Integrated Reporting

Exploring the effects of Integrated Reporting in South Africa

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Abstract

This paper analyzes the relatively new topic, the Integrated Reporting (IR) framework, with the objective to provide empirical insight and contribute to the existing gap in the academic literature. This research capitalizes on the regulatory environment in South Africa where IR has been mandatory since 2010. The results of the research reveal that after the mandatory adoption of IR, the accuracy and dispersion of analyst earnings forecast did not improve. Furthermore, the cost of capital was not lowered. The results are sharpened with the addition of the alignment aspect, which explores whether there are any differences between IR of higher alignment with the established framework. The outcome of the analysis shows that IR of higher alignment with the framework lead to improved analyst earnings forecast accuracy and lower cost of capital. Unfortunately, the results do not indicate an improvement in analyst earnings forecast dispersion.

The results presented in this paper suggest that IR provides qualitative disclosure to the financial analysts and providers of capital only when the IR is of higher alignment with the established framework. Therefore, a recommendation for the practitioners on this journey towards IR is to comprehensively adopt the established framework.

1. Introduction

This paper sets to analyze the Integrated Reporting (IR) framework. The IR is a relevant and trending topic of discussion among practitioners, stakeholders and standard-setters. The IR framework has been established due to the increasing demand from the stakeholders to obtain non-financial information from the management in addition to the financial information to get a better insight of the company (Eccles et al., 2011; Dhaliwal et al., 2011). However, the lack of proper disclosure framework and guidelines results in the ongoing challenges and criticism from stakeholders with respect to the non-financial disclosures (Simnett & Huggins, 2015). The concept of integrative disclosure flourished from these ongoing challenges, which led to the establishment of IR framework. One of the objectives of the framework is to provide a systematic and integrative approach toward financial and non-financial disclosure, in which the aforementioned elements are interconnected within a single report (Dassen, 2011; Wallage, 2011; Perego et al. 2016). In doing so, the stakeholders get an enhanced view and insight of the company. It is worth mentioning that the journey towards IR has been gaining momentum, where practitioners voluntarily adopt the framework or the concept of integrated disclosure. Regulators, standard-setters and market intermediaries have publicly voiced their support towards this development. Proceeding with the aforementioned, the research question formulated that underpin this paper is as follows:

Does the Integrated Reporting framework improves the quality of disclosure?

There is currently limited empirical evidence to support the notion that integrated disclosure or IR framework improves the quality of disclosure. There is a gap in the academic literature in regards to the emergence and effect of IR framework adoption (Cheng et al., 2014; de Villiers, 2014; Simnitt & Huggins, 2015). Therefore, it can be concluded that the benefits of the IR framework currently presented is based on the hype associated with the novelty of the IR framework. As aforementioned, this paper sets to analyze the IR empirically and potentially fulfill

two objectives. First, the paper contributes to the existing gap in academic literature regarding the IR regardless of the results. Second, the results can be relevant to stakeholders, practitioners and standard-setters. The results of this research provide insight into whether the IR is simply a periodic trend among practitioners to comply with the demand of stakeholders or does it provide a solution to the ongoing challenges as depicted earlier.

In the view of the aforementioned, the ideal setting for this research is South Africa. Since the enactment of Kings code III in 2010, a local corporate practice code in South Africa, all firms listed on the Johannesburg Stock Exchange (JSE) are required to produce a report following the guidelines of the IR framework. To date, no other jurisdiction have similar requirement, which makes JSE a front-runner in the field of IR. It creates a unique setting for the empirical research of IR.

In this research, the focus is primarily on financial analysts and the providers of capital. Financial analysts are considered an important component within the capital market to provide valuable information to the relevant stakeholders (Ioannou & Serafeim, 2015). Capital providers are essential to finance company operations and continuity. Following this line of thought, this research analyzed how IR interacts and influence the analyst forecast accuracy, dispersion and the cost of capital.

The research sample consists of the firms listed on the JSE from the period 2009 – 2013, which captures the period before and after the enactment of King Code III. The concept behind this research operationalization is to determine the development before and after the first time adoption of IR regarding the analyst forecast characteristics and cost of capital. The expectation is that the IR provides valuable information to the financial analysts and providers of capital. Therefore, it can be expected that the analyst forecast accuracy and forecast dispersion are improved and the cost of capital is lower after adopting the IR framework.

Unfortunately, the results of the research do not show an improvement in forecast accuracy and dispersion after the adoption of IR in 2010. Further, the cost of capital

is not lower. The analysis is further sharpened with the addition of the alignment aspect after the adoption. Due to the relatively new concept of integrated disclosure, the fact that not all IR adhere fully to the concept and framework cannot be ignored (Klijnsmit, 2011; Hurks et al., 2015). Hence, the level of alignment of IR with the framework is taken into consideration in this research and embodied in the third hypothesis. The results indicate an improvement in analyst forecast accuracy, but not forecast dispersion. This means that IR of higher alignment with the framework helps financial analysts forecast company earnings better. However, the forecast dispersion among analysts is no different when an IR is of higher alignment. The results also indicate a lower cost of capital when an IR is of higher alignment.

All in all, the results of the research conducted provide valuable insight to the research question. The results support the notion that the IR improves the quality of disclosure from the analysts and capital providers point of view.

The results of this research contribute to the existing body of academic literature within the stream of non-financial disclosures. Many academic literatures to date have covered the implications of non-financial disclosure such as CSR (e.g. Dhaliwal et al. 2014). However, the emergence of IR left a gap still to be discovered empirically within the aforementioned stream of literature. This paper attempts to humbly make a contribution within this stream of literature by analyzing the IR empirically.

As presented in the preceding paragraph, the results can provide additional incentive for the practitioners to adopt the IR based on empirical results and not on novelty hype and assumptions. Empirical results imply that it is essential to adhere to the established framework in order to achieve the objectives and capitalize on the benefits of the IR. The results are largely in line with the intuition that non-financial disclosures in addition to the traditional financial disclosures provide the stakeholders with better insight of the company performance. The IR offers a systematic framework in integrating and linking the aforementioned elements in a single report.

The rest of the paper is structured as follows. The second section of the paper provides a theoretical background and summarizes the important results from prior studies in the field of non-financial disclosures. Furthermore, the linkage between the non-financial disclosure and the establishment of IR framework is established. Building upon the foundation of theoretical framework, the proper hypotheses are developed to explore the topic of IR. Methodological steps taken to formulate the hypotheses are elaborated on in the third section of this paper. The fourth section offers an overview of the design of the research used in this paper. The results based on the research design and analysis is in the fifth section. A brief summary reflecting back at the research question and concluding remarks of this paper is in the last section.

2. Literature review

In this section, some of the developments leading up to the establishment of IR framework are depicted. It is worth mentioning that the emphasis of this research is not specifically on corporate social responsibility (CSR) or sustainability aspects of the firm, but rather on the integrated disclosure of different elements in a corporate report. Understanding the events and circumstances leading up to the establishment of IR framework can potentially provide valuable insights to the research.

2.1 Developments towards socially responsible corporate practices

The continuous developments and increasing complexity of the world today certainly affects the way business operates, which in turn also influence the environment around the firm (Chen et al. 2006). Since the 90s, there has been a growing demand for firms to commit more on the environment and social welfare rather than the traditional business concept centered on profit (Carroll, 1991; Deegan, 2002). In practice, CSR has become a core element of business models in order to gain strategic advantage in the market and manifest the best part of firms in the eyes of the stakeholders (Sen & Bhattacharya, 2001; Lindgreen & Swaen, 2010). Additionally, firms who devote time and resources to CSR practices often times benefit from better stock market performance (Herremans et al., 1993; Lin et al., 2009) and consumer loyalty (Sen & Bhattacharya, 2001). The consensus is that firms that emphasize CSR practice are perceived as more sustainable and stable business.

As briefly indicated above, sustainability is also considered an important aspect from a management point of view (Junior et al., 2014). Different agreements, regulations and protocols has been signed and supported to establish a more sustainable future (Chen et al., 2006). Due to recent developments, the increase of public awareness and media scrutiny, the ongoing debate on sustainability has intensified. This led to the recent Paris Agreement in 2015. The Paris Agreement reflects the commitment of countries worldwide to further take actions towards a more sustainable future on global level. This is further operationalized on country level. It is reasonable to expect that sustainable agreement such as the Paris

Agreement and other sustainability developments will certainly have an impact on the core business operation. How businesses operate under an increasing rigid and strict environmental regulation will be key to the success of every business in the twenty-first century (Chen et al., 2006). In addition, it is essential that firms communicate the achievements made to respond to stakeholders concern (Perrini & Tencati, 2006).

