

THE VALUE RELEVANCE OF INTEGRATED REPORTING IN SOUTH AFRICA

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Foreword

When selecting the subject of this dissertation, social and economic relevance were important criteria. The increasing global focus on sustainable capitalism and the role that corporate reporting plays in the decision-making process of stakeholders attracted me towards research on the 'value relevance of integrated reporting in South Africa'.

I would like to express my gratitude towards my promoter, Prof. Dr. De Beelde, for guiding me during this final test of my master's degree and for providing me with powerful insights in the subject of value relevance and corporate integrated disclosure.

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List of used abbreviations

ACCA	Association of Chartered Certified Accountants
AE	Abnormal Earnings
AIDS	Acquired Immune Deficiency Syndrome
BP	British Petroleum
BV	Book Value of equity
CG	Corporate Governance
CRR	Corporate Responsibility Reporting
CRSC	Corporate Reporting Supply Chain
CSR	Corporate Social Responsibility
CSRPerf	Corporate Social Responsibility Performance
CSSA	Chartered Secretaries Southern Africa
DI	Dividends distributed to shareholders
EC	European Commission
ESG	Environmental, Social, and Governance
ESS	Environmentally and/or Socially Sensitive
EY	Ernst & Young
GRI	Global Reporting Initiative
HIV	Human Immunodeficiency Virus infection

IFAC	International Federation of Accountants
IFR	Internet Financial Reporting
IIRC	International Integrated Reporting Council
IR	Integrated Reporting
<IR>	International Integrated Reporting Framework
IRC	Integrated Reporting Committee
IRQ	Integrated Reporting Quality
JSE	Johannesburg Stock Exchange
King I,II,III,IV	King Report on Corporate Governance
KPI	Key Performance Indicators
KPMG	Klynveld Peat Marwick Goerdeler
MV	Market Value of equity
NACE	Nomenclature statistique des Activités économiques dans la Communauté Européene
NGO	Non-governmental organization
NI	Net Income
SNG	SizweNtsalubaGobodo
TP	Time Period
VDT	Voluntary Disclosure Theories
VIF	Variance Inflated Factor
ZAR	Zuid Afrikaanse Rand

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Introduction

Investors, capital markets and other stakeholders rely on high quality, value-relevant information presented in corporate reports when making their economic decisions. Traditional financial disclosure on its own is not adequate to fully discharge these duties of accountability as it does not represent the full picture of an organization's operations and impacts on the society in which it functions (Ernst & Young, 2017). In this perspective, corporate sustainability, social and environmental reporting started manifesting itself quickly in the 1980s. Gray, Owen, & Maunders (1987, p. 9) describe that the intention of CSR is "to communicate the social and environmental effects of an organization's economic actions to particular interest groups within society and to society at large." However, CSR reporting is also subject to a lot of criticism. No connections are drawn between environmental & social information and the financials (EY, 2017), crucial problems are being ignored, and these reports often do not represent a company's authentic sustainability performance (Milne & Gray, 2012). In this regard, the International Integrated Reporting Council (2011a, p. 4) and Setia, Abhayawansa, Josihi, & Huynh (2015, p. 399) claim that integrated reporting (IR) is "a new approach to corporate reporting that is aiming to overthrow these constraints, enabling investors and other stakeholders to obtain a more extensive view of organisational value creation and performance." The IIRC (IIRC, 2013a, p. 7) defines an integrated report as a "concise communication about how an organization's strategy, governance, performance and prospects lead to the creation of value over the short, medium and long term." IR allows readers to look beyond a company's short-term results to form a better opinion on long-term value (Lee & Yeo, 2016), and is mainly designed to add perspectives and insights for the providers of financial capital (Zhou, Simnet, & Green 2017). Driven by its political history of apartheid, South Africa is the global precursor in adopting and implementing IR. In 2010, the Johannesburg Stock Exchange (JSE) became the first capital market to mandate IR by incorporating The King Reports on Corporate Governance principles into its listing requirements (Rensburg & Botha, 2014). Zhou et al (2017, p. 3) remark that "if this relatively new reporting initiative is indeed constructive and relevant to investors in evaluating the prospects of companies, it is expected that some benefits will be allocated to the reporting companies." As the IIRC claims that adoption of its International IR Framework (<IR>) will improve firm value (IIRC, 2013a), Barth, Cahan, Chen, & Venter (2016), Lee & Yeo (2016), and Cosma, Soana, & Venturelli (2018) indeed find empirical evidence that integrated disclosure is perceived as relevant by investors in a mandatory setting.

In this regard, the purpose of this dissertation is to provide further insights into the current debate whether investors consider the financial and extra-financial information presented in integrated reports as valuable. This study also investigates whether their assessment differs depending on if a company is active in an environmentally and/or socially sensitive industry or not. Finally, I examine the presence of 'learning effects' and test whether the value relevance has changed in 2015 in respect to 2017.

This study is based on previous research from Hassel, Nilsson, & Nyquist (2005), de Klerk & de Villiers (2012), Barth et al. (2016), and Lee & Yeo (2016). I depend on firm value to represent the economic decisions of capital providers. Derived from the residual income valuation model (Ohlson, 1995), the market value of equity is expressed as a function of the inverted book value of equity, return on equity, integrated reporting quality, CSR performance, corporate governance, and 2 dummy variables to investigate possible structural changes over time and across industries. I constructed a measure for integrated reporting quality (IRQ) from the published categories of the EY's Excellence in IR Awards, for the reason that I did not get proprietary access to underlying scores. I use data from South Africa because of its advanced position in IR and because it is the only country where integrated reporting is mandated.

My research results contrast with prior studies as they indicate that IRQ does not significantly impact firm value. Hence, based on the used model and dataset I conclude that information presented in integrated reports is not assessed as valuable by corporate investors when making their economic decisions. Furthermore, I gather no empirical evidence for systematic differences in IR perception by capital providers depending on whether companies are active in an environmentally and/or socially sensitive industry or not. Finally, I find that investors do not evaluate integrated reports as more or less valuable in 2015 in respect to 2017.

This paper contributes empirical findings to the small basis of South African-focused studies and thus to help standard setters, companies and other stakeholders determine the usefulness of integrated disclosure by studying the value relevance. This dissertation is motivated by the recent focus on sustainable capitalism and the increasing global interest shown by companies, investors and regulators in integrated reporting. Finally, I would like to extend the limited academic literature on the effects of the mandatory adoption of integrated reporting.

The continuation of this dissertation is structured as follows. The next section discusses the previous findings in the literature. The following sections present the research design and the development of the used hypotheses. Further, an elaboration on the collection of the data is shown and the descriptive statistics are delivered. The regression analysis is presented before the conclusion, limitations, and recommendations for further research.

Literature review and institutional background

1. Usefulness of traditional corporate reporting

For an economy to function, savings should be optimally allocated to investment opportunities. However, Healy & Palepu (2001) note that this matching process is disturbed due to at least two reasons. “First, managers have access to better information than investors about the value of their business investments. Second, managers typically have an incentive to exaggerate the value of their ideas in order to attract capital.” Healy & Palepu (2001, p. 3). This asymmetry of information can result in the so called lemons problem where high quality ‘cars’ (i.e. good investments) are being undervalued and ‘lemons’ (i.e. bad investments) are being overvalued by the market (Akerlof, 1970; Healy & Palepu, 2001, p. 3). In order to solve this mis-valuation issue, Healy & Palepu (2001, p. 4) propose that “optimal contracts between entrepreneurs and investors and regulation can provide incentives for full disclosure of private information.” These recommended solutions give rise to a demand for financial intermediaries who enhance the credibility of management disclosures. In other words, intermediaries “engage in private information production to uncover managers’ superior information.” (Healy & Palepu, 2001, p. 4). Appendix 1 presents a schematic overview of financial and information flows and intermediaries in a capital market (Healy & Palepu, 2000, p. 408). Thus, corporate disclosure together with the assurance of the disclosed information has the ability to reduce information asymmetry, and allows capital providers to evaluate the return on their investments. Additionally, it also allows for capital providers to understand a company’s corporate governance framework and interpret the input of capitals (Beyer, Cohen, Lys, & Walther, 2010). However, a company can only benefit from its corporate disclosure if the disclosure is extensive and reliable (Anderson & Frankle, 1978).

The Corporate Reporting Supply Chain (CRSC, Appendix 2) provides an overview of the supply of information on which investors, financial institutions, customers, trading partners, etc. depend when making their financial decisions. Belief in the capital markets depends on trust in this CRSC (DiPiazza & Eccles, 2002). However, DiPiazza & Eccles (2002, p. 1) claim that “Enron and other accounting scandals have focused the public’s attention on the institutions and people responsible for the information on which investors (as well as lenders, trading partners, customers and employees) depend.” Thus, they have broken the faith in the CRSC. Macey (2003, p. 421) indicates that “the current highly technical accounting system is easy to manipulate

because of its complexity and that companies are tend to take advantage of the system because of the intense pressure to produce a profit.” Thus, regulators should simplify and streamline reporting regulation rules. DiPiazza & Eccles (2002) on the other hand suggest that a spirit of transparency, a culture of accountability and people of integrity are the key elements in order to restore the damaged faith in the CRSC. Trucco (2015) defines three levels of analysis of corporate disclosure, i.e. mandatory and voluntary disclosure, financial and non-financial information, and forward-looking and historical information. Ball et al. (2012) notes that voluntary disclosure should be considered as a complement of mandatory disclosure and should not be perceived as a substitute of mandatory reporting. Previous research has indicated the potential benefits of voluntary disclosure. It can reduce information asymmetry between the company and its stakeholders (Verrecchia, 1983), the cost of raising equity capital (Botosan, 1997; Shroff, Meyer, & Burghof, 2013) and the cost of debts (Sengupta, 1998). However, it must be stated that the disclosed information needs to be reliable and accurate for these benefits to apply (Bebbington et al., 2008; Fombrun et al., 2000).

