **PERIDAU** is the percentage of independent board members on the audit committee. **PERINBB** is the percentage of nomination committee members who are independent from the Board. **PERIDNC** is the percentage of independent directors on the nomination committee. **CGC** is a dummy variable equal to 1 if the firm has a corporate governance committee and 0 otherwise. **BSIZE** is the number of directors on the Board. **BOARDIND** is the board independence ratio measured as the number of independent directors divided by total board size. **DUALITY** is a dummy variable which takes 1 when a firm's CEO is also the chairman of the board of directors and 0 otherwise. **INST** is the ratio of number of shares owned by institutional shareholders to total outstanding common shares. **BIG_4** is a dummy variable. When a firm is audited by a Big 4 accounting firm the dummy variable equal to 1 and 0 otherwise. **MANDATORY** is a dummy variable which takes 1 when a firm mandatorily uses the IR and 0 when a firm voluntarily uses the IR. **LN_EMPLOY** is the natural logarithm of the number of the employees. **BETA** is the market beta coefficient obtained from Datastream for each firm and for each year. **PAR** is the natural logarithm of the pages' number of the annual reports.

EBTPS, which are positive and highly significant at the 10% level or better. This finding can be interpreted as an increase in the book value of equity and earnings before taxes that positively affected the market valuation of our firms during the five-year period (2011–2015). Additionally, we observe that the variables LEVERAGE, PPE and CASH are positively and significantly associated at the 5% level or better with the dependent variable MVPS, implying that firms with high levels of leverage, operating performance and liquidity display higher market valuation and confirming the findings of Iatridis (2012b) and Lourenco et al. (2014).

In comparison with firms with smaller numbers of employees, firms with a large number of employees tend to exhibit higher market valuation levels. Firms in which an audit committee is considered as a corporate governance mechanism tend to realize a higher valuation from the markets because the variable PERIDAU is associated positively and significantly at the 5% level or better with MVPS. Stakeholders can more effectively evaluate large firms with a high proportion of fixed assets to total assets than they can evaluate firms without these characteristics. Finally, firms in which the CEO is also chairman of the board tend to display lower market valuation than do firms in which the CEO and the chairman of the board are different persons.

4.4. Quality of IR disclosure and abnormal stock returns

Eq. (3) tests the association between the predictive power of abnormal stock returns and the level of earnings quality from IR disclosure. Table 7 provides evidence in favour of H_3. Abnormal stock returns are proved to be positively associated with the level of earnings quality under IR. The dependent variable is AR. The coefficient EPS is associated positively and significantly at the 1% level with the abnormal stock returns. The coefficient DS x DAC (or DS x SMOOTHNESS) is negatively and significantly associated at the

Table 4
Correlation Matrix.

Correlation Matrix	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1)ROA	**1.00**	−0.03	−0.06	−0.04	0.27***	0.04**	0.05*	0.08	0.02	0.21***	0.17***	0.12**	0.16***	−0.06	−0.05
(2)TOBIN'S_Q	−0.05	**1.00**	0.05	0.99***	0.10*	0.14**	0.06	−0.08	−0.03	−0.13**	0.16***	−0.14**	−0.06	−0.44***	0.04
(3)MVPS	−0.07	0.50***	**1.00**	0.06	0.09	0.09*	0.19***	−0.13***	0.14**	−0.26***	−0.05	0.03	0.12**	0.21***	0.05
(4) MBR	−0.17***	0.87***	0.36***	**1.00**	0.11**	0.16***	0.07	−0.07	−0.01	−0.14***	0.16***	−0.14**	−0.06	−0.43***	0.08
(5)AR	0.18***	0.15***	0.11*	0.13**	**1.00**	0.21***	0.26***	0.06	0.08	0.40***	0.22***	0.06	0.03	0.27***	−0.05*
(6) DDS	0.02***	0.15**	−0.01	0.12**	0.19***	**1.00**	0.73***	0.18***	0.14*	0.14**	0.24***	−0.05	0.10*	−0.10*	−0.10*
(7) DS	0.03***	0.19***	0.04**	0.14**	0.22***	0.82***	**1.00**	0.17***	0.14**	0.05	0.33***	−0.01	0.25***	−0.08	−0.12*
(8) DUALITY	0.16***	0.06	0.07	0.11**	0.02	0.18***	0.20***	**1.00**	0.20***	−0.04	−0.19***	−0.00	−0.14**	0.00	0.21***
(9) BSIZE	0.01	−0.19***	−0.08	−0.08	0.08	0.14**	0.17***	0.19***	**1.00**	−0.04	−0.23***	0.03	−0.27***	0.34***	0.07
(10) BOARDIND	0.13**	−0.03	−0.35***	0.17***	0.33***	0.13**	0.06	−0.09	0.03	**1.00**	−0.21***	0.00	−0.02	−0.30***	−0.01
(11) INST	0.21***	0.13**	−0.03	0.04	0.19***	0.23***	0.29***	−0.18***	−0.21***	0.19***	**1.00**	0.01	0.35***	−0.21***	−0.15***
(12) GROWTH	0.19***	0.10*	0.12	0.08	0.08	−0.04	0.01	0.03	−0.09	−0.15***	0.16***	**1.00**	0.12**	−0.11**	−0.03
(13) TURNOVER	0.19**	0.08	0.24***	−0.04	0.11**	0.07	0.14**	−0.02	−0.27***	−0.14**	0.26***	0.18***	**1.00**	−0.17***	0.44***
(14) SIZE	−0.10*	−0.64***	−0.23***	−0.40***	0.31***	−0.13**	−0.15***	0.02	0.37***	−0.19***	−0.25***	−0.13**	−0.16***	**1.00**	0.00
(15) LEVERAGE	−0.09	0.17***	−0.10*	0.29***	0.01	−0.14**	−0.14**	0.19***	0.08	0.00	−0.12**	0.03	−0.42***	−0.00	**1.00**

Spearman and Pearson correlations among performance and control variables are illustrated in the Table below. Below the diagonal the Spearman correlations are reported while Pearson correlations are reported above the diagonal. **ROA** is the ret urn on assets in fiscal year t calculated as net income during year t scaled by total assets at the beginning of the year. **TOBIN'S_Q** is the ratio of the market value of assets to the replacement costs of assets (Cheng, 2008; Jermias and Gani, 2014). **MVPS** is the market value of equity scaled by the number of common shares **MBR** is market – to – book ratio in fiscal year t. It is calculated as the market value of equity divided by the book value of equity at the end of the year. **AR** is the abnormal return equals to expected return minus actual return at the end of the year. Expected return estimated according to CAPM Model. **DDS** is a dummy variable equal to 1 if a firm has gathered an IR disclosure score which is equal or greater than the median price notifications percentage of all sampled firms and 0 if otherwise. For more details see Section 3.3.1. **DS** is derived from the scale of total received score of each firm to the maximum score (equals to 28 observations based on KING III checklist). **DUALITY** is a dummy variable which takes 1 when a firm's CEO is also the chairman of the board of directors and 0 otherwise. **BSIZE** is the number of directors on the Board. **BOARDIND** is the board independence ratio measured as the number of independent directors divided by total board size. **INST** is the ratio of number of shares owned by institutional shareholders to total outstanding common shares. **GROWTH** is the growth in total assets from the beginning to the end of year t. **TURNOVER** is a measure of asset utilization that captures how efficiently the firm's assets are used and is estimated as the ratio of annual sales to total assets at the end of fiscal year t. **SIZE** is the natural logarithm of total assets at the end of fiscal year t-1. **LEVERAGE** is another proxy for firm's leverage calculated as the ratio of total debt at the end of fiscal year t to total assets at the end of fiscal year t − 1. T – statistic and p – values (in the parentheses) for each estimated variable are provided in columns right to these outputs. The superscripts ***, ** and * denote significance at 1%, 5% and 10% respectively.

Table 5
Quality of IR Disclosure and Firm's Performance.

Dependent Variable: ROA					
		Model 1(a)		Model 1(b)	
Variable	Predicted Sign	Coefficient	T –Statistic (P-values)	Coefficient	T –Statistic (P-values)
Intercept	?	−0.1336*	−1.83 (0.07)	−0.1206***	−10.10 (0.00)
DDS	+	0.0313**	2.02 (0.05)		
DS	+			0.0232**	2.17 (0.03)
DUALITY	?	−0.0145**	−2.09 (0.04)	−0.0156**	−2.41(0.01)
BSIZE	+	0.0012	1.33 (0.18)	0.0005	0.79 (0.43)
BOARDIND	+	0.0750***	3.43 (0.00)	0.0714*	10.25 (0.08)
INST	+	0.0793***	3.27 (0.00)	0.0869**	10.42 (0.03)
GROWTH	+	0.0138*	1.66 (0.09)	0.0121**	1.78 (0.05)
FIRM_SIZE	+	0.0019	1.12 (0.26)	0.0017**	2.18(0.04)
DEBT_RATIO	–	−0.0519*	−1.90 (0.06)	−0.0114	−0.35 (0.72)
Industry Fixed Effects		Yes		Yes	
Year Fixed Effects		Yes		Yes	
Adj. R^2		19.774%		18.312%	
N		307		306	

$ROA_{i,t} = a_0 + a_1DS_{i,t} + a_2DUALITY_{i,t} + \alpha_3BSIZE_{i,t} + \alpha_4BOARDIND_{i,t} + a_5INST_{i,t} + a_5GROWTH_{i,t} + a_6FIRM\_SIZE_{i,t} + a_7DEBT\_RATIO_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t}$ 1(a).

$ROA_{i,t} = a_0 + a_1DDS_{i,t} + a_2DUALITY_{i,t} + \alpha_3BSIZE_{i,t} + \alpha_4BOARDIND_{i,t} + a_5INST_{i,t} + a_5GROWTH_{i,t} + a_6FIRM\_SIZE_{i,t} + a_7DEBT\_RATIO_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t}$ 1(b).

The period of interest is 2011–2015. Our sample consists of 82 international firms listed in IR database (http://examples.integratedreporting.org/reporters?start=A). **ROA** is the ret urn on assets in fiscal year t calculated as net income during year t scaled by total assets at the beginning of the year. **DDS** is a dummy variable equal to 1 if a firm has gathered an IR disclosure score which is equal or greater than the median price notifications percentage of all sampled firms and 0 if otherwise. For more details see Section 3.3.1. **DS** is derived from the scale of total received score of each firm to the maximum score (equals to 28 observations based on KING III checklist). **DUALITY** is a dummy variable which takes 1 when a firm's CEO is also the chairman of the board of directors and 0 otherwise. **BSIZE** is the number of directors on the Board. **BOARDIND** is the board independence ratio measured as the number of independent directors divided by total board size. **INST** is the ratio of number of shares owned by institutional shareholders to total outstanding common shares. **GROWTH** is the growth in total assets from the beginning to the end of year t. **FIRM_SIZE** is the natural logarithm of total revenue at the end of fiscal year t-1. **DEBT_RATIO i**s a proxy of leverage equals to total liabilities at the end of fiscal year t to total assets at the end of fiscal year t − 1. T – statistic and p – values (in the parentheses) for each estimated variable are provided in the columns right to each estimated coefficient. The superscripts *, ** and *** denote significance at 10%, 5% and 1% respectively.

5% level with the dependent variable, indicating a significant improvement in the level of earnings quality from IR disclosure for firms with high levels of earnings quality. The coefficient of interest is φ_{19}. The AR and the DS x DAC x LNMV (or DS x SMOOTHNESS x LNMV) are associated negatively and significantly at the 1% level (or 5% level), reflecting the positive relation between the firm's market value and the level of earnings quality under IR.

The coefficient DS x LNMV is positively and significantly associated at 1% level with the dependent variable, indicating a significant improvement in the informativeness resulting from the IR disclosure quality in firms with high market value. The AR and the DS x EPS x LNMV are associated positively and significantly at the 1% level, reflecting the positive relation between the firm's market value and the informativeness from IR disclosures.

Moreover, this implies that IR disclosure quality enhances earnings informativeness more for firms with a high market value. Hence, firms with high market value may provide high-quality IR disclosure accounting information to shareholders. As shown by the positive coefficient on DS x PERINBB x EPS, the percentage of nomination committee members who are independent from the board is related positively and significantly at the 5% level to the earnings informativeness from the IR disclosure quality. Finally, the AR and the DEBT_RATIO are associated negatively and significantly at 5% level, indicating the liquidity is positively related to firm value. Our results confirm the findings of Barth et al. (2017).