Another point of attention is corporate governance. In light of unexpected accounting scandals of considerable proportion from renowned firms, such as Enron and WorldCom, corporate governance mechanism has been in the public and stakeholders criticism and media spotlight. This led to an increase interest to revise the current corporate governance mechanism, in which the control and ownership of the firm is separated. Consequently, the management who is in control of the firm can strive for their own interest and not the interest of the shareholders (Jensen & Meckling 1976; Ho et al., 2008). The shortcomings in corporate governance can also potentially have bigger implications as well. For example, some argue that the East Asian financial crisis of 1997 was caused by lack of transparency in the corporate culture (Ho et al., 2008). The lack of trust from the stakeholders and the public in general is evident. Ho & Wong (2001) argue that enhanced disclosure can improve the transparency and potentially mitigate the issues concerning corporate governance.

2.2 Voluntary disclosure of non-financial information
Recall that the emphasis of this paper is not about CSR or sustainability, but rather on the integrated disclosure of different elements, such as CSR and sustainability, in a harmonized single report. The reason for a brief elaboration on the different topics and developments is to illustrate the new reality that firms have to operate in and the challenges firms try to overcome. One of the challenges is the ability of the management to convey useful information to the stakeholders with respect to the different factors that influence the firm. As depicted in the preceding paragraph, often times firms have to manage the dynamics of many different factors that

influence the firm performance, directly or indirectly, that can not always be quantified in numbers and figures.

The corporate annual reports are considered the primary source of communication to the stakeholders in this regard. As noted by Kothari et al. (2009), in addition to the traditional annual reports the management also voluntarily publishes information through other channels of communication as well, such as conference calls. The traditional corporate annual reports focused mainly on financial performance of the firm and are retrospective of nature (Kothari et al. 2009). Due to the increase interest from stakeholders to obtain information beyond the financial disclosures of the firm (Eccles et al., 2011; Dhaliwal et al., 2011; Steyn, 2014; Cohen et al., 2015) that cannot be fully conveyed through the current reporting framework (King, 2011; Clayton et al., 2015; Simnitt & Huggins, 2015), the management is often inclined to disclose supplementary information on a voluntary basis. Moreover, the separation of control and ownership creates the so-called information asymmetry between the management and the shareholders (Francis et al., 2005; Kothari et al., 2009; Hassan & Marston, 2010). The management is considered to have superior knowledge and information of the firm. Therefore, the stakeholders demand the management to disclose additional relevant information to enhance the transparency (Healy & Palepu, 2001). The legitimacy of these kind of voluntary disclosures is also questionable. It can be argued that the voluntary disclosures often times provide the incomplete picture of the firm. The management are inclined to cherry pick the best aspects of the firm and leave out the less favorable aspects (Owen et al., 2000).

Notwithstanding the aforementioned, in recent years there has been an exponential increase in voluntary disclosures. Especially, there is a demand for non-financial information from the management (O'Donovan, 2002; Marcuccio & Steccolini, 2005; Cohen et al., 2015). This ongoing trend of non-financial disclosures in corporate reporting has the attention from regulators, standard setters and academics (Healy & Palepu, 2001; Wallage, 2011; Jensen & Berg, 2012; NBA 2013). The consensus is that supplementary non-financial disclosures can complement the mandatory disclosures and potentially provide better insight to the firm's

performance. In fact, in an annual survey conducted by KPMG (2015) among the top 100 firms across 45 countries shows that stand-alone CSR reports in corporate reporting are considered the new mainstream practice. Furthermore, a sustainability survey conducted by McKinsey (2014) in which hundreds of top executives took part also reflected similar result. The results of the survey indicate that one of the most important reasons for the management to address sustainability issues is to be perceived positively by the stakeholders.

Due to the increase in voluntary non-financial disclosures, especially social and environmental disclosures, a growing body of academics has showed an increase interest in this phenomenon of management practice (Deegan, 2002). Consequently, many theories or hypotheses were established to explain this phenomenon among practitioners. One of the theories often employed by the academics in the field of social and environmental disclosure is the *legitimacy theory* (Tilling, 2004; Mahadeo et al., 2011). The concept of legitimacy from an organizational point of view is the simple fact that the decisions and actions of the firm are deemed acceptable within the boundaries and norms of the society (Suchman, 1995). Tilling (2004) defines legitimacy as an important resource for the continue operation of the firm. The degree of legitimacy ultimately influences the ability of the firm to attract other important resources. The management provides voluntarily supplementary disclosure with respect to the decisions and actions of the firm to the stakeholders in order to maintain or enhance this so-called legitimacy. O'Donovan (2002) noted that it is essential for the management to disclose information when the firm engage in new activities. If the stakeholders are not aware of the intentions underlying the actions of the management, the legitimacy may be jeopardized. In line with the discussion up until now, the concept of legitimacy is not static but dynamic of nature. It is influenced largely by the expectations of the society. Recall that there is a growing demand from the stakeholders regarding CSR practices and the general public scrutiny regarding sustainability issues. Hence, it has been on the management agenda to address the abovementioned issues (e.g. Chen et al., 2006; McKinsey, 2014).

Healy & Palepu (2001) summarized some of the generally used hypotheses in the academic literatures such as, but not limited to, *corporate control contest hypothesis* and *capital markets transactions hypothesis*. The *capital market transaction hypothesis* will be relevant in this research. The underlying concept of the aforementioned hypothesis state that firms that are active in the capital market will be more inclined to disclose supplementary disclosure to mitigate the information asymmetry problem. The management believes it is essential for the investors to perceive the firm positively which influence the cost of financing

Another stream of theory is the *stakeholder theory*. There are some disagreement on the extend in which the theory captures and provide insight the underlying concept of voluntary non-financial disclosure practice. Some argue that the stakeholder theory is not so useful compared to other theories in this field of interest (Deegan, 2002; Orij, 2010). Others believe the stakeholder theory is valuable in providing insight to the matter at hand (Mahadeo et al., 2011). Nevertheless, the stakeholder theory is relevant in this research. The concept of stakeholder theory can further be sub-divided into an ethical and managerial point of view (Deegan, 2002; Mahadeo et al., 2011). From an ethical perspective, the stakeholder theory provides a normative approach how the management should manage the stakeholder. The managerial perspective rests on the assumption that the management has to strategically manage the different stakeholders, especially the stakeholders that have a great level of influence to the firm's resources. The management has incentive to disclose information to these stakeholders to show that the actions and decisions are aligned with the expectations from the stakeholders (Campbell, 2007). Notwithstanding the aforementioned, there is overlap between the two views on voluntary disclosure (see for example O'Donovan, 2002; Mahadeo, et al., 2011). The perspective in this paper is based on a combination of legitimacy theory and stakeholder theory. This will be further elaborated on in the following sections in this paper.

2.3 Non-financial disclosures and analyst forecast characteristics
As illustrated in the analogy of market for lemons classic theorem by Akerlof (1970),

in which the seller side has more information in the market compared to the buyer side. Consequently, the buyer cannot properly estimate the price. Following this line of thought, corporate disclosures are considered an important element for an efficient capital market (Cohen et al., 2015). As previously noted by Healy and Palepu (2001), when the management anticipates capital market activities, the management has the incentive to mitigate any information asymmetry by voluntarily disclosing more information. However, due to the complexity of information in corporate disclosures and the potential information asymmetry that prevails between the management and stakeholders, financial analysts are employed to dissect and analyze the information disclose by the management. When the information discloses by the management is considered poor, the investors often turned to analysts to provide relevant information. Financial analysts provide earnings forecast, buy/sell recommendations among other services to the participants of the capital market (Lang & Lundholm, 1996). These earnings forecast and recommendations have a great influence on the investor's decision (Orens & Lybaer, 2007). Proceeding with the aforementioned, financial analysts are considered an important component within the capital market mechanism (Ioannou & Serafeim, 2015). For example, in a study conducted by Covrig & Low (2005) found that analyst forecast value relevance is much higher compared to management disclosure. The setting of the research is in Japan, where the management corporate disclosure of Japanese firm is considered poor.

Recall that many factors, such as environmental, social and economic, influence the firm performance. For example, Dhaliwal et al. (2012) argued that firms that take CSR into account have a better corporate branding. This in turn affects the customers and their behavior towards the firm. Ultimately, the customer behavior towards the firm influences the business turnover. Therefore, it is reasonable to expect that financial analysts also consider the non-financial disclosures important. In line with the expectations, non-financial disclosures have also been added to the scope of useful information to the analysts and investors (AICPA, 1994; Dhaliwal et al., 2012; Cohen et al., 2015).