So if corporate disclosure has the ability to improve the efficiency of capital markets, why do companies not always participate extensively and voluntarily in disclosing their performance and activities? There are several voluntary disclosure theories (VDT) looking into the reasons for companies to reveal or conceal information. The agency theory is one of the oldest modes of social interaction. Ross (1973, p. 134) defines that “an agency relationship has arisen between two or more parties when one, designated as the agent (i.e. company management), acts for, on behalf of, or as representative for the other, designated the principal (i.e. shareholders).” In other words, the principal delegates some of his decision-making authority to an agent. Further, Urquiza, Navarro, Trombetta, & Lara (2010, p. 396) state that “information asymmetry can cause conflicts and the possibility that the agent will not always take decisions that maximize shareholders’ value.” The provision of information can potentially minimize this problem. Determinants that have been frequently associated with the agency problem are firm size, leverage and profitability. Urquiza et al. (2010, p. 396) declare that the reasoning behind this is that “larger companies carry out more contracts of a higher complexity, and the issuance of more high quality information has the potential to reduce agency costs.” Further, they state that “highly leveraged firms have to satisfy the information needs of more creditors, more profitable companies want to enforce more favourable contractual conditions, and their managers fancy improved compensation contracts.” (Giner, 1997; García-Meca, Parra, Larrán, & Martínez, 2006; Urquiza et al., 2010, p. 396). The political process theory indicates that companies disclose

information in order to reduce political costs. Urquiza et al. (2010, p. 397) note that “these costs arise because regulators analyse corporate disclosure when developing regulations, more extensive disclosure should justify larger profits and thus avoid new future legal obligations.” Factors that influence the decision to disclose information to avoid political costs are firm size, profitability and competition level (Watts & Zimmerman, 1986; Lang & Lundholm, 1993). Signalling theory suggests that companies disclose information voluntarily because they want to signal the market about their presence, preventing adverse selection. Companies hope to attract investors by communicating their strengths and by issuing more and better information to the market (Urquiza et al., 2010; Bini, Giunta, & Dainelli, 2010). Firm size and profitability are determinants often associated with this theory (Watts & Zimmerman, 1986; Morris, 1987). Abeysekera (2013) states that the decision to disclose information voluntarily is a strategic one, companies will disclose information if their benefits cover their costs. Besides agency costs and political costs, there is the direct cost of preparing, certifying, and disseminating corporate information, which potentially lowers firm value (Leuz, 2013). Coates (2007) notes that opportunity costs are invoked because of the additional time spent by management on producing more high quality information. Besides, economies of scale play an important role, especially smaller firms can face difficulties with certain disclosures. Prior research on the implementation of new regulatory rules on capital markets has shown that smaller companies tend to retire their listings when new regulations (together with new disclosure practices) are introduced (Engel, Hayes, & Wang, 2007; Farvaque, Refait-Alexandre, & Saïdane, 2011). Further, transparency can result in the loss of competitive advantage (Dye, 1985; Admati & Pfleiderer, 2000). Farvaque et al. (2011) and Leuz (2013) mention that labour unions, tax authorities, regulators, and employees can use proprietary information that has the potential to harm a company. The previously mentioned factors can bind companies ‘disclosure incentives, making confidentiality desirable. However, Farvaque et al. (2011, para. 41) notes that ‘the past has proven that extensive transparency rules are in everyone’s interest, bankruptcies can result in State intervention, which is burdensome for all taxpayers.”

In order to better understand the potential benefits derived from corporate reporting, it is important to introduce the concept of value relevance. If corporate disclosure leads to improved decision-making by capital providers, it can be deemed as useful. These economic decisions of users of the financial statements can be represented with a measure for firm value that follows either a level (price) or change (return) specification (Easton, 1999; Barth et al., 2006). Typically, share price or market value of equity are used as a valuation benchmark. However, de Klerk & de

Villiers (2001, p. 34) state that “value relevance studies are designed to assess how well particular accounting (and non-accounting) information reflect information that is used by investors in valuing a firm’s value, and not to estimate share price or market value of equity.” Moreover, Barth et al. (2001, p. 90, p. 94) declare that “this type of research does not require a totally efficient market where investors’ beliefs are well founded, neither does it assume that the market value of equity or share price represent the ‘true’ economic value of a company.” Further, contradictory with fundamental analysis studies, “researchers selectively include variables to learn about the valuation of certain traditional accounting numbers.” (Barth et al., 2001, p. 90, p. 94). In recent literature, the most employed value relevance models are the ones based on Ohlson (1995), which represents firm value as a linear function of book value of equity and the present value of expected future abnormal earnings (Barth et al., 2001; de Klerk & de Villiers, 2012).

Many studies have been conducted on the value relevance of traditional financial accounting information in different institutional settings and Chandrapala (2013, p. 99) concludes that most find a significant positive relationship. Kothari (2001) concludes that earnings announcements impact stock prices, which suggests that financial information is perceived as valuable by investors in their assessment. Hayn (1995) finds that earnings significantly positively impact stock returns. Frankel & Lee (1998) conclude that earnings, book value of equity and earnings forecasts significantly impact share prices for an international dataset. Also King & Langli (1998) find that both book value of equity and earnings are significantly related to share prices. Graham (2000) examines the value relevance of book value of equity and residual earnings for an Asian dataset and observes that both significantly influence stock prices. Wang & Chang (2008) confirm this and find that the coefficients of these accounting variables are statistically and positively significant for a Taiwanese dataset. Chandrapala (2013) finds that the value relevance of earnings and book value is below average when comparing with other accounting variables. He also concludes that ownership concentrated firms provide more value relevant information and that the value relevance of book value information is greater than earnings information. While a majority of researchers do not find any significant indications that the value relevance of traditional financial reporting is decreasing over time (Collins, Maydew, & Weiss, 1997; Lev & Zarowin, 1999), Hail (2013) observed a loss in the relevance of the income statement.

Holthausen & Watts (2001) criticise value relevance research for having made only a limited contribution to accounting standard setting as it concentrates primarily on equity valuation. They

state that “accounting numbers provide information for valuation that underlies the value relevance literature, and thus does not seek to develop a descriptive theory.” Further, they claim that “the other important roles of accounting that determine accounting standards are being ignored.” (Holthausen & Watts, 2001, p. 6, p. 7). Barth, Beaver, & Landsman (2001, p. 77) counter these allegations and maintain that “value relevance research assesses how well accounting figures reflect information used by capital providers and contributes understanding into questions of interest to standard setters”. Further, they claim that “the relation between equity prices and returns is important since the financial statements focus on equity investment and that “other purposes of corporate disclosure do not diminish the importance of value relevance research.” (Barth et al., 2001, p. 77).

Also the linkage between accounting information and the cost of capital of firms is an important subject in accounting research. Regulating officials have stated that there is a negative association between both variables. Levitt (1998) declares that better accounting standards reduce capital costs and Foster (2003) claims that more information always equates to less uncertainty, and people are willing to pay more for certainty. Easley & O’Hara (2004) indeed find that an increased quality and quantity of accounting information results in a lower cost of capital. Also Lambert, Leuz, & Verrecchia (2007) conclude that an increase in financial information quality leads to an unambiguous decline in the cost of capital.

Ismail (2002) attributes the (then) recent trend of a general increase in the amount of voluntary disclosures to the growing development of the Internet. Ashbough, Johnstone, & Warfield (1999) find that the internet plays an important role in increasing the value relevance of financial reporting and that firms engaging in IFR (Internet Financial Reporting) also have a good reputation for CSR practices. Ashbough et al. (1999, p. 242, p. 255) further state that “IFR increases the timeliness of financial reporting, this involves disclosing information before it loses its capacity to influence decisions as well as disseminating information in a manner that allows for faster acquisition and use of that information.” Put differently, Koreto (1997, p. 1) claims that “due to the dynamic business world, traditional paper-based corporate reporting has become increasingly less timely and thus less useful to decision makers.” Furthermore, Healy & Palepu (2001, p. 423) state that “the traditional financial reporting model seems to fail to reflect the implications of business innovations and economic changes in a timely manner.” In the recent years, there is a growing concern that annual reports are becoming more cluttered, more complex and less relevant to shareholders (Financial Reporting Council, 2011).

2. Towards a new reporting initiative

Even though there is empirical evidence that the value relevance of traditional corporate disclosure is not decreasing over time (Collins et al, 1997; Lev & Zarowin, 1999), financial information does not portrait the entire picture of a company. In other words, “financial reporting on its own is not capable to fully discharge the duties of accountability.” (EY, 2017, p. 6). This resulted in the manifestation of corporate social and environmental disclosure, which refers to the “process of communicating the social and environmental impacts of companies’ economic actions to particular interest groups within society and to society at large.” (Gray et al., 1987, p. 2). The first environmental and social reports were issued in the 1980s. They spread quickly, especially among multinational companies (Gáspár, Magyar, & Schneider, 2012). The next step in the disclosure evolution, i.e. sustainability reporting - often considered as synonymous with CSR/CRR reporting and triple bottom line reporting - is a best practice nowadays employed by companies worldwide. Companies disclose their economic, environmental and social impacts, and present their values and governance model. Further, they demonstrate the link between their strategy and sustainable economic model, wich helps them manage their social and environmental impacts and improve operating efficiency. In 2016, approximately 95% of the Fortune Global 250 issued sustainability reports (GRI, 2013; EY, 2016). Most stock exchanges also obligate listed companies to disclose their CSR practises. Ioana & Adriana (2013) briefly summarize some prominent CSR regulations.

The United States disseminated the Sarbanes–Oxley Act in 2002, mandating environmental disclosure for public companies. In Europe, Sweden mandated sustainability reporting for public companies and France developed a framework for CSR reporting within its ‘Nouvelles Regulations Economiques’. Further, the European Commission established the European Alliance for Corporate Social Responsibility, i.e. an organization that acts as promoter for CSR and social-environmental disclosure. In South Africa, the JSE mandates integrated disclosure for listed companies by incorporating the King corporate governance codes in its listing requirements (Ioana & Adriana, 2013, p. 2).

Ioannou & Serafeim (2017) investigate the effect of disclosure regulations that mandate sustainability reporting and find that on average the effect of regulation on companies has been value-enhancing rather than value-destroying. Prior research also provides evidence that CSR

disclosure programs invoked by regional administrations have encouraged companies to advance their environmental performance (Konar & Cohen, 1997).