Table 8 provides the results of the multivariate regression analyses for the four Models (6(a), 6(b), 6(c) and 6(d)). In Models 6(c) and 6(d), we notice that H_{3a} holds and is in line with the stakeholder theoretical framework. Both MANDATORY x DAC and MANDATORY x SMOOTHNESS are negatively and significantly associated at the 5% level of better with DS, implying that in terms of high earnings quality, IR is more effective for firms that use IR on a mandatory basis than for firms that use IR on a voluntary basis. A possible interpretation of this finding is that the mandatory implementation of IR in the South African legislative framework has led these firms to a more sophisticated implementation of the framework and to providing better quality accounting information. The earnings quality of South African firms has a greater impact on the quality of IR disclosure than that of firms that have voluntarily established IR disclosure. Our results support the findings of Velte (2018); Pududu and De Villiers (2016) and Jordaan et al. (2018).

With regard to our corporate governance variables as controls, BIG 4, DUALITY, INST, and CGC are positively and significantly associated at the 1% level with DS in both regression Models. We found evidence to support the assumption that a better readability of integrated reports can be enhanced when the following conditions exist: the firms are audited by a Big 4 accounting firm; the CEO is also the chairman of the board of directors; the firms have a high percentage of institutional shareholders; and the firm has a corporate governance committee. Furthermore, the variables of firm SIZE and MBR are positively related to DS, which is also in line

Table 6
Quality of IR Disclosure and Value Relevance.

Dependent Variable: MVPS		Model 2(a)		Model 2(b)	
Variable	Predicted Sign	Coefficients	T –Statistic (P-values)	Coefficients	T –Statistic (P-values)
Intercept	?	−290.3655	−1.50 (0.13)	−849.7267*	−2.37 (0.02)
DDS	+	168.9737**	2.84 (0.01)		0
DS	+			788.2193***	2.73 (0.01)
BVPS	+	0.2460*	1.78 (0.08)	0.2390*	1.84 (0.07)
EBTPS	+	2.9434**	2.15 (0.03)	2.9392**	2.23 (0.03)
LEVERAGE	–	548.5296**	2.56 (0.01)	549.3768***	2.62 (0.01)
ROE	+	−2.6200	−0.46 (0.65)	3.0648	0.53 (0.60)
CASH	+	391.8818**	2.13 (0.03)	472.0811**	2.27 (0.02)
PPE	–	−262.6333**	−1.96 (0.05)	−185.3458	−1.61 (0.11)
SIZE	+	−36.7952**	−2.12 (0.03)	−32.7255**	−2.03 (0.04)
DUALITY	–	−183.4787***	−2.64 (0.00)	−201.14584***	−2.73 (0.01)
PERIDAU	+	2.8582***	2.65 (0.00)	2.4641**	2.61 (0.02)
LN_EMPLOY	+	49.0839**	2.27 (0.02)	49.3140**	2.29 (0.03)
Industry Fixed Effects		Yes		Yes	
Year Fixed Effects		Yes		Yes	
Adj. R^2		36.652%		38.098%	
N		297		297	

$MVPS_{i,t} = \lambda_0 + \lambda_1 DDS_{i,t} + \lambda_2 BVS_{i,t} + \lambda_3 EBITPS_{i,t} + \lambda_4 LEVERAGE_{i,t} + \lambda_5 ROE_{,t} + \lambda_6 CASH_{i,t} + \lambda_7 PPE_{i,} + \lambda_8 SIZE_{i,t} + \lambda_9 DUALITY_{i,t} + \lambda_{10} PERIDAU_{i,t} + \lambda_{11} LN\_EMPLOY_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + e_{it}$ 2(a).

$MVPS_{i,t} = \lambda_0 + \lambda_1 DS_{i,t} + \lambda_2 BVS_{i,t} + \lambda_3 EBITPS_{i,t} + \lambda_4 LEVERAGE_{i,t} + \lambda_5 ROE_{,t} + \lambda_6 CASH_{i,t} + \lambda_7 PPE_{i,} + \lambda_8 SIZE_{i,t} + \lambda_9 DUALITY_{i,t} + \lambda_{10} PERIDAU_{i,t} + \lambda_{11} LN\_EMPLOY_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + e_{it}$ 2(b).

The period of interest is 2011–2015. Our sample consists of 82 international firms listed in IR database (http://examples.integratedreporting.org/reporters?start=A). **MVPS** is the market value of equity scaled by the number of common shares. The (independent) variables of interest are the DDS and the DS. **DDS** is a dummy variable equal to 1 if a firm has gathered an IR disclosure score which is equal or greater than the median price notifications percentage of all sampled firms and 0 if otherwise. For more details see Section 3.3.1. **DS** is derived from the scale of total received score of each firm to the maximum score (equals to 28 observations based on KING III checklist). All other variables are defined in the footnotes of the Table 4.1. T – statistic and p – values (in the parentheses) for each estimated variable are provided in columns (4) and (6). The superscripts *, ** and *** denote significance at 10%, 5% and 1% respectively.

with our initial suggestions. Finally, the dividend payout ratio's influence on DS is positive and significant at the 1% level.

5. Robustness checks

5.1. Quality of IR disclosure and firm's performance

Following Lee and Yeo's (2016) and Jermias and Gani's (2014) methodology of sensitivity analysis, we use Tobin's Q index instead of operating profitability as a measure of market value. Based on Cheng (2008), we measure the Tobin's Q ratio as the market value of assets divided by the replacement cost of assets. The market value of assets equals the market value of equity plus the difference between the book value of assets and the book value of equity. We use the book value of assets as a proxy for the replacement cost of assets (Jermias and Gani, 2014). Using Tobin's Q as a measure of firm value, Lee and Yeo (2016) find evidence of a relationship between the degree of integration and market value and, further, that the relationship is stronger for firms with higher degrees of organizational complexity and with higher external financing needs. Hence, we estimate the following Equation:

$$\boldsymbol{TOBIN'S\_Q_{i,t} = a_0 + a_1\ \lambda_1 DISCLOSURE\_QUALITY_{i,t} + a_2 DUALITY_{i,t} + a_3 BSIZE_{i,t} + a_4 BOARDIND_{i,t} + a_5 INST_{i,t} + a_6 GROWTH_{i,t} + a_7 TURNOVER_{i,t} + a_8 SIZE_{i,t} + a_9 LEVERAGE_{i,t} + a_{10} STDEV\Delta OI_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + \nu_{i,t}} \quad (7)$$

We create two Sub-Models, Model 7(a) and 7(b), in which we test the IR disclosure quality in two different ways. In Model 7(a), we use the independent variable DDS, and in Model 7(b), the independent variable DS.

$$\boldsymbol{TOBIN'S\_Q_{i,t} = a_0 + a_1 DDS_{i,t} + a_2 DUALITY_{i,t} + a_3 BSIZE_{i,t} + a_4 BOARDIND_{i,t} + a_5 INST_{i,t} + a_6 GROWTH_{i,t} + a_7 TURNOVER_{i,t} + a_8 SIZE_{i,t} + a_9 LEVERAGE_{i,t} + a_{10} STDEV\Delta OI_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + \nu_{i,t}} \quad (7a)$$

$$\boldsymbol{TOBIN'S\_Q_{i,t} = a_0 + a_1 DS_{i,t} + a_2 DUALITY_{i,t} + a_3 BSIZE_{i,t} + a_4 BOARDIND_{i,t} + a_5 INST_{i,t} + a_6 GROWTH_{i,t} + a_7 TURNOVER_{i,t} + a_8 SIZE_{i,t} + a_9 LEVERAGE_{i,t} + a_{10} STDEV\Delta OI_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + \nu_{i,t}} \quad (7b)$$

The coefficient of interest is α_1. The independent variables DDS and DS are associated positively and significantly at the 1% level

Table 7
IR Disclosure, Earnings Quality and Abnormal Stock Returns.

Dependent Variable: AR		Model 3(a)		Model 3(b)	
Variable	Predicted Sign	Coefficient	T –Statistic (P-values)	Coefficient	T –Statistic (P-values)
Intercept	?	0.0463***	9.38 (0.00)	0.0465***	9.66 (0.00)
DS	+	−0.0203***	−3.72 (0.00)	−0.0198***	−3.76 (0.00)
EPS	+	0.0001***	5.30 (0.00)	0.0001***	5.17 (0.00)
LAGEPS	+	1.02E-05	0.37 (0.71)	5.54E-06	0.19 (0.84)
DS*EPS	+	2.81E-06	0.69 (0.49)	2.35E-06	0.54 (0.59)
DS*LAGEPS	+	−1.47E-05	−0.39 (0.69)	−6.56E-06	−0.16 (0.87)
LNMV	+	−0.0005	−0.94 (0.35)	−0.0004	−0.82 (0.41)
DS*LNMV	+	0.0007	1.39 (0.16)	0.0007	1.17 (0.24)
LNMV*EPS	+	−2.70E-05***	−4.45 (0.00)	−2.73E-05***	−4.26 (0.00)
DS*EPS*LNMV	+	0.0001***	3.71(0.00)	0.0001***	3.52 (0.00)
BMR	+	−0.0005**	−2.08 (0.04)	−0.0005**	−2.52 (0.02)
DS*BMR	+	−4.38E-06	−1.14 (0.25)	−2.92E-06	−0.71 (0.48)
PERINBB	?	−0.0002***	−4.07 (0.00)	−0.0002***	−3.86 (0.00)
DS*PERINBB	+	0.0003***	4.23 (0.00)	0.0003***	4.01 (0.00)
DS*PERINBB*EPS	+	−1.24E-06**	−2.20 (0.03)	−1.35E-06**	−2.42 (0.02)
DEBT_RATIO	–	−0.0026**	−2.21 (0.03)	−0.0027**	−2.34 (0.02)
FIRM_SIZE	+	0.0004***	4.49 (0.00)	0.0004***	4.60 (0.00)
SMOOTHNESS	–	−2.5263**	−2.18 (0.03)		
DS* SMOOTHNESS	–	−5.8777**	−2.54 (0.01)		
DS* SMOOTHNESS*LNMV	–	−0.2779**	−2.10 (0.03)		
DAC	–			0.0007	0.06 (0.95)
DS*DAC	–			−0.0458**	−2.08 (0.04)
DS*DAC*LNMV	–			−0.0005***	−2.63 (0.00)
Industry Fixed Effects		Yes		Yes	
Year Fixed Effects		Yes		Yes	
Adj. R^2		34.7492%		34.1618%	
N		293		293	

This Table presents the estimations from the Equations below:

$AR_{i,t} = \varphi_0 + \varphi_1 DS_{i,t} + \varphi_2 EPS_{i,t} + \varphi_3 LAGEPS_{i,t-1} + \varphi_4 (DS_{i,t}*EPS_{i,t}) + \varphi_5 (DS_{i,t}*LAGEPS_{i,t}) + \varphi_6 LNMV_{i,t} + \varphi_7 (DS_{i,t}*LNMV_{i,t}) + \varphi_8 (EPS_{i,t}*LNMV_{i,t}) + \varphi_9 (DS_{i,t}*EPS_{i,t}*LNMV_{i,t}) + \varphi_{10} BMR_{i,t} + \varphi_{11} (DS_{i,t}*MRB_{i,t}) + \varphi_{12} PERINBB_{i,t} + \varphi_{13} (DS_{i,t}*PERINBB_{i,t}) + \varphi_{14} (DS_{i,t}*PERINBB_{i,t}*EPS_{i,t}) + \varphi_{15} DEBT\_RATIO_{i,t} + \varphi_{16} FIRM\_SIZE_{i,t} + \varphi_{17} SMOOTHNESS_{i,t} + \varphi_{18} (DS_{i,t}*SMOOTHNESS_{i,t}) + \varphi_{19} (DS_{i,t}*SMOOTHNESS_{i,t}*LNMV_{i,t}) + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t}$ (3a).