There has been an increase in the usage of non-financial information by

financial analysts. In the past however, the usage of non-financial information by analyst was considered useless or irrelevant (Cohen et al., 2015). The argumentation for the aforementioned was that analysts use specific models to make predictions and forecast of the firm performance. The data inputs for such models are often times well-specified and quantified data. However, as indicated previously, the non-financial information is often times free flowing with little structure. Therefore, analysts are less inclined to include non-financial information in the analysis, either due to irrelevancy or the difficulty to interpret the information. Furthermore, Ioannou & Serafeim (2015) noted that in the past the stakeholders perceived the CSR performance and respective ratings negatively. That is, analysts did not consider non-financial disclosure relevant and even provided negative recommendations regarding CSR disclosures. Investors and analysts believed that CSR related issues were strategically disclosed with the end purpose to simply strive for more profit. Fortunately, over time this view has been shifted to a more positive note, namely the emergence of the stakeholder theoretical point of view as discussed previously. Academic literatures have provided reasonable explanations of this shift towards a more positive perspective on CSR disclosures. Due to the increasing complexity of business operations, the financial analysts are aware of the importance to look beyond the financial information to enhance the quality of the assessment of the firm (Orens & Lybaer 2007; Dhaliwal et al., 2012). To illustrate the aforementioned, Ioannou & Serafeim (2015) conducted a research on analyst recommendations and CSR score for the sample period 1993 to 2007. The result revealed that in the beginning phase of the sample period, the CSR score on recommendations were indeed negative and significant. However, as the time period progress, the variable of interest shifted from negative to positive recommendations.

In another research by Lang & Lundholm (1996) reflect the positive association between analyst forecast characteristics and the quality of disclosure. Based on the data from the Report of the Financial Analysts Federation Corporate Information Committee (FAF), Lang & Lundholm (1996) showed that firms that scored higher on the FAF report with respect to the disclosure have a positive effect

on different analyst characteristics, such as analyst following, forecast accuracy and forecast dispersion. The measurement of the FAF report is based on the comprehensive disclosure, including non-financial information.

In a study by Orens & Lybaer (2007) in the Belgian market concluded that analysts often uses forward-looking information, such as objectives and sustainable strategies. The research further provides evidence regarding the positive relation between non-financial information and the accuracy of the earnings forecast. The results support the notion that the use of non-financial information leads to more accurate forecast.

Dhaliwal et al. (2012) sharpened the analysis by emphasizing on CSR disclosure and financial analyst characteristics in 31 different countries. The result is line with the abovementioned studies, in which firms that have a CSR report is associated with a lower earnings forecast error. Further test concludes that firms that disclose CSR report and are more stakeholders oriented have a more significant effect on forecast error. Additionally, the effect of CSR report is even more significant if the financial disclosure is poor. This is in line with the expectations that non-financial information complements financial information.

2.4 Non-financial disclosure and cost of capital

A firm is financed through an optimal combination of equity and debt. This cost of capital is an important indicator within the corporate decision making process, such as assessment of investment projects and to evaluate an optimal combination of equity and debt (Easley & O'hara, 2004; El Ghoul et al., 2011). Conventional financial theories indicate that the management can improve the value of the share by reducing the uncertainties that the investors and other stakeholders perceive of the firm (Botosan, 2000). There will never be a complete reduction of uncertainty as there will always be risks associated. However, one source of risk is the uncertainty created by the information asymmetry between the management and the stakeholders, which can be addressed.

Regulators and standard setters have attempted to provide suggestions to lower this cost of capital. The AICPA (1994) noted that a better corporate disclosure

could lead to lower cost of capital. The Royal Netherlands Institute of Chartered Accountants (NBA) also shared similar point of view. The NBA (2013) noted that most of the value of the firm is reflected in the brand and corporate sustainability among other intangible factors. Therefore, the real value of the firms is not properly reflected in the financial statement. The stakeholders get a better view of the value creation process of the firm when non-financial elements are incorporated in corporate reports in an integrative manner. This could lead to lower cost of capital for the firm itself.

Many studies has been conducted on the effect of voluntary disclosure of non-financial information on the cost of capital due to the increase interest in aspects such as CSR and sustainability. El Ghoul et al. (2011) noted that the cost of capital is the rate that the market employs to discount the future cash flow to estimate the current value of the firm based on the level of risk associated with the firm. Therefore, if firms with better CSR practice influence the perception positively of the market, it is reasonable to expect that the cost of capital to be lower. El Ghoul et al. (2011) conducted a research among a large sample of US firms. They measure the level of CSR of each firm based on a self-constructed framework. In line with the expectations, the result provided evidence that higher level of CSR practice leads to lower cost of capital. For the investors it is of great importance to have a complete and holistic view of the firm in order to assess the potential payoff.

Dhaliwal et al. (2011) also found negative and significant association between the voluntary disclosure of CSR practice and the cost of capital within a US sample. Dhaliwal et al. (2011) captured the effect of voluntary non-financial disclosure with a dummy variable that equals 1 if the observation discloses a stand-alone CSR report and 0 otherwise. Firms with a high cost of capital in the previous year are more inclined to issue more voluntary disclosure. In line with the *capital markets transactions hypothesis,* Dhaliwal et al. (2011) found that firms that disclose supplementary non-financial information are more inclined to issue equity capital.

A subsequent research by Dhaliwal et al. (2014) on international level that includes samples from 31 countries also echoed the same results after controlling for country level determinants such as country legal environment and public

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awareness. The result indicates that non-financial disclosures such as social and environmental disclosure are negatively and significantly associated with the cost of capital.

Botosan (1997) conducted a research on the effect of supplementary voluntary disclosure on the cost of capital. The supplementary disclosure encompasses, but not is confined to, forward looking information, business environment and strategy. The study measure the level of supplementary disclosure based on self-constructed model. Evidence suggests that higher level of voluntary disclosure indeed leads to lower cost of capital. However, the result is only existent for the firms that have lower analyst following. For firms that have high analyst following, the result also indicates a negative association, but not statistically significant. Botosan (1997) argue that a potential explanation in this regard would be on the self-constructed model in which it does not capture information that is not based on annual report of the firm.

2.5 Challenges with non-financial disclosures

As mentioned in the previous sections, the increase awareness of stakeholders and the public in general regarding CSR practices and sustainability issues lead to the increase disclosure of non-financial information by the management. The financial analysts, as an important component within the capital market, have also increased the usage of non-financial information. However, as the disclosure of non-financial information is often times voluntarily of nature, it is reasonable to expect challenges in this regard. From the management point of view, the disclosure to satisfy the need of the intended users is also very complex. In the past, much attention has been placed solely on the shareholders. However, in the last decade a broader range of groups, encompassed under the term stakeholders, have also showed increased interest in the firm and all the related affairs. In short, the management does not have a homogenous set of stakeholders, but a group of different stakeholders that have different demands when it comes to information from the management. Hence, the disclosure of information to satisfy the different stakeholders certainly cannot be labeled as easy (Sweeney & Coughlan, 2008).

Proceeding with the aforementioned, a reasonable point in question arises with respect to the effective disclosure of actions and decisions that are not stipulated in the regulations or effusive of nature (Ho et al., 2008) without being perceived as self-serving (Lindgreen & Swaen, 2010). The dynamic of different factors that influence the business operations cannot always be reflected in numbers and figures. The challenge in the past was the lack of common disclosure framework, as there are no standard disclosure frameworks regarding non-financial information. Furthermore, practitioners believe that the traditional corporate reporting do not fully capture and convey the information to stakeholder regarding the dynamic environment and the complexity in which the business operates in (AICPA, 1994; Dhaliwal et al., 2011; Cheng et al., 2014). Stakeholders often look beyond the numbers and figures to understand the firms underlying value (Yongvanich & Guthrie, 2006; Farneti & Guthrie, 2009; Dhaliwal et al., 2011; NBA, 2013; Cohen et al., 2015). The exponential increase of non-financial disclosure in corporate reporting has fueled another debate and concern among stakeholders, practitioners and regulators. As noted by Simnett & Huggins (2015), the size of corporate reports have increased exponentially in recent years. However, the quality of the corporate reports did not increase relative to the quantity. Due to the exponential increase in size of the corporate reports, the stakeholders are often left with an abundance of information. The relevant information that stakeholders actually consider useful are often times obscured within the voluminous corporate reports (FRC, 2011). This has prompt regulators with the initiatives such as 'cutting clutter' (FRC, 2011) or 'losing the excess baggage' (ICAS, 2011) with respect to corporate reports. The objective is to improve the efficacy of corporate reporting by eliminating immaterial information. In the view of the aforementioned, many organizations, such as the Global Reporting Initiative (GRI) and World Business Council for Sustainability Development, have provided practitioners a systematic framework and guideline with respect to non-financial disclosures (Deegan, 2002). Subsequently, many standard reporting and assessment framework were established for internal or external use, such as GRI and Balance Scorecard (de Villiers et al., 2014). Since its introduction, the GRI framework has been considered

the standard template when it comes to non-financial disclosure for external communication (Brown et al., 2009; Thijssens et al., 2016). It is worth mentioning that regulated or mandatory reports and disclosure are considered to be more relevant for the intended users. It provides uniformity in reports and disclosures and hence reduces the cost of processing the information (Healy & Palepu, 2001; Kothari, 2001).