As firms and regulators worldwide have embraced sustainability reporting, the most widely adopted framework has been the GRI Sustainability Reporting Framework (EY, 2016). "This framework sets out the principles and indicators that organizations can use to measure and report their economic, environmental, and social performance." (GRI, 2013, p. 3). Further, the GRI (2013, p. 3) states that "it is periodically reviewed in order to provide the best and most modernised guidance for effective sustainability reporting." However, Jones, & Hillier (2016) remark that high priority issues (high level of materiality) identified by companies adapting the G4 guidelines mostly focus on business issues rather than environmental matters. Furthermore, some companies only provide limited detail on the identification of material issues which makes it unclear whether the interests of all stakeholders have been taken into account. This proves the Framework's need of continuous improvement. The G4 Guidelines were eventually superseded by the fifth update of the Framework, the GRI Sustainability Reporting Standards were released on 19 October 2016. These will be required for all CSR reports and materials (following the GRI Framework) published on or after 1 July 2018. In addition, such standards should make it easier for auditors to deliver an additional assurance service on CSR reports to check whether management assertions about extra-financial information are materially misstated. Auditors can form their opinion based on the criteria on which the reporting is based (Ballou et al., 2006; GRI, 2013). But Ballout et all (2006, p. 8) also remarks that "audited CSR reports are still generally limited in scope, which results in auditors mostly providing only a limited assurance." Surveys of Corporate Register (2008) & the GRI (EY, 2012) show that the number of limited scopes is steadily decreasing, 49% limited scopes in 2012 against 56% in 2008.

A South African survey of KPMG (2008) indicates that the level of corporate responsibility reporting is mainly influenced by the extent of a company's environmental impact, its size and its exposure to international capital market. Also Brammer & Pavelin (2006, 2008), Guidry & Patten (2012), and Burgwal & Vieira (2014) gather empirical evidence that bigger companies are more likely to make higher environmental and social disclosures. Further, Brammer & Pavelin (2006, 2008), Cho & Patten (2007), Faisal, Tower, & Rusmin (2012), and Zeng, Xu, Yin, & Tam (2012) conclude that wheter or not companies operate in an environmentally sensitive industry is an important determinant for CSR disclosure. Cahan, de Villiers, Jeter, Naiker, & Van Staden (2016, p. 10) state this can be attributed to "the occurence of prior environmental disasters that resulted

into negative financial consequences, which caused that the market now expects firms in these industries to disclose how they handle environmental matters, including procedures to minimize the possibility of environmental liability.” Douglas, Doris, & Johnson (2004) and Faisal et al. (2012) note that companies operating in more developed countries are more likely to report their social and environmental activities extensively than companies operating in less developed countries. Some researchers find an explanation for higher levels of CSR disclosure in the legitimacy theory (Patten, 1992, Gray, Kouhy, & Lavers, 1995, Deegan & Rankin, 1996, Cho & Patten, 2007; Faisal et al., 2012). Faisal et al. (2012) define this theory in the following way:

The legitimacy of organizations to operate in society depends on an implicit contract between the company and society. Companies can forfeit their license to operate by trespassing society's norms and expectations. Organizations are disclosing on CSR elements in order to legitimise their activities, to be accepted, and avoid being disciplined by the society in which they operate (Faisal et al., 2012, p. 3).

Thus, legitimacy theorists find that CSR disclosures are invoked by external influences and are designed to generate a “license to operate” from all corporate stakeholders. Ballou, Heitger, & Landes (2006, p. 4) remark that “while maximizing shareholder value continues to be the main objective of companies, it will not be maximized over the long term if other stakeholders’ interests are not served.” Other researchers see a more plausible explanation in the voluntary disclosure theory, i.e. CSR disclosure is used to reduce information asymmetry between managers and investors (Verrechia, 1983, 2001). Crifo & Forget (2012) attribute three factors to a company’s responsible behaviour of participating in CSR reporting. First, the threat of penalties, regulatory compliance and costs. Second, to respond to social pressure and private politics from NGOs, social activists and citizens. The third determinant is the fact that not all of the manager’s values will be reflected in a company’s decisions and CSR reporting may compensate for this.

Whether CSR disclosure and performance are value relevant or not is still an ongoing debate among researchers. As previously mentioned, some scholars argue that environmental and social disclosures are mainly a ‘legimitation tool’ (Patten, 1992, Gray et al., 1995, Deegan & Rankin, 1996, Cho & Patten, 2007; Faisal et al., 2012; Abhayawansa, Joshi, & Huynh, 2015). Lorraine, Collison, & Power (2004) find a negative association between environmental disclosure and share price performance. Hassel et al. (2005) find that environmental performance has a negative impact on firm value for a Swedish dataset. However, Aerts, Cormier, & Magnan (2008, p. 643)

mention that “this type of research often investigates specific disclosure items or events that may or may not be a reflection of a firm's overall environmental disclosure strategy (f.e. negative information/events).” Others, mainly supporting on the voluntary disclosure theory find empirical support that CSR disclosures should be of value to investors, as they contain relevant information about the firm’s (environmental & social) performance (Al-Tuwaijri et al., 2004; Clarkson et al., 2011). More recently, Mervelskemper & Streit (2015) find that the relationship between ESG performance and a firm’s value was stronger if firms publish a CSR/ESG report. Loh, Thomas, & Wang (2017) find that the quality of sustainability disclosure is positively related to the market value of a firm. Also Qiu, Shauket, & Tharquan (2016) find that firms will obtain financial and non-financial benefits if they improve their social disclosures. Regarding high profile industries, de Klerk & de Villiers (2012) did not find empirical evidence that a higher level of CRR (corporate responsibility reporting) will be assessed differently for companies operating in environmentally sensitive industries in comparison with companies in other industries. While some studies (Plumlee, Brown, & Hayes, 2008; Reverte, 2011) conclude that CSR disclosure by firms with superior sustainability performance leads to a lower cost of equity capital, Qiu et al. (2016) did not find an association between CSR disclosure and the cost of equity capital.

3. Integrated reporting

Nevertheless, it became clear that sustainability reporting on its own is insufficient to meet stakeholders' needs. Environmental and social information is being shown separately from the financials and no connections are drawn (EY, 2017). Mervyn King (EY, 2017, p. 6) concludes "that entities started reporting in silos, which does not reflect the reality of how companies operate." CSR reports often fail the tests of credibility, materiality and relevance to investors (Guthrie, Ricceri, & Dumay, 2012). Milne & Gray (2012) declare that CSR disclosure ignores material problems and that these reports do not represent a company's legitimate sustainability performance. The latest development in a long line of reporting innovations that have tried to improve the usefulness of corporate reporting came with the introduction of integrated reporting (IR). IR is generally perceived as a required forward-looking progression of sustainability reporting. Houdet et al. (2014, p. 5) defines integrated reporting as "disclosing financial and non-financial governance, performance and risk management in an integrated way within the same annual document." The International Integrated Reporting Council (2011a, p. 3) states that "an integrated report should bring together material information about an organization's strategy, governance, performance and prospects in a way that reflects the commercial, social and environmental context within which the organization operates." It should further "provide a clear and concise representation of how the organization creates and sustains value and it should be an organization's primary reporting vehicle." (IIRC, 2011a, p. 3). In this way, organizations can meet stakeholders's needs (Cohen et al., 2012) and increase transparency, governance and decision-making (Adams & Simnett, 2011). Advocates further claim that IR is expected to enhance the quality of information for stakeholders (external market benefits), improve internal resource allocation decisions (internal benefits), and will connect previously disconnected pieces of financial and sustainability information (Eccles & Saltzman, 2011; Middleton, 2015). The European Commission (EC) acknowledged that integrated reporting is a step ahead of its own ESG disclosure requirements and that it is "monitoring with great interest the evolution of the integrated reporting concept, and, in particular the work of the IIRC." (Barth et al., 2016, p. 5).

Integrated reporting is strongly endorsed by the IIRC (2013a, p. 1), i.e. a global coalition of companies, standard setters, regulators, investors, NGOs, and the accounting profession that was established in 2010 and aims to promote integrated communication about value creation as the next step in the evolution of corporate reporting. The Council (IIRC, 2013a, p. 2) wants "integrated reporting and thinking to be established as the norm in the public and private sector."

To help achieve this, the IIRC developed a framework (International <IR> Framework) for integrated reporting. The core objective of the Framework is “to provide a guidance on good practise on how to prepare an integrated report.” (IIRC, 2013a, p. 2). More precisely <IR> “guides organizations on communicating the broad set of information needed by stakeholders to assess the organization’s long-term prospects in a clear, concise, connected and comparable format.” (IIRC, 2013a). Barth et al. (2016, p. 4, p. 5) explain that “the Framework is principle based and does not provide a standard format for integrated reports or specify any disclosure requirements”. The Framework further puts the emphasis on an organization’s resources and capitals (i.e. financial, manufactured, human, intellectual, natural and social capital). An organization not only makes use of these capitals, but it also depends on and impacts them. The International <IR> Framework was finally issued in December 2013. In March 2013, the IIRC released a Capital background paper for the Framework in which it further elaborates on the six different types of components (IIRC, 2013b). Together they should represent “stores of value (input) that are the basis of an organization’s production of goods and services, i.e. value creation.” (IIRC, 2013b, p. 1).

It is also important that companies issuing integrated reports provide a strong and independent third-party assurance on the disclosed extra-financial (i.e. non-financial) information and its connection with the financials (Adams, 2015). Mervyn King (ACCA, 2015, p. 4) declares that the “assurance of the integrated report adds value by improving the report’s credibility and assisting boards of directors in fulfilling their monitoring and review functions.” But even though integrated reporting has been manifesting itself worldwide, there are a number of challenges which make an assurance engagement difficult. King (ACCA, 2015, p. 4) mentions that these include “the difficulty of developing suitable criteria for assuring the integrated report, the limited range of skills of a traditional audit team. The high cost of providing the assurance and the risk of additional auditor liability also need to be taken into account.” Eccles, Krzus, & Watson (2012) name building the necessary capabilities in auditing firms and liability reforms as the main challenges for an effective assurance. Further, they declare that there is an absence of consensus on what true and fair view means for an integrated report. De Villiers, Rinaldi, & Unerman (2014, p. 26) mention that “there is a lack of comprehensive guidelines and measures for the development of a standard assurance procedure.” Cheng, Green & Ko (2014, p. 3) state that “the assurance of reported information has no relevance without an assurance of the related assurance procedures.” In other words, a standard providing assurance for the integrated financial, social, environmental and ethical information is desirable, and AA1000 AccountAbility Assurance

Standard 2008 (currently in revision for launch in 2019) seems to be responding to this request (Demartini & Trucco, 2017).