$AR_{i,t} = \varphi_0 + \varphi_1 DS_{i,t} + \varphi_2 EPS_{i,t} + \varphi_3 LAGEPS_{i,t-1} + \varphi_4 (DS_{i,t}*EPS_{i,t}) + \varphi_5 (DS_{i,t}*LAGEPS_{i,t}) + \varphi_6 LNMV_{i,t} + \varphi_7 (DS_{i,t}*LNMV_{i,t}) + \varphi_8 (EPS_{i,t}*LNMV_{i,t}) + \varphi_9 (DS_{i,t}*EPS_{i,t}*LNMV_{i,t}) + \varphi_{10} BMR_{i,t} + \varphi_{11} (DS_{i,t}*BMR_{i,t}) + \varphi_{12} PERINBB_{i,t} + \varphi_{13} (DS_{i,t}*PERINBB_{i,t}) + \varphi_{14} (DS_{i,t}*PERINBB_{i,t}*EPS_{i,t}) + \varphi_{15} DEBT\_RATIO_{i,t} + \varphi_{16} FIRM\_SIZE_{i,t} + \varphi_{17} DAC_{i,t} + \varphi_{18} (DS_{i,t}*DAC_{i,t}) + \varphi_{19} (DS_{i,t}*DAC_{i,t}*LNMV_{i,t}) + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t}$ (3b).

The period of interest is 2011–2015. The sample consists of 82 international firms listed in IR database (http://examples.integratedreporting.org/reporters?start=A). **AR** is the abnormal return equals to expected return minus actual return at the end of the year. Expected return estimated according to CAPM model. **DS** is derived from the scale of total received score of each firm to the maximum score (equals to 28 observations based on KING III checklist). **EPS** is the earnings per share scaled by the stock price at the beginning of the year. **LAGEPS** is one year lagged earnings per share scaled by the stock price at the beginning of the year. **LNMV** is the natural logarithm of market value of equity. **BMR** Is book – to – market ratio in fiscal year t. It is calculated as the book value of equity divided by the market value of equity at the end of the year. **PERINBB** is the percentage of nomination committee members who are independent from the Board. **DEBT_RATIO i**s a proxy of leverage equals to total liabilities at the end of fiscal year t to total assets at the end of fiscal year t-1. **FIRM_SIZE** is the natural logarithm of total revenue at the end of fiscal year t-1. **SMOOTHNESS** is the ratio of the standard deviation of operating income divided by the standard deviation of cash flow from operations. **DAC** are the residuals that derived from the estimation of the normal accruals equation {DeFond and Subramanyam, 1998; Bartov et al., 2001; Kothari et al., 2004; Garza-Gomez et al., 2006}. T – statistic and p – values (in the parentheses) for each estimated variable are provided in columns right to these outputs The superscripts *, ** and *** denote significance at 10%, 5% and 1% respectively.

with Tobin's Q, implying that compared to those that display a lower quality of IR disclosure, firms with a higher IR disclosure quality tend to exhibit higher performance. Furthermore, as we expected, stronger corporate governance mechanisms lead to higher performance. Specifically, from Table 9, our results align with the results of Table 5.

We observe that compared to firms in which the CEO and the chairman of the board are independent persons, firms in which the CEO is simultaneously the chairman of the board of directors present lower performance. Additionally, compared to firms with a smaller board size, firms with a high number of board members tend to display a lower performance, confirming the findings of Weisbach (1988) and Jermias and Gani (2014).The negative association between board size and performance is also consistent with the argument that a larger board takes more time and effort to reach consensus and encounters more free-riding problems among directors (Cheng, 2008).

Additionally, our results indicate that institutional ownership (INST) is positive and significant at the 1% level, suggesting that firms benefit from the monitoring activities of institutional shareholders and confirming the findings of Bushee (1998) and Cyert et al. (2002). Furthermore, in both Models 7(a) and 7(b), our findings suggest that firm size is negatively and significantly associated with

Table 8
IR Disclosure and Earnings Quality.

Dependent Variable: DS		Model 6(a)		Model 6(b)		Model 6(c)		Model 6(d)	
Variable	Predicted Sign	Coefficient	T –Statistic (P-values)	Coefficient	T –Statistic (P-values)	Coefficient	T –Statistic (P-values)	Coefficient	T –Statistic (P-values)
Intercept	?	0.2067***	3.38 (0.00)	0.2232***	3.33 (0.00)	0.5142***	12.91 (0.00)	0.4899***	14.81 (0.00)
MANDATORY	?	0.1219***	14.49 (0.00)	0.1241***	14.12 (0.00)	0.1204***	7.03 (0.00)	0.1357***	8.25 (0.00)
DAC	–	−0.1622*	−1.76 (0.07)			−0.2663*	−1.78 (0.07)		
MANDATORY*DAC	?					0.5323**	2.08 (0.04)		
SMOOTHNESS	+			−0.1701*	−1.76 (0.07)			−0.2257**	−2.18 (0.03)
MANDATORY*SMOOTHNESS	?							3.1618***	3.05 (0.00)
SIZE	+	0.0172***	4.39 (0.00)	0.0169***	4.26 (0.00)	0.0074***	2.95 (0.00)	0.0083***	2.65 (0.00)
MBR	+	0.1380***	6.04 (0.00)	0.1310***	4.74 (0.00)	0.0012**	2.30 (0.02)	0.0014***	4.44 (0.00)
BIG_4	+	0.0374***	6.36 (0.00)	0.0378***	6.97 (0.00)	0.0414***	3.08 (0.00)	0.0405***	8.34 (0.00)
ROE	+	−0.0069***	−4.23 (0.00)	−0.0081***	−3.45 (0.00)	−0.0160***	−3.36 (0.00)	−0.0162***	−16.43 (0.00)
DUALITY	+	0.0410***	3.73 (0.00)	0.0371***	3.27 (0.00)	0.0484***	4.45 (0.00)	0.0427***	3.82 (0.00)
INST	+	0.1421***	8.78 (0.00)	0.1390***	6.90 (0.00)	0.1305***	2.92 (0.00)	0.1122***	4.89 (0.00)
CGC	+	0.1153***	8.68 (0.00)	0.1155***	7.83 (0.00)	0.1155***	9.46 (0.00)	0.1151***	7.05 (0.00)
DIV	+	0.1551***	5.3 (0.00)	0.1029***	3.82 (0.00)	0.1639***	1.91 (0.00)	0.0639***	3.56 (0.00)
Industry Fixed Effects		Yes		Yes		Yes		Yes	
Year Fixed Effects		Yes		Yes		Yes		Yes	
Adj. R^2		59.0756%		58.8605%		55.3164%		59.1523%	
N		323		314		323		314	

This Table presents the estimations from the Equations below:

$DS_{i,t} = \kappa_0 + \kappa_1 MANDATORY_{i,t} + \kappa_2 DAC_{i,t} + \kappa_3 SIZE_{i,t-1} + \kappa_4 MBR_{i,t} + \kappa_5 BIG\_4_{i,t} + \kappa_6 ROE_{i,t} + \kappa_7 DUALITY_{i,t} + \kappa_8 INST_{i,t} + \kappa_9 CGC_{i,t} + \kappa_{10} DIV_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t}$ (6a).

$DS_{i,t} = \kappa_0 + \kappa_1 MANDATORY_{i,t} + \kappa_2 SMOOTHNESS_{,t} + \kappa_3 SIZE_{i,t-1} + \kappa_4 MBR_{i,t} + \kappa_5 BIG\_4_{i,t} + \kappa_6 ROE_{i,t} + \kappa_7 DUALITY_{i,t} + \kappa_8 INST_{i,t} + \kappa_9 CGC_{i,t} + \kappa_{10} DIV_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t}$ (6b).

$DS_{i,t} = \kappa_0 + \kappa_1 MANDATORY_{i,t} + \kappa_2 DAC_{i,t} + \kappa_3 (MANDATORY_{i,t} * DAC_{,t}) + \kappa_4 SIZE_{i,t-1} + \kappa_5 MBR_{i,t} + \kappa_6 BIG\_4_{i,t} + \kappa_7 ROE_{i,t} + \kappa_8 DUALITY_{i,t} + \kappa_9 INST_{i,t} + \kappa_{10} CGC_{i,t} + \kappa_{11} DIV_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t}$ (6c).

$DS_{i,t} = \kappa_0 + \kappa_1 MANDATORY_{i,t} + \kappa_2 SMOOTHNESS_{,t} + \kappa_3 (MANDATORY_{i,t} * SMOOTHNESS_{i,t}) + \kappa_4 SIZE_{i,t-1} + \kappa_5 MBR_{i,t} + \kappa_6 BIG\_4_{i,t} + \kappa_7 ROE_{i,t} + \kappa_8 DUALITY_{i,t} + \kappa_9 INST_{i,t} + \kappa_{10} CGC_{i,t} + \kappa_{11} DIV_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t}$ (6d).

The period of interest is 2011–2015. The sample consists of 82 international firms listed in IR database (http://examples.integratedreporting.org/reporters?start=A). **DS** is derived from the scale of total received score of each firm to the maximum score (equals to 28 observations based on KING III checklist). **MANDATORY** is a dummy variable which takes 1 when a firm mandatorily uses the IR and 0 when a firm voluntarily uses the IR. **DAC** are the residuals that derived from the estimation of the normal accruals equation {DeFond and Subramanyam, 1998; Bartov et al., 2001; Kothari et al., 2004; Garza-Gomez et al., 2006}. **SMOOTHNESS** is the ratio of the standard deviation of operating income divided by the standard deviation of cash flow from operations. The rest variables are analyzed in Table 4.1. T – statistic and p – values (in the parentheses) for each estimated variable are provided in columns right to these outputs The superscripts *, ** and *** denote significance at 10%, 5% and 1% respectively.

Table 9
Quality of IR Disclosure and Firm's Performance.

Dependent Variable: TOBIN'S_Q		Model 7(a)		Model 7(b)	
Variable	Predicted Sign	Coefficient	T –Statistic (P-values)	Coefficient	T –Statistic (P-values)
Intercept	?	36.3514***	10.58 (0.00)	34.7441***	12.19 (0.00)
DDS	+	2.4997***	10.99 (0.00)		
DS	+			5.0057***	2.81 (0.00)
DUALITY	–	−3.0373***	−9.23 (0.00)	−2.8466***	−12.72 (0.00)
BSIZE	–	−0.7281***	−23.76 (0.00)	−0.7306***	−18.87 (0.00)
BOARDIND	+	−13.8845***	−12.74 (0.00)	−13.3270***	−14.94 (0.00)
INST	+	7.5070***	7.72 (0.00)	8.0268***	8.58 (0.00)
GROWTH	+	−1.6747***	−4.36 (0.00)	−1.6766***	−3.92 (0.00)
TURNOVER	+	−2.6177***	−6.15 (0.00)	−2.8789***	−5.75 (0.00)
SIZE	+	−2.8109***	−16.32 (0.00)	−2.8516***	−17.57 (0.00)
LEVERAGE	–	−0.9419	−0.91 (0.37)	−1.5931	−1.47 (0.14)
STDEVΔOI	?	1.646E-05***	12.66 (0.00)	1.80E-05***	10.90 (0.00)
Industry Fixed Effects		Yes		Yes	
Year Fixed Effects		Yes		Yes	
Adj. R^2		34.129%		33.407%	
N		306		306	

This Table presents the estimations from the Equations below:
$TOBIN'S\_Q_{i,t} = a_0 + a_1DDS_{i,t} + a_2DUALITY_{i,t} + \alpha_3BSIZE_{i,t} + \alpha_4BOARDIND_{i,t} + a_5INST_{i,t} + a_6GROWTH_{i,t} + a_7TURNOVER_{i,t} + a_8SIZE_{i,t} + a_9LEVERAGE_{i,t} + a_{10}STDEV\Delta OI_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t}$ 7(a).
$TOBIN'S\_Q_{i,t} = a_0 + a_1DS_{i,t} + a_2DUALITY_{i,t} + \alpha_3BSIZE_{i,t} + \alpha_4BOARDIND_{i,t} + a_5INST_{i,t} + a_6GROWTH_{i,t} + a_7TURNOVER_{i,t} + a_8SIZE_{i,t} + a_9LEVERAGE_{i,t} + a_{10}STDEV\Delta OI_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t}$ 7(b).
The period of interest is 2011–2015. Our sample consists of 82 international firms listed in IR database (http://examples.integratedreporting.org/reporters?start=A). We use the **TOBIN'S_Q** ratio as a proxy for the firm's performance. Specifically, TOBIN'S_Q is the ratio of the market value of assets to the replacement costs of assets (Cheng, 2008; Jermias and Gani, 2014). The (independent) variables of interest are the DDS and the DS. **DDS** is a dummy variable equal to 1 if a firm has gathered an IR disclosure score which is equal or greater than the median price notifications percentage of all sampled firms and 0 if otherwise. For more details see Section 3.3.1. **DS** is derived from the scale of total received score of each firm to the maximum score (equals to 28 observations based on KING III checklist). All other variables are defined in the footnotes of the Table 3. T –statistic and p – values (in the parentheses) for each estimated variable are provided in columns right to these outputs The superscripts *, ** and *** denote significance at 10%, 5% and 1% respectively.

performance. This result is consistent with the findings of previous studies (e.g., Jermias, 2007; Westphal, 1999).