Another point of attention is the cohesiveness of the report (Cheng et al. 2014; Setia et al. 2015). As mentioned previously, firms disclose information, such as CSR and sustainability, taking the demand of different stakeholders into consideration. The emphasis is often placed on simply the disclosure of the information and less on the total cohesiveness of the report. Consequently, the non-financial information is considered a stand-alone report with no linkage to the financial part or the other elements of the report (Wallage, 2011; Jensen & Berg, 2012; IIRC, 2013; NBA, 2013; Cheng et al., 2014; de Villiers et al., 2014). Setia et al. (2015) pointed to another shortcoming in the current non-financial disclosures. The non-financial disclosures do not provide insight how the company uses different resources to generate value, which might be useful to stakeholders in evaluating the company performance.

Following this line of thought, King (2011) recognized the need for a change or adapts the current framework in corporate reporting to effectively and efficiently convey the information to the relevant stakeholders. In the wake of these ongoing challenges in corporate reporting, International Integrated Reporting Council (IIRC) with relevant stakeholders, regulators and standard setters established the IR framework. The concept of qualitative disclosure has been expanded with the emergence of an additional characteristic, namely *integration* (Adams & Frost, 2008; NBA, 2013; IIRC, 2013; Perego et al., 2016). The integration aspect refers to the combination of different elements such as sustainability with corporate strategy and ultimately the business performance. This aspect of integration, as indicated previously, has been lacking in the traditional disclosure framework. The IR framework and the concept of integrative disclosure will be further elaborated in this paper.

South Africa has been widely considered the avant-garde regarding the concept of integrated reporting (Klijnsmit, 2011; de Villiers, 2014; Simnett & Huggins, 2015). The King Committee in South Africa has introduced many codes of corporate practice since 1993, including the concept of integrated reporting in the last King Code III. Subsequently, the Code is used to develop the IR framework internationally. Mervyn E. King is considered the leading force behind the journey towards IR in South Africa as well as on the international level (Klijnsmit, 2011). The objective of the IR framework is to provide practitioners with an effective framework to disclose relevant information, both financial and non-financial, in an integrative manner. It is worth mentioning that many academics, stakeholders and regulators consider the IR the potential future of corporate reporting. The shortcomings in the traditional reporting framework hinder the effective communication between the management and stakeholders (Dassen, 2011; Wallage, 2011; NBA 2013; Cheng et al., 2014; Stubbs & Higgins, 2014). The IR framework is not to replace the traditional corporate reporting mechanism and framework. The IR framework simply attempts to adapt or update the current corporate reporting framework to better improve the communication with the stakeholders (King, 2011).

2.6 IR framework for corporate disclosures

The IR framework was established in the wake of ongoing challenges with respect to the current corporate reporting framework. As illustrated in the previous section, the firm often times has to disclose different elements in a single report (Dassen, 2011; Wallage, 2011; Perego et al. 2016). In addition, the report has to convey the information that is useful to different stakeholders. Following this line of thought, the IR framework summarized the value creation process using the six capitals structured within the eight elements of the report following the seven fundamental principles (IIRC, 2013). This will be further elaborated on in this section.

The key characteristic and concept behind the IR framework is the emphasis on the cohesiveness of the report. In other words, the non-financial and financial disclosures are inter-connected in a harmonized report (IIRC, 2013; Cheng et al.,

2014; de Villiers et al., 2014; Adams, 2015; Clayton et al., 2015). The IIRC (2013) established a framework in this regard that is principle driven. As previously alluded to, firms face different factors that are often times dynamic of nature. For example, each firm approaches sustainability differently based on their resources and environment. In short, there is no one-size fit all approach when it comes to IR reporting. Therefore, the IR framework is based on principles that provide the flexibility within the bandwidth without sacrificing the uniformity between the different IR.

As aforementioned, the objective of the IR is to elaborate how the organization creates value using the so-called capitals and how these ultimately influence the environment surrounding the organization in a narrative structure. The capitals are namely: manufactured, financial, intellectual, human, social and natural (IIRC, 2013). As noted by Cheng et al. (2014), the capitals can be considered as the inputs or resources of the business model. Adams (2015) noted that the description of capital might bring forth confusion. Adams (2015) clarifies that the capitals are described on how it contributes to and interact with the business model of the firm. Therefore, the capitals from an IR framework point of view are not similar to the traditional sustainability point of view, in which the focus is only on the impact. Adams (2015) noted that if the capitals are described from the IR framework perspective how they contribute to the business model, the connectivity aspect of the capitals in the disclosure is achieved. It is worth mentioning that not all capitals are necessarily included in the IR, as it ultimately depends on the materiality of the capital that contributes to the overall value creation of the organization and hence important to the stakeholders.

The framework established eight elements supported by seven fundamental principles in order to provide some structure, consistency and uniformity to the IR when describing the aforementioned capitals. The elements of an IR include, but are not confined to, organizational overview, risks and opportunities. These elements provide a blueprint on the format of the report when the organization describes the value creation. The elements are not to be considered disjoint from one another, but

should provide interconnectedness between the elements. This is emphasized in the fundamental principles of the IR framework.

The fundamental principles are the cornerstone of the framework. The framework established seven principles to provide certain degree of guideline to the practitioner when drafting the IR. Some of the principles include, but are not limited to, connectivity of information and stakeholder relationship. Clayton et al. (2015) argue that the connectivity of information or integration is a fundamental aspect that differs from the traditional sustainability or CSR reporting. Furthermore, the IR framework emphasizes the importance to identify the key stakeholders of the firm. In doing so, the management is able to disclose information that is useful to the key stakeholders. The pivotal aspect in this regard is not only identifying the stakeholders but also maintain the relationship through more alignment of the disclosures with their demand and interests. Lindgreen & Swaen (2010) iterate the importance to align the information disclosed with the need and interest of the stakeholders. Failure in doing so will result in skepticism and lose of trust from the stakeholders.

3. Hypothesis development

As noted by Clayton et al. (2015), the traditional sustainability or CSR reporting framework lacks the mechanism that connects the financial and non-financial elements in a corporate report. For example, the integration of sustainability with the strategy that underpins the business operation that ultimately influences the firm performance. Jensen & Berg (2012) pointed to another shortcoming in the conventional reporting. The traditional annual and CSR reports are often times reliant on retrospective information and do not provide prospective information. Consequently, the value of the disclosures can potentially be limited. Furthermore, it is worth mentioning that the IR framework encompasses more than just reporting social, environmental and governance aspects as elaborated in the preceding paragraph. As noted by Setia et al. (2015), the core aspect of the IR framework is to narrate to the stakeholders the value creation process of the company in an integrative manner. In addressing the value creation process, the environmental, social and governance aspects come to light, as these are important to create value in the long term.

As previously alluded to, academics, regulators and practitioners are optimistic regarding the emergence of IR framework to resolve these ongoing issues. The NBA (2013) noted that the IR framework could potentially be the future of corporate reporting. In short, the IR framework is considered superior compared to the prior reporting frameworks. However, the term superiority is carefully and conservatively used in this context. The novelty of the framework creates a subjective perspective in which the positive effect of IR can potentially be exaggerated. Moreover, the IR framework has not been researched empirically (Cheng et al., 2014; de Villiers, 2014; Simnitt & Huggins, 2015). Therefore, this paper sets to explore new horizons with the IR framework within the stream of academic literature with respect to non-financial disclosures.

Recall previously that the perspective in this paper is a combination of stakeholder theory and legitimacy theory. The IR framework emphasizes the importance to identify the key stakeholders as one of the fundamental principles. In line with the managerial perspective of stakeholder theory, in which the information

disclosed should align with the key stakeholder expectations (Deegan, 2002; Rensburg & Botha 2014). Furthermore, the objective with the IR framework is to ultimately improve the communication channel with the key stakeholders in an integrative manner and reduce any barrier that jeopardizes transparency. This could be interpreted by the fact that firms attempts to justify the decisions and actions in the eyes of the stakeholders and enhance the trust (Steyn, 2014), which could be closely related to the concept of legitimacy theory.

Proceeding with the abovementioned, this paper adopts the optimistic point of view regarding the IR framework. Based on the assumption that IR provides an enhanced systematic framework compared to prior reporting frameworks, it is reasonable to expect that the IR framework produces similar positive results with respect to analyst forecast characteristics and cost of capital in prior researches. This leads to the formulation of the hypotheses of this research in the following sections of this chapter.