Serafeim (2015) finds that companies adopting integrated reporting voluntarily attract more long-term investors and fewer 'transient' investors. Using an international sample, Arguelles, Balatbat, & Green (2015) find that the association between an IR score (ESG data derived from Thomson Reuters' Asset 4) and market value of equity (Tobin's Q) is stronger for companies issuing an integrated report. Also Martinez (2016) concludes that there is a significant association between IR (dummy variable) and the firm's market value for an international dataset, which is driven by the cash flow effect. Loprevite, Ricca, & Rupo (2018) conclude that companies adopting the IR approach voluntarily have higher levels of integrated performance. Using Ohlson's model, they further gather empirical evidence that the level of integrated performance positively influences investors' decisions, though with a low relevance of traditional accounting information.

IR involves much more than adjusting the way companies disclose. An integrated report should primarily function as a mediator. Instead, companies should focus on improving performance and on how to create value over time. Adams (2017) states that "integrated thinking is at the core of integrated reporting, without an understanding of this concept an organization will not be able to achieve real integration in corporate reporting." Further he states that "integrated thinking requires the identification of value drivers in the organization. It involves the board of directors, senior management, and employees taking into account a range of capitals that go beyond the financial horizon (i.e. the Six Capitals)." (Adams, 2017). The International Federation of Accountants (IFAC, 2015, p. 5) notes that "integrated thinking should lead to improved organizational alignment toward strategic goals and value creation and will result in greater confidence in making value creating decisions based on relevant quality information for all stakeholders."

In 2013, the IIRC (2013a, p. 2) declared that with its <IR> it is aiming to "improve the quality of information available to providers of financial capital to enable a more efficient and productive allocation of capital." Critics suggest that the IIRC has a hidden agenda and argue that the Framework has switched from an emphasis on sustainability disclosure to a purely capital market focus (IIRC, 2013a; Dumay, Bernardi, Guthrie, & Demartini, 2016). Milne & Gray (2013) state that "<IR> has nothing to with either accountability or sustainability." Also Elkington (2009) concludes that <IR> is not improving the disclosure of triple bottom line information. Flower (2015) notes that there is a bias in the selection of items. He finds that companies only include certain subjects

when they contribute to the value creation of the firm. Others claim that the investment community does not know how to or even does not care to interpret ESG (Environmental, Social, and governance) information presented in corporate reports. An often given example by opponents is the case of the world's leading nutrition company, Nestlé. The multinational gains worldwide access to (city) water supplies at a fraction of the real cost of water and then over-charges consumers for access to the very same water in plastic bottles. The fact that the chairman and CEO of Nestlé, Peter Brabeck-Letmathe calls the idea that water is a human right "extreme", only adds more fuel to the flames for environmentalists. Locals have already protested against these practices and Nestlé is currently facing lawsuits for mislabeling its water products (White, 2017; Pavlo, 2018; Rodriguez, 2018). However, the company is not being downgraded by its capital providers. Though, investors seem to be interested in information about 'payment to executives', they often want the executives' remuneration to be directly linked to share price performance, whether this is for society's "right reasons" remains another issue (M.H. Rea, personal communication, 4 January 2018). Furthermore, Patten (1992) examined the Exxon Valdez Oil spill and found that threats to a firm's legitimacy spark companies to include more CSR information in its disclosure. This only supports the theory of companies only caring about CSR/ESG when disaster strikes and is threatening a firm's reputation and then in hindsight it needs to minimize the damage by rolling out evidence of systems and controls that ought to have avoided disasters. More recently, similar behaviour could be perceived after BP's Transocean disaster in the Gulf of Mexico (Wilmshurst & Frost, 2000, M.H. Rea, personal communication, 4 January 2018). Hassel et al. (2005) find empirical evidence that market participants have increased their focus on environmental performance and increasingly penalized high performance. They state that this finding suggests that "when a company is confirmed as a 'responsible corporate citizen' it is tended to be viewed as coming at a cost to shareholders." Hassel et al. (2005, p. 56). Fonseca (2010) criticizes the assurance process for sustainability reports of companies in environmentally sensitive industries (mining and metals). He states that "the analysed reports demonstrated several quality problems and that the extensive scope limitations and diversity of verification criteria employed by assurers indicate that mining companies had significant control over the assurance practice." (Fonseca, 2010, p. 355). Another perspective on reporting and assurance is offered by the neo-institutional theory, which states that companies adapt to social norms and external influences and do not follow rational or economic arguments. This homogeneity of behaviour is known as isomorphism (Goodrick & Salancik, 1996; Gürtürk & Hahn, 2016). DiMaggio & Powell (1983) distinguish 3 types of

isomorphic behaviour, i.e. coercive isomorphism, mimetic isomorphism, and normative isomorphism.

Coercive isomorphism develops from formal and informal influences on companies by other companies upon which they are dependent by cultural expectation in the society within which they operate. Normative isomorphism arises from an increasing professionalization of the environment, it could create mutual managerial views in favor of or against certain types of disclosure practices (f.e. reporting on ESG information). Mimetic isomorphism originates from environmental uncertainties, i.e. the organization sets imitation up as behavioral heuristics by reproducing and improving upon the disclosure practices from organizations that it perceives to be legitimate and successful. This often for the reason of competitive advantage in terms of legitimacy (Setyorini & Ishak, 2012, p. 3).

De Villiers & Alexander (2014) indeed find that isomorphism results in companies to copy the CSR reporting practices of better performing entities. Even though there was a distinction in legislation between the sample firms, they implemented generic solutions to environmental problems. Grrk & Hahn (2016) translate isomorphism into the context of assurance.

The increasing adaptation of CSR/IR assurance may result from pressures for legitimacy and the social expectations that are exercised by the organisation's external environment. Companies and assurance providers face voluntary frameworks and not mandatory legislation when it comes to CSR/IR assurance. This makes assurance procedures uncertain and ambiguous and may result in mimetic somorphism in which assurance providers adopt the actions of other assurers, especially when assurance statements are perceived as a tool to decrease information asymmetries and increase the credibility of corporate information (Grrk & Hahn; 2016, p. 8).

Thus, this may result in assurance only being used because it increases the legitimacy of a company's operations and not because it actually verifies the disclosed content.

4. Mandatory integrated reporting in South Africa

South Africa is globally known as the precursor when it comes to IR. In 2010 the Johannesburg Stock Exchange became the first (and still only) capital market in the world to mandate IR for listed companies. The JSE decided to include the then newly released King III Report on Corporate Governance in its listing requirements. Baboukardos & Rimmel (2016, p. 438) describe that “King III calls for the integration of information about a firm’s financial and sustainability performance and recognizes the need to contextualize financial reporting by reporting on how a firm has affected (both positively and negatively) the economic life of its external environment.” According to King III and the IIRC (2013a), such an approach will result in disclosure that allows for an informed assessment of a firm’s market value. Solomon & Maroun (2012) conclude that the implementation of King III indeed led to an increase in the disclosure of social, environmental and ethical issues. A major shortcoming was that JSE listed companies could bypass the listing requirement if they provided sufficient arguments for not issuing an integrated report, the ‘apply or explain’ regime. In 2017, the JSE eventually announced that any documents submitted for approval on or after 1 October 2017 should comply with the King IV corporate governance codes (Baker & McKenzie, 2017). With this significant change came an end to the ‘apply or explain’ era, from now on listed companies should ‘apply and explain’ the emission of an integrated report. Furthermore, Demartini & Trucco (2017, p. 24) find that “King IV focuses more on an ‘outcome-based’ approach rather than a ‘rule-based’ approach, increases transparency and aligns itself with the integrated thinking approach.” Another reason for this undisputed world leadership can be found in how widely accepted integrated reporting and thinking as a management tool are among both public and private companies. However, the main driver behind all of these factors lays in the history of the country that has proven that the success of a company does not depend on financial capital alone. In its past, South Africa has had to deal with a lack of regulation and ethics, a deficient administration, a shortage of water, etc. Furthermore, since the end of apartheid, the need for social and economic empowerment of the black population, HIV/AIDS, and South Africa’s re-entry into the international community have been some of the driving forces in the development and evolution of the King Reports. In 1993, the South African Institute of Directors ordered the King Committee to compose the highest standards of corporate governance in South Africa. The first King Report, King I was published in 1994 and went beyond the then prevailing standard on CSR, i.e. the Cadbury Report. Guidelines for issues that were never before addressed in the country, i.e. board diversity, role of directors, remuneration disclosure, code of ethics, auditing requirements, etc. were implemented and the Report was the first to promote an

integrated approach that included all stakeholders (Visser, 2005; West, 2006; Setia et al., 2015; Barth et al., 2016; Demartini & Trucco, 2017; IRC of South Africa, 2017).

There is no universal method to measure the quality of an integrated report and the limited prior research has used different benchmarks, often in combination with <IR> compliance. Lee & Yeo (2016) assesses the quality of an integrated report in South Africa by solely evaluating the strengthness of compliance with the <IR> Framework of 8 elements (i.e. organizational overview and external environment, governance, business model, risks and opportunities, strategy and resource allocation, performance, outlook, and basis of preparation and presentation). Other possible measures for the quality of an integrated report are annual awards and surveys, delivered by a limited amount of independent institutions and audit firms (f.e. Nkonki IR Awards, SNG survey on IR, EY's Annual Review of Top 100 IRs in South Africa, CSSA IR Awards, etc.). Over the years some of these awards have established themselves as a reliable measure partly due to their high standards and level of transparency, f.e. Nkonki IR Awards and EY's Annual Review. For each survey, a panel of adjudicators with a considerable background and career in IR evaluates the integrated reports and delivers a final score. For the EY and Nkonki survey, companies are eventually categorized in five different classes. The emphasis is placed especially on the quality, understandability, accessibility, and connectedness of the presented integrated information. Working method, results and evolution are displayed in an annual document. However, final scores of the panel are never published (Barth et al., 2016; EY, 2017). A random observation for the EY survey of 2015, 2016, and 2017 is that some of the companies who obtained an exceptionally high IRQ score are in industries known for their severe environmental and social impact (f.e. Kumba Iron Ore Ltd, Oceana Group Ltd, etc.), which is in line with prior findings and surveys on CSR disclosure (Cho & Patten, 2007; KPMG, 2008; Faisal et al., 2012; Zeng et al., 2012; Cahan et al., 2016). However, there is still a lot of room for improvement. A PwC survey (2014) found that companies struggle to enhance the quality of their integrated reports. Two third of the top 40 JSE listed companies do not identify their relevant stakeholders, threats, opportunities, and challenges. Some fail to implement an integrated thinking approach and only 31% of sample firms identified KPIs. Alarming is the fact that just 39% disclosed their influence on all external capitals and only 11% reported on the impact of their financial performance and these capitals (PwC, 2015; Demartini & Trucco, 2017). Solomon & Maroun (2012) indicate that the same information is often repeated and du Toit et al. (2017, p. 25) find that "certain types of information are often restricted to certain sections within the reports." du Toit et al. (2017, p. 24) suggest that "regulators have to provide more detailed guidelines about the

reporting requirements of companies, while companies need to realign their focus towards the basics of integrated reporting and develop a mindset to continuously improve their reporting.” Further, they declare that companies have to “significantly reduce the number of times certain social, environmental and ethical issues are repeated in an integrated report and to integrate them in other relevant sections of the report to ensure an equal spread of information throughout.” (du Toit et al., 2017, p. 25). Another shortcoming is the fact that the JSE does not require listed companies to provide an assurance statement for their integrated reports. Though it is not mandatory yet, such statement is recommended in order to ensure that disclosed information is trustworthy and reliable (Solomon & Maroun, 2012; Demartini & Trucco, 2017).