5.2. Quality of IR disclosure and value relevance

To test the robustness of the value relevance of the summary accounting information, we introduce a different dependent variable to capture the market predictions of a firm's growth opportunities. Hence, the market-to-book ratio (MBR) is used as a value-relevance indicator of the summary accounting information metric and is calculated by dividing the market capitalization to the net book value. We test whether firms with high IR disclosure quality are positively related with the MBR. We estimate the following Equation (8) based on Cormier and Magnan's (2007) approach:

$$MBR_{i,t} = \lambda_0 + \lambda_1 DISCLOSURE\_QUALITY_{i,t} + \lambda_2(1/BV)_{i,t} + \lambda_3(EBIT/BV)_{i,t} + \lambda_4 DEBT\_RATIO_{i,t} + \lambda_5 CFO_{i,t} + \lambda_6 TURNOVER_{i,t} + \lambda_7 SIZE_{i,t} + \lambda_8 DUALITY_{i,t} + \lambda_9 BIG4_{i,t} + \lambda_{10} PAR_{i,t} + \lambda_{11} LN(EMPLOYEES)_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + e_{it} \quad (8)$$

We create two Sub-Models, Model 8(a) and 8(b), in which we test the IR disclosure quality in two different ways. In Equation (8a), we use the independent variable DDS, and in Equation (8b), the independent variable DS.

$$MBR_{i,t} = \lambda_0 + \lambda_1 DDS_{i,t} + \lambda_2(1/BV)_{i,t} + \lambda_3(EBIT/BV)_{i,t} + \lambda_4 DEBT\_RATIO_{i,t} + \lambda_5 CFO_{i,t} + \lambda_6 TURNOVER_{i,t} + \lambda_7 SIZE_{i,t} + \lambda_8 DUALITY_{i,t} + \lambda_9 BIG4_{i,t} + \lambda_{10} PAR_{i,t} + \lambda_{11} LN(EMPLOYEES)_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + e_{it} \quad (8a)$$

$$MBR_{i,t} = \lambda_0 + \lambda_1 DS_{i,t} + \lambda_2(1/BV)_{i,t} + \lambda_3(EBIT/BV)_{i,t} + \lambda_4 DEBT\_RATIO_{i,t} + \lambda_5 CFO_{i,t} + \lambda_6 TURNOVER_{i,t} + \lambda_7 SIZE_{i,t} + \lambda_8 DUALITY_{i,t} + \lambda_9 BIG4_{i,t} + \lambda_{10} PAR_{i,t} + \lambda_{11} LN(EMPLOYEES)_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + e_{it} \quad (8b)$$

In Table 10, we illustrate the sensitivity analysis results based on the second research hypothesis: we observe that firms that disclose higher-quality IR accounting information are linked with increased value relevance, shown by the fact that both DDS and DS are positively and significantly associated at the 5% level with the MBR. The remainder of the results are similar to those of Table 6. Furthermore, the basic summary information focuses on the accounting variables 1/BV and EBIT/BV, which are positive and significant at the 1% level. This finding can be interpreted as an increase in the book value of equity scaled by the number of common

Table 10
Quality of IR Disclosure and Value Relevance.

Dependent Variable: MBR		Model 8(a)		Model 8(b)	
Variable	Predicted Sign	Coefficient	T –Statistic (P-values)	Coefficient	T –Statistic (P-values)
Intercept	?	−0.4355	−0.61 (0.54)	−0.8485	−1.04 (0.30)
DDS	+	0.3048**	2.44 (0.01)		
DS	+			1.0311**	2.23 (0.03)
1/BV	+	625.3700***	5.58 (0.00)	630.1521***	5.59 (0.00)
EBIT/BV	+	0.4952***	5.39 (0.00)	0.5045***	5.44 (0.00)
DEBT_RATIO	–	0.7462***	2.82 (0.01)	0.6920***	2.75 (0.01)
CFO	+	1.15E-06*	1.71 (0.09)	1.08E-06*	1.68 (0.09)
TURNOVER	+	−0.0761	−1.15 (0.25)	−0.1137	−1.55 (0.12)
SIZE	+	−0.0207	−0.55(0.57)	−0.0193	−0.53 (0.59)
DUALITY	–	−0.3544**	−2.57 (0.01)	−0.3560**	−2.56 (0.01)
BIG_4	?	−0.5297***	−2.64 (0.00)	−0.5472***	−2.60 (0.01)
PAR	+	0.1860**	2.15 (0.04)	0.1636**	2.06 (0.04)
LN_EMPLOY	?	0.0331	1.32 (0.18)	0.0322	1.28 (0.20)
Industry Fixed Effects		Yes		Yes	
Year Fixed Effects		Yes		Yes	
Adj. R^2		61.009%		60.873%	
N		298		298	

$MBR_{i,t} = \lambda_0 + \lambda_1 DDS_{i,t} + + \lambda_2(1/BV)_{i,t} + \lambda_3(EBIT/BV)_{i,t} + \lambda_4 DEBT\_RATIO_{i,t} + \lambda_5 CFO_{i,t} + \lambda_6 TURNOVER_{i,t} + \lambda_7 SIZE_{i,t} + \lambda_8 DUALITY_{i,t} + \lambda_9 BIG4_{i,t} + \lambda_{10} PAR_{i,t} + \lambda_{11} LN\_EMPLOY_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + e_{it}$ 8(a).

$MBR_{i,t} = \lambda_0 + \lambda_1 DS_{i,t} + + \lambda_2(1/BV)_{i,t} + \lambda_3(EBIT/BV)_{i,t} + \lambda_4 DEBT\_RATIO_{i,t} + \lambda_5 CFO_{i,t} + \lambda_6 TURNOVER_{i,t} + \lambda_7 SIZE_{i,t} + \lambda_8 DUALITY_{i,t} + \lambda_9 BIG4_{i,t} + \lambda_{10} PAR_{i,t} + \lambda_{11} LN\_EMPLOY_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + e_{it}$ 8(b).

The period of interest is 2011–2015. Our sample consists of 82 international firms listed in IR database (http://examples.integratedreporting.org/reporters?start=A). **MBR** i is the market capitalization to the net book value. **DDS** is a dummy variable equal to 1 if a firm has gathered an IR disclosure score which is equal or greater than the median price notifications percentage of all sampled firms and 0 if otherwise. For more details see Section 3.3.1. **DS** is derived from the scale of total received score of each firm to the maximum score (equals to 28 observations based on KING III checklist). **1/BV** is the book value of equity scaled by the number of common shares. **EBIT/BV** is earnings before interest and taxation scaled by the number of common shares. **DEBT_RATIO i**s a proxy of leverage equals to total liabilities at the end of fiscal year t to total assets at the end of fiscal year t-1. **CFO** is the Operating cash flow in fiscal year t scaled by total assets at the beginning of the year. **TURNOVER** is a measure of asset utilization that captures how efficiently the firm's assets are used and is estimated as the ratio of annual sales to total assets at the end of fiscal year t. **SIZE** is the natural logarithm of total assets at the end of fiscal year t-1. **DUALITY** is a dummy variable which takes 1 when a firm's CEO is also the chairman of the board of directors and 0 otherwise. **BIG_4** is a dummy variable equal to 1 if a firm is audited by a Big 4 accounting firm and 0 if otherwise. **PAR** is the natural logarithm of the pages' number of the annual reports. **LN_EMPLOY** is the natural logarithm of the number of the employees. The superscripts *, ** and *** denote significance at 10%, 5% and 1% respectively.

shares and the earnings before interest and an increase in taxation scaled by the number of common shares that positively affect the market valuation of our firms during the five-year period (2011–2015).

Additionally, we observe that the variables DEBT_RATIO and CFO are positively and significantly associated at the 10% level or better with high levels of leverage and that the operating cash flows display a higher market valuation, confirming the findings of Iatridis (2012b) and Lourenco et al. (2014). Stakeholders can better evaluate firms whose integrated reports contain a large number of pages. Finally, compared to firms in which the CEO and the chairman are different persons, the firms in which the CEO is also the chairman of the board tend to display lower market valuation.

5.3. IR disclosure, earnings quality and abnormal stock returns

Similar to Eq. (3) and (9) tests the association between the predictive power of abnormal stock returns and the level of earnings quality of IR disclosures.

$$AR_{i,t} = \pi_0 + \pi_1 LNDS_{i,t} + \pi_2 EPS_{i,t} + \pi_3 LAGEPS_{i,t-1} + \pi_4 (LNDS_{i,t} * EPS_{i,t}) + \pi_5 (LNDS_{i,t} * LAGEPS_{i,t}) + \pi_6 LNMV_{i,t} + \pi_7 (LNDS_{i,t} * LNMV_{i,t}) + \pi_8 (EPS_{i,t} * LNMV_{i,t}) + \pi_9 (LNDS_{i,t} * EPS_{i,t} * LNMV_{i,t}) + \pi_{10} MBR_{i,t} + \pi_{11} (LNDS_{i,t} * MRB_{i,t}) + \pi_{12} PERINBB_{i,t} + \pi_{13} (LNDS_{i,t} * PERINBB_{i,t}) + \pi_{14} (LNDS_{i,t} * PERINBB_{i,t} * EPS_{i,t}) + \pi_{15} FIRM\_SIZE_{i,t} + \pi_{16} EARNINGS\_QUALITY_{i,t} + \pi_{17} (LNDS_{i,t} * EARNINGS\_QUALITY_{i,t}) + \pi_{18} (LNDS_{i,t} * EARNINGS\_QUALITY_{i,t} * LNMV_{i,t}) + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t} \quad (9)$$

For EARNINGS_QUALITY, because we use two proxies, SMOOTHNESS and DAC, we estimate the following two Sub-Models:

$$AR_{i,t} = \pi_0 + \pi_1 LNDS_{i,t} + \pi_2 EPS_{i,t} + \pi_3 LAGEPS_{i,t-1} + \pi_4 (LNDS_{i,t} * EPS_{i,t}) + \pi_5 (LNDS_{i,t} * LAGEPS_{i,t}) + \pi_6 LNMV_{i,t} + \pi_7 (LNDS_{i,t} * LNMV_{i,t}) + \pi_8 (EPS_{i,t} * LNMV_{i,t}) + \pi_9 (LNDS_{i,t} * EPS_{i,t} * LNMV_{i,t}) + \pi_{10} MBR_{i,t} + \pi_{11} (LNDS_{i,t} * MRB_{i,t}) + \pi_{12} PERINBB_{i,t} + \pi_{13} (LNDS_{i,t} * PERINBB_{i,t}) + \pi_{14} (LNDS_{i,t} * PERINBB_{i,t} * EPS_{i,t}) + \pi_{15} FIRM\_SIZE_{i,t} + \pi_{16} SMOOTHNESS_{i,t} + \pi_{17} (LNDS_{i,t} * SMOOTHNESS_{i,t}) + \pi_{18} (LNDS_{i,t} * SMOOTHNESS_{i,t} * LNMV_{i,t}) + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t} \quad (9a)$$

Table 11
IR Disclosure, Earnings Quality and Abnormal Stock Returns.