3.1 Analyst forecast characteristics
As illustrated in the analogy of market for lemons classic theorem by Akerlof (1970), corporate disclosures are considered an important element for an efficient capital market. Recall that financial analysts are also using non-financial information for the analysis and forecast. The consensus is that non-financial disclosures provide analysts with better information about the firm performance and the underlying value (Lang & Lundholm, 1993; Hope, 2003). Many empirical studies have supported the notion that enhanced non-financial disclosures provide the analysts with better picture of the firm performance. The financial analysts are able to gain valuable insight regarding the outlook of the firm with additional non-financial disclosures (Hope, 2003). Consequently the analysts can make more accurate forecast. Following this line of thought, Lang & Lundholm (1993) provide evidence that firms with more enhanced disclosure, including non-financial disclosure, leads to lower analyst forecast error. Dhaliwal et al. (2012) indicate that firms that issue stand-alone CSR reports have a lower analyst forecast error.

The IR provides an enhanced disclosure framework that not only includes CSR or sustainability aspect, but also elaborates on forward-looking information. In fact, it is anchored in one of the principles of the IR framework, namely the focus on strategic and future orientation. This fundamental principle underlines the importance to elaborate on the strategy on how the firm creates value in the short, medium and long term. Furthermore, one of the elements of the IR framework is the elaboration on outlook performance of the firm. This includes the challenges regarding the strategy the management pursues and the potential influence on the results. The IR is in line with the demand of financial analysts, in which forward looking information provides insightful knowledge for the analysts to make a forecast (Orens & Lybaert 2007; Bozzolan et al., 2009). Following this line of thought, it is reasonable to expect the formulation of the following hypothesis in an alternative form:

H1 (a): *The mandatory adoption of IR is negatively associated with the analyst forecast error.*

Lang & Lundholm (1993) provides a possible explanation on how the analyst forecasts can differ from one another on two aspects, namely the forecast models and the information they use as input for the forecast models. Assuming that all analysts use the same forecast model, but due to the relatively low informative disclosure by management, the analysts are inclined to find other channels of information. The forecast among analysts may differ when each analyst include different sources of information in the forecast and analysis. This is supported by the result of the research conducted by Lang & Lundholm (1993). Firms that provide enhanced disclosure, including non-financial information, have lower analyst dispersion.

Vanstraelen et al. (2003) conducted a research among three European countries, namely: Netherlands, Germany and Belgium. From the three European countries, Netherlands scored higher on firms providing non-financial information

that includes forwards looking disclosures. Consequently, the forecast dispersion for the Dutch firms is much lower compared to the other two European countries.

An IR according to the guidelines reflected in the fundamental principles, should provide a cohesive reliable report that integrates all material elements to the intended users. In addition, the IR also includes forward-looking information in the report in a cohesive manner. If the IR framework legitimately provides such holistic and complete view of the firm, it is reasonable to expect that more analysts will rely on the IR as an important source for the input of the forecasts models. If all analysts use the IR for the input of the forecast models, it is reasonable to expect that the output to be similar as well. Following this line of thought, the latter part of the first hypothesis voiced in an alternative form is as follows:

H1 (b): *The mandatory adoption of IR is negatively associated with the analyst forecast dispersion.*

3.2 Cost of capital

As analyst forecast characteristics are elaborated in the previous hypothesis, Vanstraelen et al. (2003) provided another perspective. When the analyst forecast dispersion is high it indirectly reflects the uncertainty of the investors on the firm performance as well. The investors will arguably demand for a premium when there is a perceived higher risk due to the uncertainty, which in turn increases the cost of capital. Furthermore, the information asymmetry that prevails between the management and the investors will also influence the cost of capital as depicted previously in the *cost of capital markets hypothesis* (Healy & Palepu, 2001). To mitigate the aforementioned, the relationship with the key stakeholders is highlighted in one of the seven fundamental principles of IR framework (IIRC, 2013). In an integrated report, the information should align with the interest and demand of the identified key stakeholders of the firm. In addition, the information should be complete and reliable. Recall previously that one of the challenges that the stakeholders are confronted with is the possible self-interest practice from the management. This means that the management only discloses positive information

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to portray the best part of the firm. The IR framework should enhance the transparency by disclosing the opportunities but also the risk factors and challenges that might influence the value creation. This can potentially reduce the information asymmetry, as it will be perceived as less subjective in the eyes of the stakeholders (Lindgreen & Swaen, 2010).

Proceeding with the aforementioned, the result from the study by Dhaliwal et al. (2011) indicates that firms that provide CSR report is associated with a lower level of cost of capital. A subsequent study by Dhaliwal et al. (2014) with a larger sample from different countries also echoed similar results. Botosan (1997) conducted a study on the association between the level of disclosure and cost of capital. The results indicate that firms with enhanced and higher level of disclosure benefit from a lower cost of capital. It is worth mentioning that the list of elements and factors that Botosan (1997) considered important and included in the study regarding disclosure, are also largely outlined in the IR framework. Botosan & Plumlee (2002) analyzed the different disclosure channels on cost of capital. The results indicate that the enhanced disclosure in annual report is associated with lower cost of capital. However, surprisingly the other channels of communications, such as quarterly reports increased the cost of capital. The IR is considered an integral part of the annual report. Therefore, the expectation is that the IR leads to lower cost of capital.

Summarizing the abovementioned, the IR framework emphasizes on the complete disclosure to key stakeholders that includes among others the strategy and business model. Therefore, it is reasonable to expect that the information asymmetry between the stakeholders and management will be reduced with an enhanced disclosure framework such as the IR. Consequently, the uncertainty and risk perceived by the stakeholder is reduced. Following this line of thought, the second hypothesis formulated in an alternative form is as follows:

H2: *The mandatory adoption of IR is negatively associated with the cost of capital.*

3.3 The alignment of IR reports with IR framework

As noted by Klijnsmit (2011) and Hurks et al. (2015), the IR report produced by firms does not always fully align with the IR framework. This can be explained by the fact that the concept of integrative disclosure is relatively novel. The management still needs to understand the concept of integrated disclosure. However, Steyn (2014) pointed to another remark. The concept of IR is not only confined to the disclosure practices, but it also impacts the organizational process as well. Recall that the objective of IR framework sets to integrate different elements, such as sustainability into the corporate strategy and performance. Therefore, it is reasonable to expect certain degree of change or adjustment in the business strategy, process and structure. Due to this change, the information system and process within the organization has to adapt as well in order to support the objective of IR. However, the reality is that not every business has the resources and capabilities to fully adapt or implement new process or information system to fully support the concept of IR. Therefore, it becomes cumbersome to produce an IR if the process and information system do not support the concept of IR.

In the view of the aforementioned, Hurks et al. (2015) analyzed the IR of the firms participating voluntarily in the global pilot program of IIRC. They measured the IR reports produced by the firms with the framework established by the IIRC. This includes the fundamental principles, content elements and the capitals as illustrated in the preceding sections. The results indicate that the level of compliance with the described IR framework varies among the firms. That means IR reports does not always include or apply the capital, element or fundamental principles, which leads to lower alignment with the established framework. This is in line with the aforementioned that the IR framework is still considered relatively new among practitioners and hence does not always have the resources to produce a report that fully embraces the concept of IR.

This prompts the formulation of the third hypothesis. In the preceding hypotheses, the emphasis is placed on the effect of first time adoption of IR. The third hypothesis sharpens the analysis by focusing on post adoption of IR framework, but the alignment with the framework is not fully achieved as illustrated

by Hurks et al. (2015). The third hypothesis sets to clarify the question whether there is a difference in full and/or partial alignment in order to achieve the full potential of the IR framework. The expectation is that higher or full alignment with the IR framework provides more benefit compared with lower alignment.

Proceeding with the aforementioned, the expectations embodied in the third hypothesis is as follows:

H3 (a): *Higher alignment with the IR framework leads to lower analyst forecast error*

H3 (b): *Higher alignment with the IR framework leads to lower forecast dispersion*

H3 (c): *Higher alignment with the IR framework leads to lower cost of capital*

The level of alignment will be measured using an external independent assessment, namely the annual results of EY Excellence in Integrated Reports Award. The reason on this operationalization and other aspects of this research will be elaborated on in the next section of this paper.

4. Research design

As the theoretical concept behind this paper is established in the preceding sections, the ensuing step is the operationalization of the theoretical concept of the research. This chapter begins with the description of the research setting and the sample period followed by the different models that will be employed in this research.