To the best of my knowledge, only few studies have been conducted on the mandatory setting of South Africa to generate evidence supporting the IIRC’s claim that <IR> adoption improves firm valuation. Lee & Yeo (2016) did research on the value relevance of IR and they conclude that the benefits of IR exceed its costs. They find that there is a positive association between integrated disclosures and firm valuation. The impact is stronger for companies with a higher organizational complexity, which suggests that IR improves the information environment in complex firms (measured by firm size, amount of business segments and amount of intangible assets). Furthermore, they remark that higher financing needs and a more extensive integrated disclosure result in a higher firm valuation, which suggests that IR lowers the information asymmetry gap. Finally, they find that the mandation of IR for JSE listed companies in 2010 has caused an increase in the value relevance perception of investors. More recently, Cosma et al. (2018) find a significant association between integrated reporting quality (IRQ) and stock price for a sample of observations ranging from 2013 to 2016. They also notice ‘learning effects’ in investors’ assessment over time, the value attributed to IR grows over time. Barth et al. (2016) find empirical evidence for a positive association between IRQ and both stock liquidity and firm value. They state that “firm value is mainly affected by increased expected future cash flows (cash flow effect), because capital providers revise their estimates upwards as they have a better understanding of the companies’ capitals and strategy due to a higher IRQ.” (Barth et al., 2016, p. 27, 28). Another plausible cause could be the improvement in decision making by managers. On the other hand, the research concludes that the association between IRQ and the cost of capital is weak. Contrarily, Zhou et al. (2017) find that a high quality of IR (measured by a higher level of alignment with the <IR>) is associated with a significant reduction in the cost of equity capital and the realized market returns. They state that “this proposes that investors are willing to accept a lower rate of return as a result of reduced information risk.” Zhou et al. (2017, p. 30, p. 31).

However, their evidence also suggests that this effect can be connected with a better information environment.

5. Conclusion

As previous literature gathered empirical evidence for the value relevance of traditional financial reporting and discussed the usefulness of CSR disclosure, research is now shifting towards a new reporting initiative called integrated reporting (IR). There is already an extended amount of research supporting the value relevance of IR in a voluntary setting (Serafeim, 2015; Arguelles et al., 2015; Martinez, 2016; Loprevite et al. 2018; etc.). On the other hand, the number of South African focused IR studies is more restricted (Barth et al., 2016; Lee & Yeo, 2016; Cosma et al., 2018), but seems to indicate its usefulness. However, IR is still in full development and research on the subject in a mandatory setting is in need of extension in order to allow capital providers, regulators, policy makers, stock exchanges, and other stakeholders to make a full assessment of its benefits and costs.

Value relevance research primarily focuses on an investors' perspective. In 2013, this capital market angle for IR was supported by the IIRC, and critics claim that this endorsement can possibly threaten the path towards what ought to be a more sustainable economic model. Especially companies operating in environmentally sensitive industries have a tendency towards providing better CSR disclosures, possibly to legitimise their activities (Cho & Patten, 2007; Faisal et al., 2012; Zeng et al., 2012). Hence, (integrated) disclosure should solely function as a messenger of the actual CSR performance of a company embedded by an integrated thinking approach. The role of a strong and independent third-party assurance on disclosed information in this process should not be neglected.

Verifying the presence of legitimacy enhancing activities by companies is out of the scope of this thesis. Abhayawansa et al., 2015, p. 20) already provide empirical evidence that JSE listed companies are adopting a legitimisation strategy, stating that "they merely follow the letter of the King III Code when creating an integrated report", resulting them to question "whether corporate behaviour has actually improved due to integrated reporting or does it only add to the empty rhetoric endemic in annual reporting." The recent update to King IV which aims to implement integrated thinking and the assurance standard, AA1000 (that is currently in revision to comply to CSR and IR) make believe that steps are taken in the right direction. In the end, it should be the (institutional) investors, capital providers, and funds making the greatest impact. Their screams for a more sustainable economic model will force companies to think differently about how they impact the world around us and at what real cost. Nevertheless, I believe it is in the best interest

of the IIRC to encourage and monitor future research and assurance to reveal and guarantee that disclosed information is authentic. This to avoid window dressing and to confirm that we are trully going towards a model of sustainable capitalism.

Hypothesis development and methodology

The preceding discussion and extensive literature on the effects of corporate disclosure on firm value lead to the following hypothesis:

Hypothesis 1: There is a positive association between IRQ and the market value of a company.

In this study a level (price) specification is followed to determine the value relevance. de Klerk & de Villiers (2012) used a modified Ohlson (1995) price model developed by Hassel et al. (2005) to assess the value relevance of Corporate Responsibility Reporting (CRR) in South Africa. In order to test the value relevance of integrated reporting in South Africa, I will apply the Hassel et al. (2005) modified Ohlson (1995) model to Integrated Reporting Quality (IRQ). Further, I will add 2 other relevant control variables, i.e. CSR Performance and Corporate Governance (Barth et al., 2016). Further, I will control for the effect that IRQ has on firm value depending on whether a company is active in an environmentally and/or socially sensitive industry or not (de Klerk & de Villiers, 2012).

The valuation model developed by Ohlson (1995) is mainly based on three assumptions. Hassel et al. (2005, p. 46) describes them as follows: "First, the value of equity equals the present value of all future dividends. Second, the accounting system satisfies a clean-surlus relationship. Finally, abnormal earnings evolve as a modified first-order, auto regressive process and other information, U_t as a simple first-order, auto regressive process." Based on these 3 assumptions, Ohlson (1995) derives the following valuation model:

$$MV_t = \alpha_0 BV_t + \alpha_1 AE_t + \alpha_2 U_t \quad (1)$$

Where MV_t is the market value of equity, BV_t equals book value of equity, AE_t is abnormal earnings, and U_t captures other non-accounting value-relevant information.

Following Hassel et al. (2005) and de Klerk & de Villiers (2012), equation (1) is restated in terms of cum-dividend market value, opening book value, net income after taxes and other non-accounting value relevant information. This results in the following model:

$$MV_t + DI_t = \beta_0 + \beta_1 BV_{t-1} + \beta_2 NI_t + \beta_3 v_t + \varepsilon_t \quad (2)$$

Where $MV_t + DI_t$ is the cum-dividend adjusted market value of equity, MV_t is the market value of equity and is computed by multiplying the number of outstanding shares at the last day of the month three months after the end of the financial year with the share price at the last day of the month three months after the end of the financial year. This is to allow time for the publication and analysis of the integrated reports by market participants (de Klerk & de Villiers, 2012), DI_t is dividends distributed to common shareholders, BV_{t-1} equals opening book value of equity, NI_t is the net income after taxes, and v_t captures other non-accounting value-relevant information.

Due to the fact that models following a level (price) specification potentially suffer scaling problems (Easton, 1999; Kothari and Zimmerman, 1995), I scale all variables with opening book value of equity, $BV_{i,t-1}$ (Hassel et al., 2005; de Klerk & de Villiers, 2012). Hassel et al. (2005) and de Klerk & de Villiers (2012) start by investigating the value relevance of accounting information solely by estimating the following regression of cum-dividend market value on net income:

$$\frac{MV_{i,t} + DI_{i,t}}{BV_{i,t-1}} = \beta_0 \frac{1}{BV_{i,t-1}} + \beta_1 \frac{BV_{i,t-1}}{BV_{i,t-1}} + \beta_2 \frac{NI_{i,t}}{BV_{i,t-1}} + \varepsilon_{i,t} \quad (3)$$

In order to study the incremental value relevance of integrated reporting, equation (3) is extended by including a measure of integrated reporting quality, IRQ:

$$\frac{MV_{i,t} + DI_{i,t}}{BV_{i,t-1}} = \beta_0 \frac{1}{BV_{i,t-1}} + \beta_1 \frac{BV_{i,t-1}}{BV_{i,t-1}} + \beta_2 \frac{NI_{i,t}}{BV_{i,t-1}} + \beta_3 IRQ_{i,t} + \varepsilon_{i,t} \quad (4)$$

Where IRQ is my proxy variable for v_t in equation (2). As the measure of IRQ is assumed to be independent of company size, it is not deflated with opening book value (Hassel et al., 2005).

Measure of integrated reporting quality (IRQ)

My proxy for IRQ is constructed from the EY Excellence in Integrated Reporting Awards 2015 & 2017 for the top 100 listed companies on the JSE. This survey subdivides companies into five buckets, but does not publish any final (quantitative) scores. Due to the fast developments within IR, these raw scores are not comparable over time. As Barth et al. (2016, p. 17) declares that “the emphasis of this survey is on the ranking,” they calculated a company’s IR score as “the mean of the three separated scores of each adjudicator, followed by annually ranking that final score into deciles.” Since I did not get proprietary access to final scores or underlying scores of any of the adjudicators, I assigned a score between 1 and 5 to each integrated report depending on its assigned category for the EY survey as presented in table 1.

Appendix 3 provides further elaboration on the way adjudicators measure the quality of integrated reports for the annual EY survey and the used procedure by Barth et al. (2016).

Table 1. IRQ scores.