Dependent Variable: AR		Model 9(a)		Model 9(b)	
Variable	Predicted Sign	Coefficient	T –Statistic (P-values)	Coefficient	T –Statistic (P-values)
Intercept	?	−0.0387***	−5.82 (0.00)	−0.0343***	−3.89 (0.00)
LNDS	+	0.0031	0.13 (0.89)	0.0098	0.38 (0.70)
EPS	+	3.29E-05	0.21 (0.84)	−2.51E-05	−0.14 (0.88)
LAGEPS	+	0.0001**	2.26 (0.02)	0.0002**	2.16 (0.03)
LNDS*EPS	+	−0.0018*	−1.90 (0.06)	−0.0018	−2.33 (0.02)
LNDS*LAGEPS	+	0.0002	0.93 (0.35)	0.0002	1.26 (0.21)
LNMV	+	0.0070	8.84 (0.00)	0.0067	7.18 (0.00)
LNDS*LNMV	+	9.96E-07	0.01 (0.99)	−0.0006	−0.23 (0.81)
LNMV*EPS	+	1.63E-07	0.02 (0.98)	2.56E-06	0.25 (0.80)
LNDS*EPS*LNMV	+	0.0002**	1.95(0.05)	0.0001**	2.20 (0.03)
MRB	+	−0.0046***	−3.46 (0.00)	−0.0045***	−3.17 (0.00)
LNDS*MRB	+	−0.0001	−1.43 (0.15)	−0.0003**	−2.35 (0.02)
PERINBB	?	−1.38E-05	−0.16 (0.87)	−2.26E-05	−0.25 (0.79)
LNDS*PERINBB	+	8.15E-05	0.30 (0.76)	1.12E-05	0.04 (0.96)
LNDS*PERINBB*EPS	+	9.62E-06	1.45 (0.15)	9.52E-06*	1.70 (0.09)
FIRM_SIZE	+	−0.0026***	4.01 (0.00)	−0.0027***	−5.27 (0.00)
SMOOTHNESS	–	−0.9155*	−1.64 (0.10)		
LNDS*SMOOTHNESS	–	−2.5263**	−2.17 (0.03)		
LNDS*SMOOTHNESS*LNMV	–	−3.5909***	−3.18 (0.00)		
DAC	–			0.0208	1.01 (0.31)
LNDS*DAC	–			−0.8265**	−2.35 (0.02)
LNDS*DAC*LNMV	–			−0.0985***	−2.70 (0.00)
Industry Fixed Effects		Yes		Yes	
Year Fixed Effects		Yes		Yes	
Adj. R^2		63.9074%		55.1866%	
N		293		293	

This Table presents the estimations from the Equations below:

$AR_{i,t} = \pi_0 + \pi_1 LNDS_{i,t} + \pi_2 EPS_{i,t} + \pi_3 LAGEPS_{i,t-1} + \pi_4 (LNDS_{i,t}*EPS_{i,t}) + \pi_5 (LNDS_{i,t}*LAGEPS_{i,t}) + \pi_6 LNMV_{i,t} + \pi_7 (LNDS_{i,t}*LNMV_{i,t}) + \pi_8 (EPS_{i,t}*LNMV_{i,t}) + \pi_9 (LNDS_{i,t}*EPS_{i,t}*LNMV_{i,t}) + \pi_{10} MBR_{i,t} + \pi_{11} (LNDS_{i,t}*MRB_{i,t}) + \pi_{12} PERINBB_{i,t} + \pi_{13} (LNDS_{i,t}*PERINBB_{i,t}) + \pi_{14} (LNDS_{i,t}*PERINBB_{i,t}*EPS_{i,t}) + \pi_{15} FIRM\_SIZE_{i,t} + \pi_{16} SMOOTHNESS_{i,t} + \pi_{17} (LNDS_{i,t}*SMOOTHNESS_{i,t}) + \pi_{18} (LNDS_{i,t}*SMOOTHNESS_{i,t}*LNMV_{i,t}) + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t}$ (9a).

$AR_{i,t} = \pi_0 + \pi_1 LNDS_{i,t} + \pi_2 EPS_{i,t} + \pi_3 LAGEPS_{i,t-1} + \pi_4 (LNDS_{i,t}*EPS_{i,t}) + \pi_5 (LNDS_{i,t}*LAGEPS_{i,t}) + \pi_6 LNMV_{i,t} + \pi_7 (LNDS_{i,t}*LNMV_{i,t}) + \pi_8 (EPS_{i,t}*LNMV_{i,t}) + \pi_9 (LNDS_{i,t}*EPS_{i,t}*LNMV_{i,t}) + \pi_{10} MBR_{i,t} + \pi_{11} (LNDS_{i,t}*MRB_{i,t}) + \pi_{12} PERINBB_{i,t} + \pi_{13} (LNDS_{i,t}*PERINBB_{i,t}) + \pi_{14} (LNDS_{i,t}*PERINBB_{i,t}*EPS_{i,t}) + \pi_{15} FIRM\_SIZE_{i,t} + \pi_{16} DAC_{i,t} + \pi_{17} (LNDS_{i,t}*DAC_{i,t}) + \pi_{18} (LNDS_{i,t}*DAC_{i,t}*LNMV_{i,t}) + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t}$ (9b).

The period of interest is 2011–2015. The sample consists of 82 international firms listed in IR database (http://examples.integratedreporting.org/reporters?start=A). **AR** is the abnormal return equals to expected return minus actual return at the end of the year. Expected return estimated according to CAPM model. **LNDS** is the natural logarithm of DS. **EPS** is the earnings per share scaled by the stock price at the beginning of the year. **LAGEPS** is one year lagged earnings per share scaled by the stock price at the beginning of the year. **LNMV** is the natural logarithm of market value of equity. **MBR** Is market – to – book ratio in fiscal year t. It is calculated as the market value of equity divided by the book value of equity at the end of the year. **PERINBB** is the percentage of nomination committee members who are independent from the Board. **FIRM_SIZE** is the natural logarithm of total revenue at the end of fiscal year t-1. **SMOOTHNESS** is the ratio of the standard deviation of operating income divided by the standard deviation of cash flow from operations. **DAC** are the residuals that derived from the estimation of the normal accruals equation {DeFond and Subramanyam, 1998; Bartov et al., 2001; Kothari et al., 2004; Garza-Gomez et al., 2006}. T – statistic and p – values (in the parentheses) for each estimated variable are provided in columns right to these outputs The superscripts *, ** and *** denote significance at 10%, 5% and 1% respectively.

$$\boldsymbol{AR_{i,t} = \pi_0 + \pi_1 LNDS_{i,t} + \pi_2 EPS_{i,t} + \pi_3 LAGEPS_{i,t-1} + \pi_4 (LNDS_{i,t}*EPS_{i,t}) + \pi_5 (LNDS_{i,t}*LAGEPS_{i,t}) + \pi_6 LNMV_{i,t} + \pi_7 (LNDS_{i,t}*LNMV_{i,t}) + \pi_8 (EPS_{i,t}*LNMV_{i,t}) + \pi_9 (LNDS_{i,t}*EPS_{i,t}*LNMV_{i,t}) + \pi_{10} MBR_{i,t} + \pi_{11} (LNDS_{i,t}*MRB_{i,t}) + \pi_{12} PERINBB_{i,t} + \pi_{13} (LNDS_{i,t}*PERINBB_{i,t}) + \pi_{14} (LNDS_{i,t}*PERINBB_{i,t}*EPS_{i,t}) + \pi_{15} FIRM\_SIZE_{i,t} + \pi_{16} DAC_{i,t} + \pi_{17} (LNDS_{i,t}*DAC_{i,t}) + \pi_{18} (LNDS_{i,t}*DAC_{i,t}*LNMV_{i,t}) + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t}}$$ (9b)

The robustness of Eq. (9) is checked in Table 11. We verify the estimation results of Eq. (9) by using the natural logarithm of the checklist score (LNDS) to estimate the IR disclosure quality for each firm. The results are reported in Table 11 and are similar to those reported in Table 7. Specifically, the coefficient of LAGEPS is associated positively and significantly at the 1% level with the abnormal stock returns, indicating the positive association between the lagged earnings per share and the abnormal stock returns. The coefficient LNDS x MRB is positively and significantly associated at a 5% level with the dependent variable, indicating a significant improvement in the informativeness from the IR disclosures of firms with high growth opportunities.

The coefficient LNDS x DAC (or LNDS x SMOOTHNESS) is negatively and significantly associated with the dependent variable at a

Table 12
IR Disclosure and Earnings Quality.

Dependent Variable: LNDS		Model 10(a)		Model 10(b)		Model 10(c)		Model 10(d)	
Variable	Predicted Sign	Coefficient	T –Statistic (P-values)	Coefficient	T –Statistic (P-values)	Coefficient	T –Statistic (P-values)	Coefficient	T –Statistic (P-values)
Intercept	?	1.069***	15.17 (0.00)	1.0789***	7.90 (0.00)	0.6491***	11.56 (0.00)	0.6752***	15.77 (0.00)
MANDATORY	?	0.1558***	16.33 (0.00)	0.1647***	4.04 (0.00)	0.1541***	6.39 (0.00)	0.1715***	8.84 (0.00)
DAC	–	−0.2253*	−1.64 (0.06)			−0.3485*	−1.64 (0.09)		
MANDATORY*DAC	?					0.7180**	1.99 (0.05)		
SMOOTHNESS	+			−0.0016*	−1.91(0.06)			−0.5340***	−3.39 (0.00)
MANDATORY*SMOOTHNESS	?							3.4123**	2.38 (0.02)
SIZE	+	0.0228***	4.79 (0.00)	0.0236***	3.00 (0.00)	0.0096***	2.69 (0.00)	0.0105***	2.61 (0.00)
MBR	+	0.1948***	7.46 (0.00)	0.2013***	3.51 (0.00)	0.0018**	2.55 (0.01)	0.0020***	4.99 (0.00)
BIG_4	+	0.0550***	5.29 (0.00)	0.0562*	1.91 (0.05)	0.0061***	3.20 (0.00)	0.0587***	6.32 (0.00)
ROE	+	−0.0081***	−4.23 (0.00)	−0.0088*	−1.79 (0.07)	−0.0211***	−3.14 (0.00)	−0.0213***	−15.55 (0.00)
DUALITY	+	0.0748***	5.08(0.00)	0.0673**	2.30 (0.02)	0.0838***	5.47 (0.00)	0.0754***	4.86 (0.00)
INST	+	0.1861***	8.08 (0.00)	0.1708*	1.67 (0.09)	0.1667***	2.65 (0.00)	0.1434***	4.53 (0.00)
CGC	+	0.1711***	9.10 (0.00)	0.1704***	6.72 (0.00)	0.1731***	10.06 (0.00)	0.1732***	7.65 (0.00)
DIV	+	0.2523***	6.51 (0.00)	0.1726	1.39 (0.16)	0.2521**	1.91 (0.03)	0.1230***	4.08 (0.00)
Industry/ Year Fixed Effects		Yes/Yes		Yes/Yes		Yes/Yes		Yes/Yes	
Adj. R^2		59.2163%		60.0611%		59.8875%		59.1523%	
N		323		306		323		314	

This Table presents the estimations from the Equations below:

$LNDS_{i,t} = \gamma_0 + \gamma_1 MANDATORY_{i,t} + \gamma_2 DAC_{i,t} + \gamma_3 SIZE_{i,t-1} + \gamma_4 MBR_{i,t} + \gamma_5 BIG\_4_{i,t} + \gamma_6 ROE_{i,t} + \gamma_7 DUALITY_{i,t} + \gamma_8 INST_{i,t} + \kappa_9 CGC_{i,t} + \kappa_{10} DIV_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t}$ (10a).

$LNDS_{i,t} = \gamma_0 + \gamma_1 MANDATORY_{i,t} + \gamma_2 SMOOTHNESS_{,t} + \gamma_3 SIZE_{i,t-1} + \gamma_4 MBR_{i,t} + \gamma_5 BIG\_4_{i,t} + \gamma_6 ROE_{i,t} + \gamma_7 DUALITY_{i,t} + \gamma_8 INST_{i,t} + \gamma_9 CGC_{i,t} + \gamma_{10} DIV_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t}$ (10b).

$LNDS_{i,t} = \gamma_0 + \gamma_1 MANDATORY_{i,t} + \gamma_2 DAC_{i,t} + \gamma_3 (MANDATORY_{i,t} * DAC_{,t}) + \gamma_4 SIZE_{i,t-1} + \gamma_5 MBR_{i,t} + \gamma_6 BIG\_4_{i,t} + \gamma_7 ROE_{i,t} + \gamma_8 DUALITY_{i,t} + \gamma_9 INST_{i,t} + \kappa_{10} CGC_{i,t} + \kappa_{11} DIV_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t}$ (10c).

$LNDS_{i,t} = \gamma_0 + \gamma_1 MANDATORY_{i,t} + \gamma_2 SMOOTHNESS_{,t} + \gamma_3 (MANDATORY_{i,t} * SMOOTHNESS_{i,t}) + \gamma_4 SIZE_{i,t-1} + \gamma_5 MBR_{i,t} + \gamma_6 BIG\_4_{i,t} + \gamma_7 ROE_{i,t} + \gamma_8 DUALITY_{i,t} + \gamma_9 INST_{i,t} + \gamma_{10} CGC_{i,t} + \gamma_{11} DIV_{i,t} + \{Industry\ Effects\} + \{Year\ Effects\} + v_{i,t}$ (10d).