4.1 Research setting in Johannesburg, South Africa

Academic researches have indicated that there is currently a gap in the literature with respect to the emergence of IR framework. Current academic literatures regarding IR framework are usually confined to reviewing or simply outlining the components of the framework without providing much added empirical analysis and insight (Cheng et al., 2014; de Villiers, 2014; Simnitt & Huggins, 2015). As the concept of reporting in an integrated manner is relatively embryonic and its practice is still mostly voluntarily, it is reasonable to expect that academic researches have yet to research the IR framework and the effects extensively. Regulators have expressed the desire for the practitioners to adopt the IR framework or the concept of reporting in an integrative manner. Hence, this paper sets to explore the possibility presented by abovementioned academic researches regarding IR. Fortunately, South Africa provides an ideal setting to explore and research the IR framework. Since 2010, all firms listed on the Johannesburg Stock Exchange (JSE) have to adopt the IR framework as described in the local corporate code, the Kings Code III. Notwithstanding the aforementioned, the King's Code III does have the 'comply or explain' principle. That means the management needs to explain in detail the reasons for not adopting the IR framework for the corporate disclosures, which is more cumbersome than adopting the IR framework (Steyn, 2014). Therefore, most of the firms listed on the JSE do provide an IR (EY, 2013; de Villiers, 2014). Currently there are no other country or jurisdiction that explicitly mandate the adoption of IR framework or have similar regulations. Hence, many consider South Africa as the pioneer in IR. It is for that reason that this research capitalizes on this unique setting in South Africa to research the IR framework empirically.

Based on the abovementioned, the sample for this research is confined to the firms listed on the JSE. Due to the relatively unknown and uncommon setting of this research compared to US or European settings employed in many empirical researches, it is reasonable to expect some limitations with the availability of the data. Nevertheless, the data sample will be hand collected or retrieved from databases IBES and COMPUSTAT GLOBAL. The IBES (*Institutional Brokers Estimate System*) database provides analyst related data, such as mean forecast earnings per share, standard deviation and the number of analyst following. The latter database is employed to retrieve financial statement data to calculate the variables in the regression models. A schematic overview of the full sample by year and industry is provided in the following table 1, panel A and panel B respectively.

TABLE 1. Sample Distribution	
Panel A: Full sample by year	
Firms listed on JSE	N
2009	393
2010	397
2011	412
2012	389
2013	389
Less: Financial sector	137
Less: Unavailable data on IBES and Compustat	1390
	453

The sample period is extended with an additional year from previous study by Setia et al. (2015). The sample period for the first two hypotheses will be therefore between 2009 and 2013. This sample period captures the period before the mandatory adoption of IR and the period after the mandatory adoption of IR. Recall that the first two hypotheses analyses the effect of the mandatory adoption of IR. A longer sample period for the research might potentially include other confounding events that could alter the results of the research. The sample period for the third hypothesis, in which the alignment with the IR is analysed post adoption, is 2013.

Table 1 continued

Panel B: Full sample by industry

Industries by SIC code	N
Agriculture, Forestry and Fishing	10
Mining	85
Construction	35
Manufacturing	125
Transportation and Public Utilities	30
Whole Sale	45
Retail	65
Services	48
Public Administration	10
	453

In panel A, the total firms listed on the JSE each year is extracted from the JSE registration of active members, which amounts to 1680 firm-year observations over the period 2009 – 2013. 1390 firm-year observations are removed due to missing variables on the databases IBES and COMPUSTAT Global. Furthermore, the observations with the industry identifying code, SIC, 6000-6999 are removed from the final sample as well.

In Panel B, the firm-year observations are classified based on the respective SIC code.

Based on the industry classification, the final sample consists of firms originating from different industrial sector. The final sample consists of around 91 unique firms with 453 firm-year observations for the period 2009 – 2013. Following many empirical researches (e.g. Richardson et al. 2005), the firms originating from the financial sector are excluded from the final sample. This is due to the unique characteristics and nature of the financial sector that do not come forth in other industries. Including these observations can potentially influence the result of the analysis. The firms pertaining to the financial sector is identified with the SIC code 6000-6999.

Recall previously that the concept of IR presented in King's Code III in South Africa was introduced earlier than the IR framework by IIRC. It is worth mentioning that the IR framework in South Africa differs in some minor aspects compared with the IR framework established by the IIRC (de Villiers et al., 2014; Steyn, 2014; Simnitt & Huggins, 2015). However, the fundamental principles and the concept of disclosing the financial and non-financial information in an integrative manner are the same. Ultimately, the objective is to provide the intended users of the report the holistic view of the company performance. The objective of this research is to provide insight on the new concept of integrative disclosure practice. Hence, these

minor differences between the international IR framework and the local IR framework from South Africa will not be considered a hinder in this research.

4.2 Regression models for the hypotheses

The regression models employed in this research are based on the models within the stream of academic researches with respect to non-financial disclosures. The models will be adapted accordingly to reflect the effect of IR framework on analyst forecast characteristics and cost of capital respectively. Consequently, adequate results and conclusions are reached in this research.

4.2.1 Analyst forecast characteristics

The effect of IR on analyst forecast characteristics is analysed in the first hypothesis. The following regression models are estimated in this regard. Following previous empirical research (e.g. Hope, 2003; Lang & Lundholm, 2003; Dhaliwal et al., 2012), the analyst forecast accuracy is estimated as follows:

$$FORERROR = |\ FCEPS_{j,t} - ACEPS_{j,t}\ |\ /\ P_{j,t} \tag{1}$$

Where:
FCEPS$_{j,t}$ = Forecast earnings per share
ACEPS$_{j,t}$ = Actual earnings per share
P$_{j,t}$ = Stock price at the beginning of the year

The analyst forecast accuracy is substituted with the forecast error (*FORERROR*). A lower forecast error means the forecast accuracy is improved. The forecast error is estimated as the absolute value difference between the mean analysts forecast EPS in year *t* for firm *j* and the actual earnings per share scaled by the price of stock for firm *j* at the beginning of the year *t*. Following Dhaliwal et al. (2012), both the forecasted and actual EPS are obtained from IBES to maintain consistency. The forecast dispersion (*FORDSPER*) is estimated as the standard deviation of analyst forecast for year *t* scaled by the mean of analyst forecast for the respective firm.

The following regression models are estimated with the forecast error, computed with equation 1, and forecast dispersion as dependent variables in

equation 2 and 3 respectively. The definition of the control variable and the employment in prior literature can be found in *Appendix 1*.

$$FORERROR = \beta_0 + \beta_1\ IR\_POST + \beta_2\ SIZE + \beta_3\ ANFLLW + \qquad (2)$$
$$\beta_4\ VAREARN + \beta_5\ LEV + \beta_6 ROE + \beta_7\ LOSS +$$
$$\beta_8\ BIG4 + \Sigma\ \beta_{9\text{-}13}\ YEAR_{2009\text{-}2013} + \varepsilon$$

$$FORDSPER = \beta_0 + \beta_1\ IR\_POST + \beta_2\ SIZE + \beta_3\ ANFLLW + \qquad (3)$$
$$\beta_4\ VAREARN + \beta_5\ LEV + \beta_6 ROE + \beta_7\ LOSS +$$
$$\beta_8\ BIG4 + \Sigma\ \beta_{9\text{-}13}\ YEAR_{2009\text{-}2013} + \varepsilon$$

Where:

IR_POST	=	Dummy variable that takes the value of 1 after the mandatory adoption of IR and 0 otherwise;
SIZE	=	The natural logarithm of total assets;
ANFLLW	=	The numbers of analyst following the firm;
VAREARN	=	Absolute earning change compared to previous year scaled by earning previous year;
LEV	=	Total liability scaled by total assets;
ROE	=	Net income divided by shareholders equity;
LOSS	=	Dummy variable that takes the value of 1 if the firm reported a loss in the current year and 0 otherwise;
BIG4	=	Dummy variable that takes the value of 1 if the auditor is one of the Big 4 audit firms and 0 otherwise.

The variable of interest in the regression models is β_1 *IR_POST.* Following the theoretical rationale established in the preceding sections and the empirical results from prior studies (e.g Dhaliwal et al., 2012), a negative and significant variable β_1 *IR_POST* would be in line with the expectations embodied in hypothesis 1. The result would reflect the expectation that IR improves disclosure quality and consequently reducing the forecast error and dispersion.

Following previous studies, the control variables related to the general environment of the firm are *SIZE, LEV* and *ROE*. The control variable *SIZE* is widely used in empirical studies to capture several dimensions of the firm, such as information environment and management incentives (Hope, 2003). According to Dhaliwal et al. (2012) the *LEV* captures the potential uncertainty that the firm might be in financial distress. The variable *ROE* captures the profitability of the firm

(Vanstraelen et al. 2003). Analysts are interested in firms that are generally more profitable. Concurrently, firms that are more profitable have more resources to provide better disclosures. The control variables *ANFLLW*, *VAREARN*, *LOSS* and *BIG4* are related to the analyst forecast. Dhaliwal et al. (2012) noted that there is competitive pressure among analysts when there are more analysts following (*ANFLLW*) the firm to provide forecast. However, it is difficult to provide accurate forecast if the earnings are volatile (Dichev & Tang 2009). This is captured in the variable *VAREARN.* Furthermore, if the firm reports a loss (*LOSS*), it creates certain degree of uncertainty for the analysts, which also affects the accuracy of the forecast negatively (Hope, 2003). Lastly, the dummy variable *BIG4* controls for the quality of the auditor. As noted by Benh et al. (2008), prestigious auditors are perceived by the analyst as reliable third party to provide high quality assurance that the corporate reports provide reliable information. Hence, the analyst can provide more accurate forecast.