EY Excellence in IR Awards 2017	
<i>Categorization</i>	<i>My score</i>
Top ten	5
Excellent	4
Good	3
Average	2
Progress to be made	1

Lin, Chang, & Dang (2015, p. 8) note that “companies in environmentally sensitive industries face serious regulations, i.e. non-toxic packaging, low polluting processes, non-use of sweatshop labour, eco-friendly manufacturing practices, etc.” As previously mentioned, they also tend to disclose more on CSR information (Patten, 1992). On the other hand, for firms in environmentally non-sensitive industries, the regulations are not as strict. Therefore, there is a possibility that these companies with high quality integrated reports will not be valued by their stakeholders. Thus, it would be interesting to investigate whether higher levels of IRQ are likely to be assessed differently for companies in environmentally sensitive industries, than for companies in other industries (de Klerk & de Villiers, 2012; Miralles-Quirós, 2018). This results in the following hypothesis:

Hypothesis 2: The association between IRQ and firm value is stronger for companies in environmentally sensitive industries.

In order to find empirical evidence that the association between IRQ and firm value is stronger for environmentally and/or socially sensitive companies, I will add an extension to equation (4). The following industries are categorized as environmentally and/or socially sensitive: mining, chemical, oil and gas, and forestry (Neu, Warsame, & Pedwell, 1998; de Klerk & de Villiers, 2012). Based on the comment of de Klerk & de Villiers (2012) for this list being too restrictive, I extend it with freight transportation, gambling, explosive/arms, tobacco, distiller and vintner, heavy construction, and pharmaceutical companies.

$$\frac{MV_{i,t} + DI_{i,t}}{BV_{i,t-1}} = \beta_0 \frac{1}{BV_{i,t-1}} + \beta_1 + \beta_2 \frac{NI_{i,t}}{BV_{i,t-1}} + \beta_3 IRQ_{i,t} + \beta_4 ESS_{i,t} + \varepsilon_{i,t} \quad (5)$$

Where $ESS_{i,t}$ is a dummy variable, equal to 1 for environmentally and/or socially sensitive companies and equal to 0 otherwise.

In 2010, integrated reporting became mandatory for JSE listed companies in South Africa on an ‘apply or explain’ basis. This is why I would like to investigate a possible structural change in the value relevance of IR before and after the introduction of this legislation. Lee & Yeo (2016, p. 4) explain that “the intuition underlying this test is that market participants (due to a more strict legislation) increase their focus on IR and gradually learn about the intricacies and challenges associated with IR implementation over time.” This is why I will make another extension to equation (5). However, due to data constraints I have no available IRQ data from before 2013. It is also too soon to investigate the impact of King IV since the currently available IRQ data still applies to integrated reports published under King III (EY, 2017). I may not be able to investigate the impact of regulation, but since IR is developing at a quick pace every year, it can still be interesting to examine the presence of ‘learning effects’ among investors over the years in their IR assessment.

Hypothesis 3_A: The value relevance of IR has increased after it became mandated in 2010.

Hypothesis 3_B: The value relevance of IR has increased since 2015.

To test this hypothesis, I will introduce a dummy variable TP whose coefficient will reflect possible unknown systematic differences between time periods.

$$\frac{MV_{i,t} + DI_{i,t}}{BV_{i,t-1}} = \beta_0 \frac{1}{BV_{i,t-1}} + \beta_1 + \beta_2 \frac{NI_{i,t}}{BV_{i,t-1}} + \beta_3 IRQ_{i,t} + \beta_4 ESS_{i,t} + \beta_5 TP_{i,t} + \varepsilon_{i,t} \quad (6A)$$

Where $TP_{i,t}$ is a dummy variable, equal to zero for observations in 2015 and equal to one for observations in 2017.

Because of concerns for multicollinearity, I will only introduce two interaction variables ($ESS_{i,t} IRQ_{i,t}$ and $TP_{i,t} IRQ_{i,t}$) when statistically significant differences are found over time or across industries. These variables allow for further investigation of the nature of the significance and are both measured by multiplying the values of respectively $ESS_{i,t}$ and $TP_{i,t}$ with $IRQ_{i,t}$ (Hassel et al., 2005).

$$\frac{MV_{i,t} + DI_{i,t}}{BV_{i,t-1}} = \beta_0 \frac{1}{BV_{i,t-1}} + \beta_1 + \beta_2 \frac{NI_{i,t}}{BV_{i,t-1}} + \beta_3 IRQ_{i,t} + \beta_4 ESS_{i,t} + \beta_5 TP_{i,t} + \beta_6 ESS_{i,t} IRQ_{i,t} + \beta_7 TP_{i,t} IRQ_{i,t} + \varepsilon_{i,t} \quad (6B)$$

Following prior literature, I will include two other control variables in the regression model since these may be correlated with IRQ or could be associated with the economic consequences I test (Barth et al., 2016). This results in the following final regression model:

$$\frac{MV_{i,t} + DI_{i,t}}{BV_{i,t-1}} = \beta_0 \frac{1}{BV_{i,t-1}} + \beta_1 + \beta_2 \frac{NI_{i,t}}{BV_{i,t-1}} + \beta_3 IRQ_{i,t} + \beta_4 ESS_{i,t} + \beta_5 TP_{i,t} + \beta_6 CSRPerf_{i,t} + \beta_7 CG_{i,t} + \varepsilon_{i,t} \quad (7)$$

Where CSRPerf is a measure for a company's Corporate Social Responsibility performance, and CG is a measure for a company's Corporate Governance score. These are both assumed to be independent of company size, so they are not deflated with opening book value (Hassel et al., 2005).

Measure of CSR Performance (CSRPerf)

I control for Corporate Social Responsibility performance because Hassel et al (2005) find that there is a negative relationship between environmental performance and market value of equity for a Swedish dataset. Contrarily, Elliott, Jackson, Peecher, & White (2013) gather empirical evidence that CSR performance is positively associated with investors' assessment of market value. Cohen (2017, p. 6) describes that "CSR is about businesses taking responsibility and being accountable for their impact on people, communities and the environment, thus CSR goes beyond the requirements of the law." Hence, I include ESG performance scores from Thomson Reuters' Eikon to control for CSR performance in my model.

Measure of Corporate Governance (CG)

I control for corporate governance because Chen, Chen, & Wei (2009) find that corporate governance has a negative impact on the cost of capital, “which affects firm value via the denominator effect.” (Barth et al., 2016, p. 18). CG is based on the Governance Pillar score derived from Thomson Reuters’ Eikon. Eikon (2018) describes that “this variable measures a company’s systems and processes which ensure that its board members and executives act in the best interest of its long term shareholders.”

Appendix 4 provides an overview of all the used variables (and their description) in the regression model.

Data Collection

Financial and extra-financial data were collected from Thomson Reuters Eikon. The IRQ scores were obtained from the reports of EY's Excellence in IR Awards 2015 & 2017. Financial data is expressed in Zuid Afrikaanse Rand (ZAR).

The original 2017 sample consists of 100 firms (Top 100 JSE 2017). First, all the companies that have one or more missing values for the used variables (21) are omitted. Further, I select firms across all industries with the exception of the industry of banks, investment/financial services companies and funds (NACE code 64-65-66). I exclude these firms as they have a different capital structure and are bounded by other reporting requirements (Jahmani, Choi, Park, & Wu, 2017). Doing this I have to eliminate 16 companies. The 2017 sample counts 63 companies.

Table 2. Sample Selection Procedure 2017.

Full list of constituents	100
Missing observations or inconsistencies in the reported data	(21)
Banks, investment/financial services and funds	(16)
Sample 2017	63

In order to test my third hypothesis, I need to study observations over 2 time periods (2015 & 2017) for the same set of companies. In this regard, I use the 2017 sample as a reference and therefore lose 9 observations due to IRQ data being only available for the top 100 listed JSE companies of each year or other inconsistencies in reported data in 2015 in respect to 2017. Following Hassel et al. (2005), I decide not to exclude loss firms (negative net income). To prevent data loss from deleting outliers, I use the technique of (95%-) winsorization. Variables $\frac{MV_{i,t} + DI_{i,t}}{BV_{i,t-1}}$, $\frac{1}{BV_{i,t-1}}$, $\frac{NI_{i,t}}{BV_{i,t-1}}$, $CSRPerf_{i,t}$, and $CG_{i,t}$ are winsorized at 2,5% (for each tail area) to reduce the probability that outliers could bias the research results. The final sample for my regression counts 54 companies with each 2 observations (1 for each time period).

Table 3. Sample Selection Procedure: Final sample.

Sample 2017	63
Missing observations or inconsistencies in the reported data (2015)	(9)
Sample 2017	54
Sample 2015	54
Final regression sample	108 (2 x 54)

Descriptive Statistics

This section presents the data characteristics of the final sample. Table 4 tabulates the descriptive statistics of the variables (after winsorizing). For sample firms (table 3), the cum-dividend adjusted market value of equity is on average 684.670 times higher than the opening book value. The (deflated) net income variable expresses that the yearly mean return on equity is 16.129% with extreme levels of profitability on both ends of the spectrum (min. -24.00% and max. 58.80%). IRQ has a mean score of 3.157 and scores range from 1 to 5. CSR performance scores float between 36.499 and 86.355 (out of 100) and corporate governance scores range from 24.258 to 90.281 (out of 100). The dummy variable ESS indicates that 35,20% of the sample companies (38) are in an environmentally and/or socially sensitive industry. 50% of the 108 observations are from 2015, the other half belongs to 2017.

Table 4. Descriptive statistics.

Variable	Mean	Std. Dev.	Min.	Median	Max.
$(MV_{i,t} + DI_{i,t}) / BV_{i,t-1}$	684.670	885.148	48.284	317.417	3813.125
$1 / BV_{i,t-1}$	1.340 E-10	1.390 E-10	8.180 E-12	8.600 E-11	6.300 E-10
$NI_{i,t} / BV_{i,t-1}$	0.164	0.174	-0.240	0.159	0.585
$IRQ_{i,t}$	3.157	1.145	1.000	3.000	5.000
$CSRPerf_{i,t}$	63.515	12.760	36.499	64.351	86.335
$CG_{i,t}$	58.916	19.858	24.258	62.914	90.281
$ESS_{i,t}$	0.352	0.480	0.000	0.000	1.000
$TP_{i,t}$	0.500	0.502	0.000	0.500	1.000

Table 5 reports the correlation coefficients between the variables in the model. A p-value lower than 0,05 indicates a statistically significant correlaton (*). Surprisingly, the inverted book value of equity is positively (and significantly) associated with net income. This implies that net income and book value of equity are negatively correlated. The variables that I test (IRQ, ESS and TP) barely show signs of correlation with firm value, p-values are far above 0,05. On the other hand, there is a positive and significant association between firm value and the control variable CSR performance. As expected, CSR performance and corporate governance are postively and significantly correlated. Further, IRQ is significantly associated with CSR performance, corporate governance (CG) and companies in environmentally and/or socially sensitive (ESS) industries. Most of the coefficients are well below 0.7, which indicates that the regression results should not be affected by any serious multicollinearity problems. The VIFs (Variance Inflating Factors, table 9) support this finding and stay within descent limits.