The period of interest is 2011–2015. The sample consists of 82 international firms listed in IR database (http://examples.integratedreporting.org/reporters?start=A). **LNDS** is the natural logarithm of DS. **MANDATORY** is a dummy variable which takes 1 when a firm mandatorily uses the IR and 0 when a firm voluntarily uses the IR. **DAC** are the residuals that derived from the estimation of the normal accruals equation {DeFond and Subramanyam, 1998; Bartov et al., 2001; Kothari et al., 2004; Garza-Gomez et al., 2006}. **SMOOTHNESS** is the ratio of the standard deviation of operating income divided by the standard deviation of cash flow from operations. The rest variables are analyzed in Table 3. The superscripts *, ** and *** denote significance at 10%, 5% and 1% respectively.

5% level, indicating a significant improvement in the level of earnings quality from IR disclosures of firms with high levels of earnings quality. The coefficient of interest is π_{18}. The AR and the LNDS x DAC x LNMV (or LNDS x SMOOTHNESS x LNMV) are associated negatively and significantly at the 1% level, reflecting the positive relation between the firm's market value and the level of earnings quality of IR disclosures. Moreover, the AR and LNDS x EPS x LNMV are associated positively and significantly at the 5% level, reflecting the positive relation between the firm's market value and the informativeness resulting from the IR disclosure quality. This confirms the H_3, where the predictive power of future stock returns is positively related to the informativeness from the IR disclosure quality. Our results confirm the findings of Barth et al. (2017).

Next, we perform additional analyses to check the robustness of our results reported in the Section 4.4. Initially, we verify the estimation results of Eq. (6) by using the natural logarithm of the checklist score (LNDS) to estimate the IR disclosure quality for each firm. The results are reported in Table 8 and are similar to those reported in Table 12. Specifically, both MANDATORY x DAC and MANDATORY x SMOOTHNESS are negatively and significantly associated at the 1% level or better with DS, implying that firms that in terms of high earnings quality, IR is more effective for firms that use IR on a mandatory basis than for firms that use IR on a voluntary basis. Furthermore, the statistical significance and signs of the other control variables remain the same with Table 8.

6. Conclusions

This study examines the relation between IR and firm market valuation. We exploit the IR disclosure level in an international sample of 82 nonfinancial firms that complied with IR in the period of the application year (2011) and four years after (until 2015). We interpret the IR disclosure quality by applying two different estimated indexes, which are symbolized as DS and DDS, consistent with the King III report and the IIRC framework. Our results align with Lee and Yeo (2016), a PRI (2013) survey, and a study conducted by Nanyang Business School (2014)[6] . Similarly, we find a positive and statistically significant association between the IR disclosure quality index (DS and DDS) and ROA after controlling for various firm characteristics, such as firm size, sales growth, and leverage, and for corporate governance mechanisms, such as the number of directorss on the board, the ratio of number of shares owned by institutional shareholders to total outstanding common shares, and the board independence ratio, which is measured as the number of independent directors divided by total board size. This study highlights IR as a corporate disclosure philosophy whose goal is to provide information about a firm's future value creation, which is related to the firm's long-term strategy (De Villiers et al., 2017).

We find that firms with a high IR disclosure quality tend to display high market value per share. Our findings suggest that higher market valuation appears in firms with high levels of leverage, profitability and liquidity. More valid and effective valuation occurs in large firms with a high proportion of fixed assets to total assets, in firms with a large number of employees, and in firms that establish audit committees. Our findings also suggest the value relevance of permanent changes, which support the long-term goal of the IRCC by clarifying a company's approach to its long-term strategic opportunities and risks, to securing long-term funding and to developing long-term endorsements from supra-national bodies. These integrated approaches not only enable a complete estimation of fair value but also improve valuation models.

Finally, we investigate the impact of IR implementation on the predictive value of abnormal stock returns. We highlight that the use of IR empowers stakeholder theory. Stakeholder theory can explain the accountability of the board not only to shareholders but also to other interested parts (Freeman, 1983, p. 248). Confirming the findings of Barth et al. (2017), in a mixed sample of firms that apply IR either on a mandatory or a voluntary basis, we enrich the understanding on IR by providing empirical evidence that since the introduction of IR, firms with high levels of IR disclosure and earnings quality have grater abnormal returns. We continue our analysis to check the relation between earnings management and the quality of IR disclosure, comparing firms that mandatorily apply IR with those that voluntarily apply it. Based on the methodology of Velte (2018); Pududu and De Villiers (2016) and Jordaan et al. (2018), we conclude that IR is more effective in terms of high earnings quality for firms that use IR on a mandatory basis than for firms that use it on a voluntary basis.

6.1. Implications

Previous literature argued that regulators and standard setters do not fully understand the reasons for and consequences of IR adoption (i.e., De Villiers et al., 2017; Chaidali and Jones, 2017). Hence, this research has implications for regulators and accounting standards setters when they are faced with firms applying IR. The findings of this research give insights to policy-makers and accounting regulators in aiding their understanding of the effects of IR on a firm's performance, value relevance, and on the predictive power of stock returns. The results will be useful for European and international accounting standard setters and other authorities and provide insight into how a satisfactory level of economic integration can be achieved through the better use of IR disclosures. These interdependent changes will reflect the trends of globalization and higher expectations for corporate transparency and accountability, as defined by the IR concepts.

At the theoretical level, this research adds to the new and limited body of interpretive research, which illustrates the assurance implications of an emerging reporting practice (see De Villiers et al., 2014; Simnett and Huggins, 2015; Maroun, 2017). IR is a new reporting method that proposes the integration of financial and non-financial information in a single report (De Villiers et al., 2017). As mentioned in the previous sections, it was established in 2011, and has provided a first step for researchers and investors to

[6] See http://integratedreporting.org/wp-content/uploads/2014/04/Integrated-Reporting-and-corporate-valuation-Media-28-April-2014_NTU.pdf.

acquire an idea about the association between IR disclosure quality (based on King III report) and a firm's valuation.

In addition to making more accurate non-financial information available for data vendors, IR facilitates a higher level of stakeholder trust, a better identification of opportunities and better resource allocation decisions, including decisions on cost reductions (Dixon et al., 2004; Moroney et al., 2012). IR creates closer engagement with investors and other stakeholders and includes the employees' current and prospective progress information, which can help the employees to upgrade their skills (Simnett and Huggins, 2015). IR is in its early stages and, in practice, is still under development. Nevertheless, this type of reporting can be used in all industries, in private and public firms and in all types of organizations. Its application is intended to improve communication between companies and capital markets. Combining financial and non-financial information highlights a firm's strategy performance, underscores the interdependency of information (KPMG, 2011) and can be a useful mechanism for firms (Adams and Frost, 2008). The use of IR by both firms and organizations will enhance their ability to raise capital by attracting new long-time investors with ESG consciousness. This should improve their capital adequacy and financial and non-financial profile.

IR implementation will create expectations regarding a higher degree of economic integration. In the future, IR could eventually replace existing corporate reports. Organizations should be able to decide the way in which information will be presented; for instance, information could include an overarching document with various other reports or a single stand-alone document covering all material aspects (Ernst and Young, 2014). Other groups that benefit from this research are professional accountants and academics.

6.2. Contribution

This study includes several contributions and contributes to the global literature because it provides evidence for a higher degree of economic integration through IR implementation. It contributes to the growing evidence that IR is an effective accounting tool and that its use is likely to be rewarded by capital markets because it helps firms to rethink and integrate their strategies and business models in line with stakeholder expectations. Through communication and transparency, IR can be used effectively to interpret the advantages of using the King III report principles and to explain to investors how an organization creates value over time (IIRC, 2015). IR is aligned with stakeholder theory. The findings of this study suggest that stronger corporate governance mechanisms lead to higher performance. It is observed that compared to firms in which the CEO and the chairman of the board are independent persons, firms in which the CEO is simultaneously chairman of the board of directors present higher performance. Firms with a high proportion of independent and non-executive board members on nomination and audit committees tend to display higher IR disclosure quality (Zahra and Stanton 1988; Core et al., 1999; Haniffa and Cooke, 2005; Huafang and Jianguo, 2007; Donnelly and Mulcahy, 2008)

We examine how the level of IR disclosure quality improves the view of the value relevance of summary accounting information (i.e., the market value of equity). The study explored how the use of an integrated analysis can create value by testing the behaviour of a multiple-based valuation model and by focusing on the predictive value of future stock returns. In addition to contributing to the academic debate on the market valuation implications of IR performance, our findings support the calls for more IR, showing that the interaction of financial and non-financial information has market valuation implications (Baboukardos and Rimmel, 2016).

We find that the more effective use of IR has resulted in abnormal stock returns being positively associated with earnings quality. This survey is accepted as valid, and the results suggest that IR provides useful accounting information, reflecting the links between King III report principles and financial performance. In addition, the results support the theory that the value of these links will improve the level of IR disclosure and encourage the introduction of integrated reports. The results complement the findings of Bernardi and Stark (2018), who found a positive relation between the high level of ESG disclosures and the IR disclosure level, concluding that IR improves the analysts' estimations regarding the value and performance of a firm. In essence, keeping other factors constant, it is concluded that high IR disclosure quality is not only linked to an increase in market valuation in firms that use IR on a mandatory basis (see Bernardi and Stark, 2018; Lee and Yeo, 2016; Atkins and Maroun, 2015) but also in firms that voluntarily decide to implement IR.

Appendix

A Checklist

The checklist below assigns weightings to the respective chapters of King III with criteria for awarding the grades selected. Each firm was evaluated independently. The detailed grade sheets are not reproduced here but are included in the full recommendations

Table A1
XXX.

Categories of checklist		
Category	Observations	Percentage
A	24-28	86%- 100%
B	20-24	72%- 85%
C	16-20	58%- 71%
D	12-16	42%- 57%

Table A2
XXX.

KING III – Reference		
Chapter	Title	Summary
I.	**Ethical leadership & corporate citizenship**	This chapter focuses on the corporate governance information. There are three questions that analyze the ethical leadership policy and firms' management.
II.	**Boards & directors**	This chapter provides information relevant to boards and directors. Specifically, it is given information about strategy, risk, performance and who is chairman. Six questions are answered in this chapter.
III.	**Audit committees**	This chapter collects information about audit committees. It checks if the Board has ensured that the Company has an effective and independent audit committee. Six questions are answered in this chapter.
IV.	**The governance of risk**	This chapter is checked the governance of risk. The board should take the necessary steps to ensure that there are processes in place to ensure complete, timely, relevant accurate. Three questions are answered in this chapter.
V.	**Governance of information technology**	The board should take the necessary steps to ensure that there are processes in place to accessible IT reporting by the board in the integrated report. One question is answered in this chapter.
VI.	**Compliance with laws, codes, rules and standards**	The board should disclose in the integrated report the applicable non-binding rules, codes and standards to which the company adheres to on a voluntary basis. One question is answered in this chapter.
VII.	**Internal audit**	If the board in its discretion decides not to establish an internal audit function, full reasons should be disclosed in the company's integrated report, with an explanation of how adequate assurance of an effective governance, risk management and internal control environment has been maintained. One question is answered in this chapter.
VIII.	**Governing shareholder relationship**	The board should disclose in its integrated report the nature of its dealings with its stakeholders and the outcomes of these dealings. One question is answered in this chapter.
IX.	**IR and Disclosure**	This chapter checks the financial and the sustainability disclosure. Nine questions are answered in this chapter.

regarding disclosure from both the King III Report and the King III Code (IoD, 2009; 2016). All the checklist results were collected in one worksheet.

In Table A1, a checklist was created to record the quality of accounting information of companies in their financial reports, reflecting the quality of accounting information of firms that use Integrated Reporting. Firms are then ranked in four different categories and are classified from A to D. The checklist included twenty-eight questions-observations. For example, as shown in Table A1, the top category was named A and contained firms that showed scores between 86% and 100%.

Our assessment emphasizes both overall compliance and disclosure quality in nine areas. As shown in Table A2, these include: 1) ethical leadership and corporate citizenship, 2) boards and directors, 3) audit committees, 4) governance of risk, 5) governance of information technology, 6) compliance with laws, codes, rules and standards, 7) internal audit, 8) governing shareholder relationships, and 9) IR and disclosure.

The IR is expected to be focused on substance over form and should disclose information that is complete, timely, relevant, accurate, honest, accessible and comparable with the past performance of the company and should also contain forward-looking information.