4.2.2 Cost of capital

The second hypothesis relates to the IR with the cost of capital. The first step is to employ a reliable model to estimate the cost of capital. Prior studies (e.g. Lopes & Alencar, 2010) have indicated the potential limitations and difficulty with respect to the estimation of cost of capital. The cost of capital employed in empirical studies is an ex-ante (expected) metric and is therefore not directly observable, which in turn makes it difficult to estimate appropriately (Francis et al., 2005). The estimation of cost of capital has been long debated in the stream of academic literature. Different academic literatures have proposed alternatives or evaluated the proper model or measurement in this regard (Easton, 2004; Botosan & Plumlee, 2005; Botosan, 2006). In the study by Botosan & Plumlee (2005), five different estimation proxies frequently used in academic studies for the cost of capital were evaluated. One of the reliable and stable estimation for cost of capital is the price-earnings growth (PEG) model developed by Easton (2004). Furthermore, Botosan (2006) reaffirms that the PEG model is more useful for disclosure related studies with respect to cost of capital. Previous studies have also employed the PEG model for the estimation of

cost of capital (e.g. Francis et al., 2005; Lopes & Alencar, 2010). It is worth mentioning that some empirical studies (e.g. Dhaliwal et al., 2011; Dhaliwal et al., 2014) estimate the cost of capital using multiple models, including the PEG model, and subsequently take the average of the cost of capital from the different models. This research consciously does not follow this operationalization due to amount of data needed for the different models, which leads to the reduction in the already limited sample of the research.

Summarizing the aforementioned, the PEG model is therefore employed in this research due to the simplicity in data needed for the calculation (Francis et al., 2005), practicality (Lopes & Alencar, 2010) and reliability (Botosan, 2006).

Following prior studies, the cost of capital is estimated using the Easton (2004) PEG model in this research and it's defined as follows:

$$CoC = \sqrt{(EPS_{t+2} - EPS_{t+1})/P_0} \qquad (4)$$

Where:
EPS = Earnings per share +t years ahead.
P   = Price of the share at fiscal year end.

The cost of equity capital (CoC) is the squared root of the difference between forecasted EPS 2 years ahead and 1 year ahead divided by the current share price. The model rest on the assumption that $EPS_{t+2} > EPS_{t+1} > 0$.

Following previous research on the disclosure and cost of capital, the regression model is estimated with the cost of capital estimated with equation 4 as dependent variable. The definition of the control variables and the employment in previous studies is structured schematically in *Appendix 1*.

$$CoC = \beta_0 + \beta_1\,IR\_POST + \beta_2\,SIZE + \beta_3\,LEV + \qquad (5)$$
$$\beta_4\,BTM + \beta_5\,LTG + \beta_6\,LNDISP + \beta_7\,ROA +$$
$$\beta_8\,VAREARN + \Sigma\,\beta_{9\text{-}13}\,YEAR_{2009\text{-}2013} + \varepsilon$$

Where:

IR_POST	=	Dummy variable that takes the value of 1 after the mandatory adoption of IR and 0 otherwise;
SIZE	=	The natural logarithm of total assets;
LEV	=	Total liability scaled by total assets;
BTM	=	Book value of equity scaled by market value of equity;

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LTG	=	The absolute difference between forecasted EPS $_{t+2}$ and EPS $_{t+1}$ scaled by EPS $_{t+1}$;
LNDISP	=	The natural logarithm of standard deviation of EPS scaled by consensus forecast;
ROA	=	Net income scaled by total assets;
VAREARN	=	Absolute earning change compared to previous year scaled by earning previous year

The variable of interest in this model is β_1 *IR_POST*. Following previous studies (e.g. Dhaliwal et al., 2011), a statistical significant and negative coefficient would reflect the expectations embodied in hypothesis 2, in which IR reduces the cost of capital.

The conventional control variable *SIZE* and *BTM* captures the different general aspects of the firm. Bigger firms usually have lower cost of capital due to the perceived less riskiness compared to the small firms (Sharfman & Fernando, 2008; Lopes & Alencar, 2010). Book-to-market ratio (*BTM)* has a positive relation with the cost of capital (Kothari et al., 2009). The market value is in the denominator of the ratio. This implies that if the market perceives the firm to be less risky, the market value will increase. This in turn drives the *BTM* ratio down. In short, a lower *BTM* means less risk and thus reduce the cost of capital. Hail (2002) noted that firms with higher debt position (*LEV*) are perceived as unstable, in which in an extreme case it can reach default. Hence, the cost of capital increases with an increase in leverage. Dhaliwal et al. (2011) included *LTG* in the model to capture the growth potential of the firm. Firms with growth opportunity will disclose more information in order to have access to external funds. Vanstraelen et al. (2003) pointed that high analyst forecast dispersion (*LNDISP*) is an indirect and unobservable indication of uncertainty among investors in the market. An increase in uncertainty leads to the cost of capital to increase to compensate for the perceived risk. The profitability of the firm is captured in the control variable *ROA.* Generally, profitable firms are perceived as low risks due to lower chances of default. Therefore, the variable is negatively associated with the cost of capital (Francis et al., 2005). Lastly, Dhaliwal et al. (2014) included the earning volatility proxied by *VAREARN*. Firms with volatile earnings face greater financial opacity, which could drive the cost of capital upward.

4.2.3 Alignment of the IR report

Recall previously that the third hypothesis sets to sharpen the analysis with the addition of alignment aspect. That is, to provide insight whether higher alignment with the concept of IR framework does provide more benefit in terms of analyst forecast accuracy, dispersion and cost of capital. In order to provide evidence on this hypothesis, there needs to be a model to measure the level of alignment. Prior studies with respect to level of disclosure (e.g. Botosan 1997; Kothari et al. 2009) used a self-constructed model to measure the level of disclosure. These self-constructed models do provide insight on the matter at hand, however it often times suffer from major drawbacks. One major drawback is the subjectivity aspect that is often times criticized in these studies. Furthermore, Hassan & Marston (2010) noted that in order to have an objective measurement on the level of disclosure, two or more person is needed to code the measurement. Due to the limitations in this research to employ a second person to measure the level of IR, this operationalization is not pursuit.

Fortunately, EY organizes annually an IR award event in South Africa called the EY Excellence in Integrating Reporting Award (EY, 2013), in which the IR of the top 100 firms listed on the JSE is assessed and awarded. The process of the assessment of the IR reports reflects the quality and objectivity of the process. Three independent professionals and academics in the field of accounting evaluate each of the 100 IR reports based on the so-called mark plan. The mark plan was developed by academics in conjunction with EY professionals. The process of assessment is emphasized as not only ticking the boxes, but the IR report needs to reflect the fundamental principles outlined in the IR framework. For example, the IR report does not only elaborate on all the different elements as prescribed by the IR framework, but also reflects cohesiveness. The average score of the three independent professionals determine the final score of the IR report for the respective firm. Based on the score of the different reports, the 100 firms are subsequently classified in four different categories, namely: excellent, good, average and poor.

Proceeding with the aforementioned, this research employs the measurement by EY to proxy for the level of alignment. The level of alignment is measured with a score of 1 to 4 based on the abovementioned categorical classification, with score 4 as the highest alignment. The third hypothesis replaces the variable $\beta_1 IR\_POST$ in the preceding hypotheses with the variable $\beta_1 IR\_ALIGN$ in the equation 2, 3 and 5 respectively. Following this modification, the regression models for the third hypothesis are constructed as follows.

$$FORERROR = \beta_0 + \beta_1 IR\_ALIGN + \beta_2 SIZE + \beta_3 ANFLLW + \qquad (6)$$
$$\beta_4 VAREARN + \beta_5 LEV + \beta_6 ROE + \beta_7 LOSS +$$
$$\beta_8 BIG4 + \beta_9 LNDISP + \varepsilon$$

$$FORDSPER = \beta_0 + \beta_1 IR\_ALIGN + \beta_2 SIZE + \beta_3 ANFLLW + \qquad (7)$$
$$\beta_4 VAREARN + \beta_5 LEV + \beta_6 ROE + \beta_7 LOSS +$$
$$\beta_8 BIG4 + \varepsilon$$

$$CoC = \beta_0 + \beta_1 IR\_ALIGN + \beta_2 SIZE + \beta_3 LEV + \qquad (8)$$
$$\beta_4 BTM + \beta_5 LTG + \beta_6 LNDISP + \beta_7 ROA +$$
$$\beta_8 VAREARN + \varepsilon$$

The variable of interest in equation 6, 7 and 8 is $\beta_1 IR\_ALIGN$. The expectation is to have a negative and statistically significant relation between the variable of interest and the respective dependent variable. That is, higher alignment score would lead to lower forecast error, forecast dispersion and cost of capital.