Table 5. Correlation coefficients.

	$(MV_{i,t} + DI_{i,t}) / BV_{i,t-1}$	$1/ BV_{i,t-1}$	$NI_{i,t} / BV_{i,t-1}$	$IRQ_{i,t}$	$CSRPerf_{i,t}$	$CG_{i,t}$	$ESS_{i,t}$	$TP_{i,t}$
$(MV_{i,t} + DI_{i,t}) / BV_{i,t-1}$	1							
$1/ BV_{i,t-1}$	0.653*	1						
$NI_{i,t} / BV_{i,t-1}$	0.195*	0.303*	1					
$IRQ_{i,t}$	0.112	0.036	-0.019	1				
$CSRPerf_{i,t}$	0.397*	0.133	-0.063	0.513*	1			
$CG_{i,t}$	0.303*	0.149	0.006	0.230*	0.706*	1		
$ESS_{i,t}$	-0.036	-0.160	-0.474*	0.238*	0.176	0.099	1	
$TP_{i,t}$	-0.038	-0.103	-0.037	-0.057	0.068	-0.010	4.31 E-18	1

* significant for $p < 0,05$

Regression analysis

Table 6 presents the results of estimating the earnings regression model without including any extra-financial data (equation 3). The coefficient of inverted opening book value of equity is positive and significant. Conflicting with prior literature, net income does not have a significant impact on the cum-dividend market value of equity. The (adjusted) explanatory power of the regression is 41,5%. Thus, this model explains 41,5% of the variation in the dependent variable (firm value), which is low in terms of credibility (70% is often used as a benchmark for credibility in accounting research). The F-test can be perceived as a worst-case scenario test to examine the overall significance of the regression (and R-squared). I consider this test throughout my regression analysis and find that the overall significance of all of the coefficients is never simultaneously zero.

Table 6. Regression: Equation (3).

Panel A: Model Summary

	R-squared	Adjusted R-squared	Durbin-Watson	Prob.
Panel B: Regression Coefficients	0.426	0.415	1.993	0.000
	Coefficient			Prob.
Constant	129.954			0.201
1/ BV_{t,t-1}	4.160 E+12			0.000
NI_{t,t} / BV_{t,t-1}	-13.871			0.972

Table 7 reports the regression results when the measure of IRQ is added to the model (equation 4). I cannot reject the zero hypothesis for IRQ under a 5% probability (H_1). IRQ does not significantly impacts firm value, which results in the conclusion that integrated reports are not perceived as valuable (accounting and non-accounting) information by investors in their decision-making process. Hence, this study provides no empirical evidence of the value relevance of IR in South Africa.

Table 7. Regression: Equation (4).

Panel A: Model Summary

	R-squared	Adjusted R-squared	Durbin-Watson	Prob.
	0.434	0.418	1.984	0.000
Panel B: Regression Coefficients				
	Coefficient			Prob.
Constant	-85.405			0.679
1/ BV_{i,t-1}	4.140 E+12			0.000
NI_{i,t} / BV_{i,t-1}	0.818			0.998
IRQ_{i,t}	68.538			0.233

Table 8 investigates the regression results when adding the dummy variable for environmentally and/or socially sensitive industries (ESS) together with the dummy for time period (TP). The adjusted R-squared is now 41,1%. The ESS variable is positive and insignificant. This indicates that there are no systematic distinctions in the assessment of integrated reports by investors depending on whether a company operates in an environmentally and/or socially sensitive industry or not (*H2*). The coefficient for TP is also statistically insignificant, which suggests that investors do not value integrated reports differently in 2015 in respect to 2017 (*H3*).

However, the economic relevance of this finding is rather limited. Future research should gather more empirical evidence supporting the findings of Lee & Yeo (2016) who conclude that after the implementation of King III on the JSE, the value relevance of IR has increased. Thus, the mandation of IR made investors differently evaluate integrated disclosure, which influences firm value. When the integrated reports of 2018 are published and analysed (IRQ measured), another purposeful investigation will be whether the application of King IV on documents published on or after 1 October 2017 did have any effect on the assessment of investors.

When adding the variables representing CSR performance (CSRPerf) and corporate governance (CG) to the regression model, the adjusted R-squared slightly increases to 50,3% (table 9). The coefficient for CSR performance is positive and significant, which indicates that a better CSR performance is assessed as valuable by investors and therefore results in a higher firm value. On the other hand, the coefficient for corporate governance is negative and insignificant.

Table 8. Regression: Equation (6).

Panel A: Model Summary

	R-squared	Adjusted R-squared	Durbin-Watson	Prob.
	0.438	0.411	1.985	0.000
Panel B: Regression Coefficients	Coefficient			Prob.
Constant	-156.364			0.493
1/ BV_{i,t-1}	4.170 E+12			0.000
NI_{i,t} / BV_{i,t-1}	154.773			0.730
IRQ_{i,t}	58.417			0.329
ESS_{i,t}	119.699			0.459
TP_{i,t}	62.062			0.638

Table 9. Regression: Equation (7).

Panel A: Model Summary

	R-squared	Adjusted R-squared	Durbin-Watson	Prob.
	0.536	0.503	1.890	0.000
Panel B: Regression Coefficients	Coefficient			Prob.
Constant	-1286.387			0.000
1/ BV_{i,t-1}	3.810 E+12			0.000
NI_{i,t} / BV_{i,t-1}	312.714			0.450
IRQ_{i,t}	-93.375			0.153
CSRPerf_{i,t}	28.856			0.000
CG_{i,t}	-2.586			0.562
ESS_{i,t}	92.099			0.536
TP_{i,t}	-16.852			0.891

I use Variance Inflated Factors (VIFs) to detect for multicollinearity (table 10). The VIF for the predictor Integrated Reporting Quality (IRQ) for example, states that the variance of the estimated coefficient of IRQ is inflated by a factor of 1.518 because IRQ is weakly correlated with the other predictors in the model. As expected, all VIFs are at acceptable levels. Low VIFs in combination with a low R-squared indicate that I should not be concerned about multicollinearity influencing the regression results. Further, all Durban-Watson statistics are close to 2, which implies that autocorrelation is no issue in these regression models. I use the White test to check for heteroskedasticity. 2 statistics reject the zero hypothesis of a homoskedastic error term under a 5% probability, which indicates that heteroscedasticity may be a concern in the presented regression. Thus, I perform a regression using the Huber-White robust standard errors. This reveals that regression results were not significantly influenced by heteroscedasticity.

Table 10. Multicollinearity: Equation (7).

Variable	Centered VIF
Constant	NA
1/ BV_{i,t-1}	1.151
NI_{i,t} / BV_{i,t-1}	1.413
IRQ_{i,t}	1.518
CSRPerf_{i,t}	2.808
CG_{i,t}	2.138
ESS_{i,t}	1.392
TP_{i,t}	1.042

Conclusion

In response to stakeholders' needs, companies have increased their social and environmental disclosure in separate reports during the past decades. However, CSR reports do not draw any connections between the different aspects of a company's operations, making it difficult for investors to assess future value and impacts on society. In this regard, IR is steadily starting to gain recognition on company and international level. Due to its history, South Africa has played a pivotal role in the development of IR to where it stands today, making it an interesting setting to analyse the implications of this new reporting framework (Barth et al., 2016; du Toit et al, 2017).

This dissertation applies a South African dataset to a modified Ohlson (1995) developed by Hassel et al. (2005) and includes some control variables identified by Barth et al. (2016) to examine the value relevance of Integrated reporting in a mandatory setting. Further, I investigate any possible systematic differences in IR evaluation by investors over time and across industries. I do not find a significant association between any of the test variables and firm value. Based on the used model and dataset I conclude that information presented in integrated reports is not assessed as valuable by corporate investors when making their economic decisions (*H1*). I also do not find a difference in IR perception by capitals providers depending on whether companies operate in an environmentally and/or socially sensitive industry or not (*H2*). Furthermore, I do not find a change in the value relevance of integrated reporting quality in 2015 in respect to 2017 (*H3*). However, I gather empirical evidence that the control variable CSRPerf (CSR performance) has a significant and positive impact on the cum-dividend adjusted market value of equity. Hence, companies that take initiatives for the welfare of society and put efforts in protecting the interest of society at large are perceived as more valuable by investors. My conclusions should be interesting for investors, companies, the JSE and the IIRC. The fact that my findings suggest that mandatory integrated reporting in South Africa is not associated with economic benefits in terms of firm value, may also be of interest for regulators and standards setters who are looking into mandating integrated reporting.

Considering that this research has some important limitations, the results should be interpreted carefully. This study relates only to large listed companies in South Africa, as this is the only country where integrated reporting is mandated. Further, South Africa has a tradition of high accounting quality and strong shareholder protection, so this limits the generalization of my

results to other countries with different institutional settings (Leuz et al., 2003; Lee & Yeo, 2016; Zhou et al., 2017). Another limitation is the small sample size due to data constraints for both financial and extra-financial information. Furthermore, this dissertation lacks quantifiable IRQ data. Despite numerous efforts I could not get access to the final IRQ scores from adjudicators of any of the South African IR surveys. The last couple of years some of these have established themselves as reliable when it comes to measuring integrated reporting quality as each integrated report is evaluated by IR experts following high standards. One of the adjudicators assured me they are working on making this kind of information more accessible for research purposes in the future. Further, this study focuses on one type of reporting through which companies communicate to their stakeholders, i.e. the integrated annual reports. Zhou et al. (2017, p. 32) notes that “the sole focus on integrated reports may not be a proper proxy for the overall disclosure policy of sample companies, future research should consider incorporating other avenues of disclosure”. It would also be interesting to further examine a possible structural change in the value relevance of IRQ and compare time periods before and after the introduction of the legislation that made IR mandatory for JSE listed companies. In addition, from the moment integrated reports of 2018 are published and analysed, it will be possible to investigate the effect of the implementation of King IV. As integrated reporting is important in South Africa for all types of companies, future research should also investigate the disclosure practice of smaller listed companies and their value relevance.