References

Abeysekera, I., 2013. A template for integrated reporting. J. Intellect. Cap. 14 (2), 227–245.
Adams, C.A., 2015. The international integrated reporting council: a call to action. Crit. Perspect. Account. 27, 23–28.
Adams, C.A., Frost, G.R., 2008. Integrating sustainability reporting into management practices. Account. Forum 32 (4), 288–302.
Adrian, T., Moench, E., Shin, H.S., 2010. Financial intermediation, asset prices, and macroeconomic dynamics. Federal Reserve Bank of New York Staff Reports 422. pp. 1–40.
Al-Tuwaijri, S.A., Christensen, T.E., Hughes, K.E.I.I., 2004. The relations among environmental disclosure, environmental performance, and economic performance: a simultaneous equation approach. Account. Organ. Soc. 29 (5–6), 447–471.
Amiraslani, H., Iatridis, G.E., Pope, P.F., 2013. Accounting for Asset Impairment: a Test for IFRS Compliance across Europe. A research report by the Centre for Financial Analysis and Reporting Research, Cass Business School.
Andrews, D.W.K., 1991. Heteroskedasticity and autocorrelation consistent covariance matrix estimation. Econometrica 59, 817–858.
Ashbaugh - Skaife, H., Collins, D.W., La Fond, R., 2006. The effects of corporate governance on firms' credit ratings. J. Account. Econ. 42, 203–243.
Atkins, J., Maroun, W., 2015. Integrated reporting in South Africa in 2012: Perpectives from South African institutional investors. Meditari Account. Res. 23 (2), 197–221.
Baboukardos, D., Rimmel, G., 2016. Value relevance of accounting information under an integrated reporting approach: a research note. J. Account. Public Policy 35 (4), 437–452.
Balakrishnan, K., Bartov, E., Faurel, L., 2010. Post loss/profit announcement drift. J. Account. Econ. 50 (1), 20–41.
Ball, R., Shivakumar, I., 2006. The role of accruals in asymmetrically timely gain and loss recognition. J. Account. Res. 44 (2), 207–242.
Ball, R., Shivakumar, I., 2008. Earnings quality in initial public offerings. J. Account. Econ. 45 (2), 324–349.
Balsam, S., Chen, H., Sankaraguruswamy, S., 2003. Earnings Management Prior to Stock Option Grants. Working Paper SSRN.
Barth, M.E., McNichols, M.F., 1994. Estimation and market valuation of environmental liabilities relating to superfund sites. J. Account. Res. 32 (3), 177–209.
Barth, M.E., Beaver, W.H., Landsman, W.R., 2001. The relevance of the value relevance literature for financial accounting standard setting: another view. J. Account. Econ. 31 (1), 77–104.
Barth, M.E., Cahan, S.F., Chen, L., Venter, E.R., 2017. The Economic Consequences Associated with Integrated Reporting Quality: Early Evidence From a Mandatory

Setting. Working paper: Pretoria. .
Bartov, E., Radhakrishnan, S., Krinsky, I., 2000. Investor sophistication and patterns in stock returns after earnings announcements. Account. Rev. 75 (1), 43–63.
Bartov, E., Gul, F., Tsui, J., 2001. Discretionary accruals models and audit qualifications. J. Account. Econ. 30, 421–452.
Beaver, W., 2002. Perspectives on recent capital market research. Account. Rev. 77 (2), 453–474.
Becker, C., DeFond, M., Jiambalco, J., Subramanyan, K.R., 1998. The effect of audit quality in earnings management. Contemp. Account. Res. 15, 1–24.
Bernardi, C., Stark, A.W., 2018. Environmental, social and governance disclosure, integrated reporting, and the accuracy of analyst forecasts. Br. Account. Rev. 50 (1), 16–31.
Berthelot, S., Coulmont, M., Serret, V., 2012. Do investors value sustainability reports? A Canadian study. Corp. Soc. Responsib. Environ. Manag. 19 (6), 355–363.
Botosan, C.A., Plumlee, M.A., 2002. A re-examination of disclosure level and the expected cost of equity capital. J. Account. Res. 40 (1), 21–40.
Burgstahler, D., Eames, J., 2003. Earnings management to avoid losses and earnings decreases: Are analysts fooled? Contemp. Account. Res. 20 (2), 253–294.
Burgstahler, D., Hail, L., Leuz, C., 2006. The importance of reporting incentives: earnings management in european private and public firms. Account. Rev. 81 (5), 983–1016.
Bushee, B., 1998. The influence of institutional investor on myopic R&D investment behavior. Account. Rev. 73 (305-), 333.
Carnevale, C., Mazzuca, M., 2014. Sustainability report and bank valuation: evidence from european stock markets. Bus. Ethics A Eur. Rev. 23 (1), 69–90.
Carnevale, C., Mazzuca, M., Venturini, S., 2012. Corporate social reporting in European banks: the effects on a firm's market value. Corp. Soc. Responsib. Environ. Manag. 19, 159–177.
Cecchetti, S., Kashyap, A., Wilcox, D., 1997. Interactions between the seasonal and business cycles in production and inventories. Am. Econ. Rev. 87 (5), 884–892.
CEccles, R.G., Saltzman, D., 2011. Achieving sustainability through integrated reporting. Stanford Summer Innov. Rev. 56-61.
Chaidali, P., Jones, M.-J., 2017. It's a matter of trust: exploring the perceptions of Integrated Reporting preparers. Crit. Perspect. Account. 48, 1–20.
Chan, K., Chan, L.K.C., Jegadeesh, N., Lakonishok, J., 2006. Earnings quality and stock returns. J. Bus. 79 (3), 1041–1082.
Chapple, L., Clarkson, P., Gold, D.L., 2013. The cost of carbon: capital market effects of the proposed Emission Trading Scheme (ETS). Abacus 49 (1), 1–33.
Chava, S., Gallmeyer, M., Park, H., 2015. Credit conditions and stock return predictability. J. Monet. Econ. 74, 117–132.
Cheng, S., 2008. Board size and the variability of corporate performance. J. Financ. Econ. 87 (157-), 176.
Churet, C., Eccles, R., 2014. Integrated reporting, quality of management, and financial performance. J. Appl. Corp. Financ. 26 (1), 56–64.
Clarkson, P., Li, Y., Richardson, G., 2004. The market valuation of environmental expenditures by pulp and paper companies. Account. Rev. 79 (2), 329–353.
Clarkson, P.M., Li, Y., Richardson, G.D., Vasvari, F.P., 2008. Revisiting the relation between environmental performance and environmental disclosure: an empirical analysis. Account. Organ. Soc. 33, 303–327.
Cohen, J.R., Krishnamoorthy, G., Wright, A.M., 2008. Form versus Substance: the implications for auditing practice and research of alternative perspectives on corporate governance. Audit. A J. Pract. Theory 27 (2), 181–198.
Cohen, D.A., Zarowin, P., 2010. Accrual-based and real earnings management activities around seasoned equity offerings. J. Account. Econ. 50 (1), 2–19. https://doi.org/10.1016/j.jacceco.2010.01.002.
Coles, J., Hesterly, W., 2000. Independence of the chairman and board composition: firm choices and shareholder value. J. Manage. 26 (2), 195–214.
Core, J.E., Holthausen, R.W., Larker, D.F., 1999. Corporate governance, chief executive officer compensation, and firm performance. J. Financ. Econ. 51, 371–496.
Cormier, D., Magnan, M., 1997. Investors' assessment of implicit environmental liabilities: an empirical investigation. J. Account. Public Policy 16, 215–241.
Cyert, R.M., Kang, S.H., Kumar, P., 2002. Corporate governance, takeovers, and top management compensation: theory and evidence. Manage. Sci. 48, 453–469.
Daily, C.M., Dalton, D.R., Rajagopalan, N., 2003. Governance through ownership: centuries of practice, decades of research. Acad. Manag. J. 46 (2), 151–158.
Dalton, D.R., Daily, C.M., Ellstrand, A.E., Johnson, J.L., 1998. Meta – analytic reviews of board composition, leadership structure, and financial performance. Strateg. Manage. J. 19 (3), 269–290.
De Klerk, M., De Villiers, C., 2012. The value relevance of corporate responsibility reporting: south African evidence. Meditari Account. Res. 20 (1), 21–38.
De Villiers, C., Rinaldi, L., Unerman, J., 2014. Integrated Reporting: insights, gaps and an agenda for future research. Account. Audit. Account. J. 27 (7), 1042–1067.
De Villiers, C., Hsiao, H., Maroun, W., 2017. Developing a conceptual model of influences around integrated reporting, new insights and directions for future research. Meditari Account. Res. 25 (4), 450–460.
Dechow, P., Skinner, D., 2000. Earnings management: reconciling the views of accounting academics, practitioners, and regulators. Account. Horiz. 14, 235–250.
Dechow, P., Ge, W., Schrand, C., 2010. Understanding earnings quality: a review of the proxies, their determinants and their consequences. J. Account. Econ. 50, 344–401.
DeFond, M.L., Subramanyam, K.R., 1998. Auditor changes and discretionary accruals. J. Account. Econ. 25, 35–67.
Demsetz, H., Lehn, K., 1985. The structure of corporate ownership: causes and consequences. J. Polit. Econ. 93 (6), 1155–1177.
Dixon, R., Mousa, G.A., Woodhead, A.D., 2004. The necessary characteristics of environmental auditors: a review of the contribution of the financial auditing profession. Account. Forum 28, 119–138.
Donnelly, R., Mulcahy, M., 2008. Board stucture, ownership, and voluntary disclosure in Ireland. Corporate governance. Int. Rev. 16 (5), 416–429.
Doyle, J., Lundholm, R., Soliman, M., 2006. The extreme future stock returns following I/B/E/S earnings surprises. J. Account. Res. 44 (5), 849–887.
Eccles, R., Krzus, M., 2010. One Report: Integrated Reporting for a Sustainable Strategy. John Wiley and Sons, New York, pp. 2–3 30, 252.
Ernst and Young, 2014. Integrated Reporting Elevating Value. (Accessed 11 January 2018). http://www.ey.com/Publication/vwLUAssets/EY-Integrated-reporting/$FILE/EY-Integrated-reporting.pdf.
Fama, E., Jensen, M., 1983. Separation of ownership and control. J. Law Econ. 27 (301-), 325.
Fang, V.W., Noe, T.H., Tice, S., 2009. Stock market liquidity and firm value. J. Financ. econ. 94, 150–169.
Ferreira, M., Matos, P., 2008. The colors of investor's money: the role of institutional investors around the world. J. Financ. Econ. 88, 499–533.
Ferreira, M., Massa, M., Matos, P., 2010. Shareholders at the gate? Institutional investors and cross – border mergers and acquisitions. Rev. Financ. Stud. 23 (2), 601–644.
Fields, T., Lys, T., Vincent, L., 2001. Empirical research on accounting choice. J. Account. Econ. 31 (1-3), 255–307.
Francis, J., Nanda, D., Olsson, P., 2008. Voluntary disclosure, earnings quality, and cost of capital. J. Account. Res. 46 (1), 53–99.
Frankel, R.M., Johnson, N.F., Nelson, K.K., 2002. The relation between auditor's fees for non audit services and earnings management. Account. Rev. 77, 71–105.
Freeman, R., 1983. Strategic management: a stakeholder approach. Advances in Strategic Management. pp. 31–60 pp. 248.
Garza-Gomez, X., Lee, Y., Du, J., 2006. Discretionary Accruals Models and Earnings Restatements: an Empirical Evaluation. Working Paper. University of Houston, Victoria.
Gonzalez, J.S., Garcia – Meca, E., 2014. Does corporate governance influence earnings management in Latin American Markets? J. Bus. Ethics 121, 419–440.
Haniffa, R.M., Cooke, T.E., 2005. The impact of culture and governance on corporate social reporting. J. Account. Public Policy 24 (5), 391–430.
Hassel, L., Nilsson, H., Nyquist, S., 2005. The value relevance of environmental performance. Eur. Account. Rev. 14 (1), 41–61.
Healy, P., Wahlen, J., 1999. A review of the earnings management literature and its implications for standard setting. Account. Horiz. 13, 365–383.
Huafang, X., Jianguo, Y., 2007. Ownership structure, board composition and corporate voluntary disclosure. Manag. Audit. J. 22 (6), 604–619.
Hussainey, K., Salama, A., 2010. The importance of corporate environmental reputation to investors. J. Appl. Account. Res. 11 (3), 229–241.
Iatridis, G., 2012a. Hedging and earnings management in the light of IFRS implementation: evidence from the UK stock market. Br. Account. Rev. 44, 21–35.
Iatridis, G., 2012b. Terrorist attacks and company financial numbers: evidence on earnings management and value relevance from Madrid, London and Istanbul. Res. Int. Bus. Financ. 26 (204-), 220.
Iatridis, G., 2012c. Audit quality in common – law and code – law emerging markets: evidence on earnings conservatism, agency costs and cost of equity. Emerg. Mark. Rev. 13, 101–117.
Iatridis, G., 2018. Accounting discretion and executive cash compensation: an empirical investigation of corporate governance, credit ratings and firm value. J. Int. Financ. Mark. Inst. Money 55, 29–49.
IIRC, 2011a. The Future of Corporate Reporting: Towards a Common Vision. (Accessed 17 July2018). http://www.kpmg.at/uploads/media/The_Future_of_