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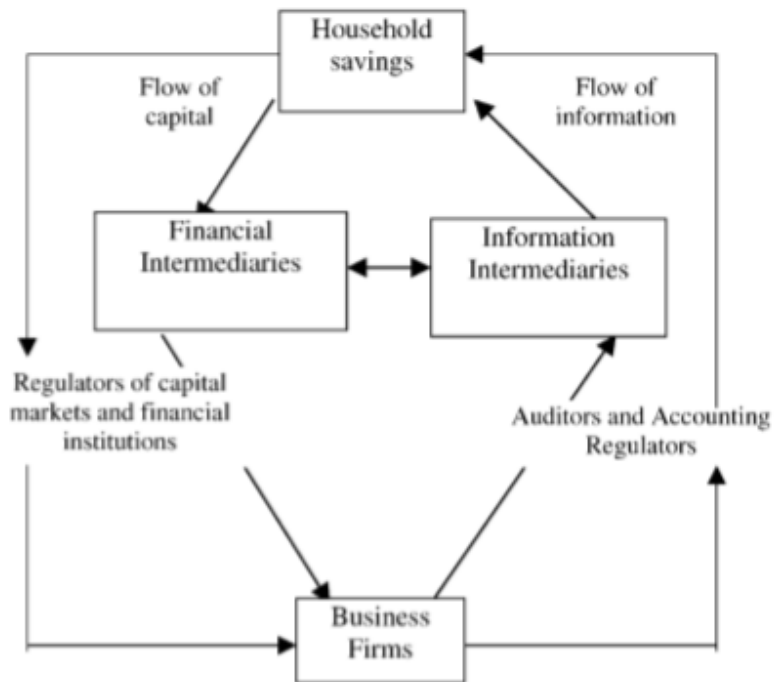
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Attachments

1. Financial and information flows in a capital market economy.



(Healy & Palepu, 2000)

2. Corporate Reporting Supply Chain.



(DiPiazza & Eccles, 2002)

3. Integrated Reporting Quality: EY's adjudicators' measure method.

The companies chosen for inclusion in the awards survey are the top 100 companies listed on the Johannesburg Stock Exchange (JSE), which are selected on the basis of their market capitalisation on the last trading day of the calendar year. This is usually the 31st December. In the case of companies which operate through a dual listing structure, only the combined group is included in the survey. The document that is actually labelled as being the integrated report is reviewed and adjudicated. For the dual listed companies that do not produce an integrated report, the adjudicators evaluate the information contained in their annual report. The adjudicators only look at the document that is labelled as being the integrated report or the annual report in the case where companies have not produced an integrated report (EY, 2017).

Each of the integrated reports of the top 100 companies is separately adjudicated by each of the three adjudicators from the College of Accounting at the University of Cape Town using the pre-agreed mark plan. The mark plan is developed by these three adjudicators, in conjunction with EY's Professional Practice Group. The UCT team comprises Professors Alexandra Watson, Goolam Modack and Mark Graham. All of the adjudicators have been involved for many years in EY's "Excellence" in reporting series, and in EY's Excellence in Integrated Reporting survey since 2011. The mark plan is based on the Guiding Principles and Content Elements that appeared in the International Integrated Reporting Council's <IR> Framework (the Framework), which was issued in December 2013. A mark out of ten is awarded for each of the seven Guiding Principles (i.e. strategic focus and future orientation, connectivity of information, stakeholder relationships, materiality, conciseness, reliability and completeness and lastly consistency and comparability). Similarly, a mark out of ten is awarded for each of the eight Content Elements (i.e. organisational overview and external environment, governance, business model, risks and opportunities, strategy and resource allocation, performance, outlook and finally basis of presentation and preparation). Marks are also awarded for the extent to which the integrated report incorporates the Framework's fundamental concepts, dealing with how value is created with reference to the six 'capitals' where relevant. The adjudicators believe that an explanation of how a business creates value with respect to the six capitals, is a particularly suitable way for most companies to present the content that needs to be presented within its integrated report. Furthermore, an explanation of how value is created within an organisation can sensibly be structured around how value is embodied in the capitals that it uses. Doing this should also give the report a more logical flow. Therefore, whilst the adjudicators do not expect companies to explicitly structure their report

around the six capitals, or use specific terminology, they would certainly look for disclosures relating to the stock and flow of the capitals (i.e. financial, manufactured, intellectual, human, social and relationship as well as natural) and the extent to which tradeoffs between different capitals may influence the organisation's strategy. Further, the adjudicators expect the company's view to be explicitly stated and the reporting approach to be appropriate for its stated target audience. The adjudicators do not attempt to achieve consensus on the scores. It is the ranking that matters. Where an adjudicator's ranking differs widely from the others, this is reviewed to ensure that information has not been overlooked. Often, scores may vary widely. While the adjudicators generally agree on what is good disclosure, perception of the relative importance of items may differ. Despite this, there is a high degree of consensus among the adjudicating members' overall perceptions and recommended rankings. The overriding objective in ranking the integrated report is the extent to which it complies with the spirit of integrated reporting as defined by King III as being "a holistic and integrated representation of the company's performance in terms of both its finance and sustainability". The other objective in ranking is based on the Framework being "a concise communication about how an organisation's strategy, governance, performance and prospects, in the context of its external environment, lead to the creation of value over the short, medium and long term". Any integrated reporting requirements in terms of King IV will be included in the 2018 survey as King IV is only effective in respect of the financial years commencing on or after 1 April 2017 (EY, 2017).

Barth et al. (2016) interview Mark Graham on 21 August 2014 about the process the adjudicators follow in scoring the integrated reports. He confirmed that it takes between 30 minutes and four hours to evaluate a single report, depending on the extent to which a firm has implemented integrated reporting principles. He described that discrepancies between the scores of adjudicators are identified at a meeting between the adjudicators. Where the adjudicators are not able to resolve these discrepancies at the initial meeting, the reports of these firms are reevaluated by the adjudicators and discussed at a follow-up meeting. He also indicated that the adjudicators take care to distinguish between credible information and puffery. As Graham described during the interview: "For some firms, it is merely a public relations exercise through pictures, but we would never rate those well. It is hard for a firm to be excellent without clear key performance indicators. If a firm has a lot of green washing and narratives are too long, it is not going to be excellent."

When conducting their research, Barth et al. (2016) have proprietary access to the underlying scores of the three adjudicators supporting the publicly announced buckets. Because the scores are subjective measures of qualitative information, we calculate a firm's score as the mean of the three adjudicators' scores and annually rank these scores into deciles to mitigate concerns about measurement error. As integrated reporting has developed rapidly over the sample period, EY did not use exactly the same score sheet for the three periods in our sample. As a result, the raw scores are not directly comparable over time. To address this issue Barth et al. (2016) do not include the raw scores in the regression, but the annual decile ranks instead.

4. Overview of the used variables in equation (3) – equation (7).

Variable	Measure/calculation
$\frac{MV_{i,t} + DI_{i,t}}{BV_{i,t-1}}$	<p>MV_{i,t} + DI_{i,t} is the cum-dividend adjusted market value of equity of company i and is scaled with the opening book value of equity for company i, BV_{i,t-1}. MV_{i,t} represents the market value of equity of company i and is calculated by multiplying the number of outstanding shares at the last day of the month three months after the end of the financial year for company i with the share price at the last day of the month three months after the end of the financial year. This time gap is to allow time for the publication and analysis of the integrated reports by investors. DI_{i,t} embodies the dividends distributed to common shareholders for company i and is calculated by multiplying the number of common shares outstanding with the (common) dividend per share. BV_{i,t-1} equals opening book value of equity of company i and is the difference between total assets and total liabilities.</p>
$\frac{1}{BV_{i,t-1}}$	<p>1/BV_{i,t-1} represents the inversed opening book value of equity of company i.</p>
$\frac{BV_{i,t-1}}{BV_{i,t-1}}$	<p>This variable is the opening book value of equity of company i scaled with the opening book value of equity of the company and is equal to 1 for all companies</p>
$\frac{NI_{i,t}}{BV_{i,t-1}}$	<p>NI_{i,t} represents the net income after taxes for company i and is scaled with the opening book value of equity, BV_{i,t-1}.</p>
$IRQ_{i,t}$	<p>IRQ_{i,t} represents the quality of the integrated report of company i. This variable is a score I assigned between 1-5. This score is based on the categorization in buckets, published from EY's annual IR survey (EY's Excellence in Integrated Reporting Awards 2015 & 2017) for the top 100 listed companies on the JSE. I did not get proprietary access to final scores of any of the adjudicators.</p>

ESS_{i,t}

(Dummy)

ESS_{i,t} is a dummy variable for industry, equal to 1 for companies that operate in an environmentally and/or socially sensitive industry, and equal to 0 otherwise. The following industries are categorized as environmentally and/or socially sensitive: mining, chemical, oil and gas, and forestry, freight transportation, gambling, explosive/arms, tobacco, distiller and vintner, heavy construction, and pharmaceutical companies.

TP_{i,t}

(Dummy)

TP_{i,t} is a dummy variable for time period, equal to zero for observations in 2015 and equal to one for 2017.

CSRPerf_{i,t}

CSRPerf_{i,t} represents the corporate social responsibility performance score of company i. This is a score between 1-100 obtained from Eikon (ESG performance score).

CG_{i,t}

CG_{i,t} represents the corporate governance score of company i. This is a score between 1-100 obtained from Eikon (Governance Pillar score).

***ESS_{i,t} IRQ_{i,t}**

(Interaction)

ESS_{i,t} IRQ_{i,t} represents an interaction variable, calculated by multiplying the IRQ score of company i with the dummy variable, ESS_{i,t}. This variable allows for further investigation if a statistical significant association is found between ESS_{i,t} and firm value.

***TP_{i,t} IRQ_{i,t}**

(Interaction)

TP_{i,t} IRQ_{i,t} represents an interaction variable, calculated by multiplying the IRQ score of company i the dummy variable, TP_{i,t}. This variable allows for further investigation if a statistical significant association is found between TP_{i,t} and firm value

*These variables were not used in the final regression models as no statistical significant association was found between either ESS_{i,t} or TP_{i,t} and $\frac{MV_{i,t} + DI_{i,t}}{BV_{i,t-1}}$. In addition, including them would have caused severe multicollinearity issues.