Corporate_Reporting_Web.pdf.
IIRC, 2011b. Towards Integrated Reporting: Communicating Value in the 21st Century. (Accessed 15 June 2018). http://integratedreporting.org/wp-content/uploads/2011/09/IR-Discussion-Paper-2011_spreads.pdf.
IIRC, 2013a. The International IR Framework. (Accessed 11 June 2018). http://integratedreporting.org/wp-content/uploads/2013/12/13-12-08-THEINTERNATIONAL-IR-FRAMEWORK-2-1.pdf.
IIRC, 2013b. Capitals: Background Paper for IR. (Accessed 11 June 2018). http://integratedreporting.org/wp-content/uploads/2013/03/IR-Background-Paper-Capitals.pdf.
IIRC, 2015. Creating Value Integrated Reporting and Investor Benefits. (Accessed 11 June 2018). http://integratedreporting.org/wp-content/uploads/2016/01/1323_CreatingValue_No3_8a-1.pdf.
Ioannou, I., Serafeim, G., 2010. The Impact of Corporate Social Responsibility on Investment Recommendations. Harvard Business School Accounting & Management Unit Working Paper No. 1507874.
IoD, 2009. King Code of Governance for South Africa. (Accessed: 19 May2018). http://www.ecgi.org/codes/documents/king3.pdf.
IoD, 2016. King IV. Report on Corporate Governance for South Africa. King IV Project, Lead (Accessed 19 May 2018). http://c.ymcdn.com/sites/www.iodsa.co.za/resource/resmgr/king_iv/King_IV_Report/IoDSA_King_IV_Report_-_WebVe.pdf.
IRCSA, 2011. Disclosure of Performance Against Strategic Objectives an Information Paper. (Accessed 27 May 2018). http://integratedreporting.org/wp-content/uploads/2017/01/Disclosure-of-Performance-IRC.pdf.
Jermias, J., 2007. The effects of corporate governance on the relationship between innovative efforts and performance. Eur. Account. Rev. 16 (4), 827–854.
Jermias, J., Gani, L., 2014. The impact of board capital and board characteristics on firm performance. Br. Account. Rev. 46, 135–153.
Johnston, D., 2005. An investigation of regulatory and voluntary environmental capital expenditures. J. Account. Public Policy 24 (3), 175–206.
Jones, J., 1991. Earnings management during import relief investigations. J. Account. Res. 29 (2), 193–228.
Jordaan, L.A., De Klerk, M., De Villiers, C.J., 2018. Corporate social responsibility and earnings management of South African companies. South Afr. J. Econ. Manag. Sci. 21 (1), a1849 https://doi.org/10.4102/sajems.v21i1.1849.
Kanagaretnam, K., Lim, C.Y., Lobo, G.J., 2011. Effects of national culture on earnings quality of banks. J. Int. Bus. Stud. 42, 853–874.
Kaplan, S.E., 2001. Ethically related judgments by observers of earnings management. J. Bus. Ethics 32, 285–298.
Kim, C., Park, J.H., 2010. The global research-and-development network and its effect on innovation. J. Int. Mark. 18 (4), 43–57.
Kim, Y., Park, M.S., Wier, B., 2012. Is earnings quality associated with corporate social responsibility? Account. Rev. 87 (3), 761–796 https://doi.org/10.2308/accr-10209.
Kinney, W.R., Palmrose, Z.-V., Scholz, S., 2004. Auditor independence, non - audit services, and restatements: was the U.S. Government right? J. Account. Res. 42 (3), 561–588.
Klein, A., 2002. Audit Committee, board of director characteristics, and earnings management. J. Account. Econ. 33 (3), 375–400.
Koh, P., 2003. On the association between institutional ownership and aggressive corporate earnings management in Australia. Br. Account. Rev. 35, 105–128.
Koijen, R.S., van Nieuwerburgh, S., 2013. Predictability of returns and cash flows. Annu. Rev. Financ. Econ. 3, 467–491.
Kothari, S.P., Leone, A.J., Wasley, C.E., 2004. Performance matched discretionary accruals measures. J. Account. Econ. 39 (1), 163–197.
KPMG, 2011. Integrated Reporting: Closing the Loop of Strategy Performance Insight Through Better Business Reporting. Issue 1. (Accessed 27 May 2018). http://integratedreporting.org/wp-content/uploads/2012/06/KPMG-Integrated-Reporting-Performance-Insight-Through-Better-Business-Reporting-Issue-2.pdf.
KPMG, 2013. Integrated reporting/. (Accessed 23 December 2018). https://home.kpmg.com/uk/en/home/insights/2013/04/integrated-reporting.html.
Krishnan, G.V., 2003. Does Big 6 auditor Industry expertise constrain earnings management? Account. Horiz. 1-16 (Supplement).
Krzus, M.P., 2011. Integrated reporting: if not now, when? Zeitschrift fuer Internationale Rechnungslegung 271-276.
Krzus, M.P., 2017. Integrated Reporting for a Long Term Strategy. (Accessed 21 July 2018). http://integratedreporting.org/wp-content/uploads/2017/03/Mar2017_IntegratedReportingForALongtermStrategy.pdf.
La Porta, R., 1996. Expectations and the cross-section of stock returns. J. Finance 51 (5), 1715–1742.
Lang, M., Smith Raedy, J., Higgins Yetman, M., 2003. How representative are firms that are cross- listed in the United States? An analysis of accounting quality. J. Account. Res. 41, 363–386.
Lang, M., W, Wilson, 2006. Earnings management and cross-listing: Are reconciled earnings comparable to U.S. earnings? J. Account. Econ. 42, 149–165.
Lee, K.W., Yeo, G.H.H., 2016. The association between integrated reporting and firm valuation. Rev. Quant. Financ. Account. 47 (4), 1221–1250.
Leuz, C., Nanda, D., Wysocki, P., 2003. Earnings management and investor protection. An international comparison. J. Financ. Econ. 69 (3), 505–528.
Lev, B., 2003. Corporate earnings: facts and fiction. J. Econ. Perspect. 17 (2), 27–50.
Liang, K., Zeger, S., 1986. Longitudinal analysis using generalized linear models. Biometrika 73, 13–22.
Lopes, P.T., Rodrigues, L.L., 2007. Accounting for financial instruments: an analysis of the determinants of disclosure in the Portuguese stock exchange. Int. J. Account. 42 (1), 25–56.
Lourenco, I.C., Callen, J.L., Branco, M.C., Curto, J.D., 2014. The value relevance of reputation for sustainability leadership. J. Bus. Ethics 119 (1), 17–28.
Magnis, C., Iatridis, G., 2017. The relation between auditor reputation, earnings and capital management in the banking sector: an international investigation. Res. Int. Bus. Financ. 39, 338–357.
Maroun, W., 2017. Assuring the integrated report: insights and recommendations from auditors and preparers. Br. Account. Rev. 49 (3), 329–346.
Marx, B., Mohammadali - Haji, A., 2014. Emerging trends in reporting: an analysis of Integrated Reporting practices by South African top 40 listed companies. J. Econ. Financ. Sci. 7 (1), 231–250.
Moneva, J.M., Cuellar, B., 2009. The value relevance of financial and non-financial environmental reporting. Environ. Resour. Econ. (Dordr) 44 (3), 441–456.
Moroney, R., Windsor, C., Aw, Y.T., 2012. Evidence of assurance enhancing the quality of voluntary environmental disclosures: an empirical analysis. Account. Financ. 52 (3), 903–939.
Moulton, B., 1986. Random group effects and the precision of regression estimates. J. Econom. 32, 385–397.
Newey, W.K., West, K.D., 1987. A simple, positive semi – definite, Heteroscedastic and autocorrelation consistent covariance matrix. Econometrica 55, 703–708.
Ohlson, J., 1995. Earnings, book values, and dividends in equity valuation. Contemp. Account. Res. 11 (2), 661–687.
Omri, E.T., 2017. When does the bond price reaction to earnings announcements predict future stock returns? J. Account. Econ. 64 (1), 167–182.
Potter, B., Soderstrom, N., 2014. Exploring the Challenges of Broadening Accounting Reports. Oxford Handbooks Online. Oxford University Press.
PRI, 2013. Integrated Analysis: How Investors Are Addressing Environmental, Social and Governance Factors in Fundamental Equity Valuation. file:///C:/Users/Admin/Downloads/Integrated_Analysis_2013.pdf (Accessed 23 May 2018). .
Pududu, M.L., De Villiers, C., 2016. Earnings management through loss avoidance: does South Africa have a good story to tell? South Afr. J. Econ. Manag. Sci. 19 (1), 18–34. https://doi.org/10.17159/2222-3436/2016/v19n1a2.
Ramchander, S., Schwebach, R., Staking, K., 2012. The informational relevance of corporate social responsibility: evidence from DS400 index reconstitutions. Strateg. Manage. J. 33 (3), 303–314.
Rogers, W., 1993. Regression standard errors in clustered samples. Stata Tech. Bull. 13, 19–23.
Shleifer, A., Vishny, R.W., 1997. A survey of corporate governance. J. Finance 52 (2), 737–783.
Simnett, R., Huggins, A.L., 2015. Integrated reporting and assurance: where can research add value? Sustainability Accounting. Manage. Policy J. 6 (1), 29–53.
Singh, M., Davidson, W., 2003. Agency costs, ownership structures and corporate governance mechanisms. J. Bank. Financ. 27 (793), 816.
Sinkin, C., Wright, C.J., Burnett, R.D., 2008. Eco-efficiency and firm value. J. Account. Public Policy 27 (2), 167–176.
Sloan, R., 1996. Do stock prices fully reflect information in accruals and cash flows about future earnings? Account. Rev. 71, 289–315.
Sun, W., Cui, K., 2014. Linking corporate social responsibility to firm default risk. Eur. Manag. J. 32 (275-), 287.
Teoh, S.H., Wong, T.J., 1993. Perceived auditor quality and the earnings response coefficient. Account. Rev. 68 (2), 346–366.
Tucker, J., Zarowin, P., 2006. Does income smoothing improve earnings informativeness? Account. Rev. 81, 251–270.

Velte, P., 2018. Is audit committee expertise connected with increased readability of integrated reports: Evidence from EU companies. Probl. Perspect. Manag. 16 (2), 23–41. https://doi.org/10.21511/ppm.16(2).2018.03.
Velte, P., Stawinoga, M., 2017. Integrated reporting: the current state of empirical research, limitations and future research implications. J. Manag. Control. 28, 275–320.
Wachter, J., 2010. Asset allocation. Annu. Rev. Financ. Econ. 2 (1), 175–206.
Weir, C., Laing, D., McKnight, P., 2002. Internal and external governance mechanisms: their impact on the performance of large UK public companies. J. Bus. Finance Account. 29 (5-6), 579–611.
Weisbach, M., 1988. Outside directors and CEO turnover. J. Financ. Econ. 431- 460.
Westphal, J., 1999. Collaboration in the boardroom: behavioral and performance consequences of CEO-Board social ties. Acad. Manag. J. 42 (1), 7–24.
Williams, R., 2000. A note on robust variance estimation for cluster - correlated data. Biometrics 56, 645–646.
Wysocki, P., 2004. Discussion of ultimate ownership, income management, and legal and extra-legal institutions. J. Account. Res. 42 (2), 463–474.
Young, C.-S., Tsai, L.-C., Hsu, H.-W., 2008. The effect of controlling shareholders' excess board seats control on financial restatements: evidence from Taiwan. Rev. Quant. Financ. Account. 30, 297–314.
Zang, A., 2012. Evidence on the trade-off between real activities manipulation and accrual-based earnings management. Account. Rev. 87 (2), 675–703. https://doi.org/10.2308/accr-10196.
Zhou, S., Simnett, R., Green, W., 2017. Does integrated reporting matter to the capital market? Abacus 53 (1), 94–132.