5. Empirical results

The results of the regression models will be presented in this section with the relevant analysis. The variables of the regression models are generated after the data are hand collected or retrieved from respective databases. All continuous variables are winzorized at 1% and 99% to remove potential outliers in the data that can influence the results. Furthermore, the OLS regression assumptions are verified (e.g. multicollinearity). The dependent variable *FORERROR, FORDSPER and CoC* are regressed on the variable of interest *IR_POST* and the control variables of the respective regression models.

5.1 Descriptive statistics & correlation

In table 2 panel A provides the summary statistics of the variables used in this research. The average analyst following the sample employed in this research is around 5,7. In prior studies (Hope, 2003; Vanstraelen et al., 2003) the average analyst following European firms and US firms is around 17 and 20 respectively. This indicates indirectly the difficulty of obtaining relevant data such as analyst forecast for unfamiliar research settings. This is reflected in the preceding table 1, in which a huge proportion of the firm-year observations are removed from the final sample due to missing data for the observations to calculate the variables in the regression models.

TABLE 2. Summary Statistics & Correlation					
Panel A: Descriptive Statistics					
Variable	N	Mean	Standard deviation	Min.	Max.
FORERROR	453	4.158	1.854	0.017	2.896
FORDSPER	453	0.143	0.279	0	2.103
CoC	350	0.119	0.128	0.010	1.080
IR_POST	453	0.621	0.485	0	1
IR_ALIGN	53	2.811	0.982	1	4
SIZE	453	8.934	1.334	6.053	11.949
ANFLLW	453	5.743	4.444	1	24
VAREARN	453	-0.130	2.156	-11.639	9.783
LEV	453	0.493	0.181	0.070	0.853

Table 2 continued

Panel A: Descriptive Statistics

Variable	N	Mean	Standard deviation	Min.	Max.
ROE	453	0.167	0.220	-0.724	1.076
LOSS	453	0.098	0.296	0	1
BIG4	453	0.878	0.327	0	1
BTM	453	0.629	0.555	0	3.296
LTG	453	0.091	0.369	-0.978	1.444
LNDISP	453	-1.888	1.333	-5.209	0.744
ROA	453	0.077	0.093	-0.231	0.495

In panel B the Pearson correlation matrix of *FORERROR, FORDSPER and CoC* are presented. The Pearson correlation matrixes of the third hypothesis, in which *FORERROR, FORDSPER and CoC is regressed by IR_ALIGN* are displayed in *Appendix 2.*

Most of the variables in the correlation matrixes of *FORERROR* and *FORDSPER* are in line with previous studies and expectations presented in the preceding sections. The variable *IR_POST* is only negative and significantly correlated with *FORDSPER* at one percent level, but not significant with *FORERROR.* Therefore, the result of the univariate relation analysis is partially in line with the first hypothesis. The variable *SIZE and ROE* is negative and statistically significant, indicating that profitable and bigger firms have lower forecast error and dispersion. This reflects the fact that profitable and bigger firms tend to exert more resources to maintain the level of qualitative disclosure for the external stakeholders. This phenomenon will impact the forecast positively due to the amount of information available for the analyst to based its forecast on. Furthermore, the number of analyst following the firm also provides an incentive for the individual analyst to provide a more accurate forecast. In line with the aforementioned, the variable *ANFLLW* is negatively and significantly correlated with *FORERROR* and *FORDSPER.* The variable *LOSS* is positive and significant at 1 percent level. This indicates that a firm that reports a loss creates uncertainty among analyst with respect to the future performance. Therefore, it becomes cumbersome for the analyst to provide accurate forecast, which increases the forecast error and dispersion. Lastly, the variable *SIZE* and

ANFLLW are positively and significantly correlated at 1 percent level, which shows that firms bigger in size have more analysts following the firm.

Table 2 continued

Panel B: Pearson Correlation Matrix

	FORERROR	IR_POST	SIZE	ANFLLW	VAREARN	LEV	ROE	LOSS	BIG4
FORERROR	1.000								
IR_POST	0.001	1.000							
SIZE	-0.143**	0.066	1.000						
ANFLLW	-0.100**	0.063	0.583***	1.000					
VAREARN	0.018	0.011	-0.019	0.009	1.000				
LEV	0.157***	-0.060	0.073	-0.015	-0.001	1.000			
ROE	-0.196***	-0.152***	0.062	0.075	0.326***	0.051	1.000		
LOSS	0.191***	0.100**	-0.039	0.107**	-0.279***	0.106**	-0.536***	1.000	
BIG4	0.038	-0.003	0.336***	0.168***	-0.020	0.056	0.028	-0.015	1.000

	FORDSPER	IR_POST	SIZE	ANFLLW	VAREARN	LEV	ROE	LOSS	BIG4
FORDSPER	1.000								
IR_POST	-0.147***	1.000							
SIZE	-0.318***	0.067	1.000						
ANFLLW	-0.363***	0.063	0.583***	1.000					
VAREARN	-0.124***	0.011	-0.019	0.009	1.000				
LEV	-0.088*	-0.060	0.073	-0.015	-0.001	1.000			
ROE	-0.312***	-0.152***	0.062	0.075	0.326***	0.051	1.000		
LOSS	0.232***	0.100**	-0.039	0.107**	-0.279***	0.106**	-0.536***	1.000	
BIG4	-0.284***	-0.003	0.336***	0.168***	-0.020	0.056	0.028	-0.015	1.000

The variable *IR_POST* is negative but not significantly correlated with the variable *CoC*, which is not in line with the expectations embodied in the second hypothesis based on the univariate analysis that the firms experience a potential decrease in cost of capital after the mandatory adoption of IR. The variable *SIZE* is negative and significant at 1 percent level, which echoes the expectation that bigger firms tend to be perceived as less risky compared to smaller firms.

	CoC	IR_POST	SIZE	LEV	BTM	LTG	LNDISP	ROA	VAREARN
CoC	1.000								
IR_POST	-0.087	1.000							
SIZE	**-0.177***	0.066	1.000						
LEV	**0.155***	-0.060	0.073	1.000					
BTM	**0.276***	0.077	**-0.145***	**-0.122***	1.000				
LTG	**0.349***	**-0.095**	0.003	0.008	0.033	1.000			
LNDISP	**0.115**	**-0.147***	**-0.318***	**-0.088*	**0.348***	0.0567	1.000		
ROA	**-0.180***	**-0.091*	0.022	**-0.259***	**-0.381***	-0.014	**-0.319***	1.000	
VAREARN	**-0.027***	0.011	-0.019	-0.001	-0.040	-0.047	**-0.124***	**0.331***	1.000

All continuous variables are winzorized at 1% and 99%.
The star signs behind the bolded numbers indicate the statistical significance of the correlation of the variables on *10 percent, **5 percent and ***1 percent level respectively.
The definitions of the variables in the Pearson correlation matrix are defined in Appendix 1 for convenience purposes.

Furthermore, firms with higher level of debt and *BTM* are generally perceived as more risky by investors, which lead to higher level of cost of capital. This is reflected in the results of the correlation where the variables *LEV* and *BTM* are positive and statistical significant at 1 percent level. The analyst dispersion is positive and significant, which reflects the expectation that higher dispersion in analyst forecast is an indirect observation of the uncertainty among investors. When there is uncertainty among investors, the cost of capital will increase. Lastly, the variable *ROA* that proxied for profitability in the regression is negative and statistically significant. This is line with the intuition that firms that are more profitable are perceived as more stable. Therefore, the cost of capital is lower.

5.2 Regression results

The results of the regression formulated in the preceding sections are reported in table 3, 4 and 5 for the hypothesis 1, 2 and 3 respectively.

TABLE 3. Regression Results H1

Variables	FORERROR		FORDSPER	
	Coefficient	p-value	Coefficient	p-value
IR_POST	-0.076	0.140	-0.016	0.897
SIZE	**-0.475***	0.094	-0.312	0.175
ANFLLW	**-0.022****	0.041	**-0.049****	0.045
VAREARN	0.197	0.231	0.004	0.803
LEV	3.585	0.299	-0.784	0.344
ROE	**-3.169*****	0.001	-0.488	0.148
LOSS	**1.543*****	0.001	**0.372***	0.092
BIG4	1.167	0.446	**-0.173***	0.065
DUMMY_YEAR	**Yes**		**Yes**	
N	453		450	
Adj. R-squared	0.189		0.229	

The regression model is FORERROR= β0 + β1 IR_POST + β2 SIZE + β3 ANFLLW + β4 VAREARN + β5 LEV + β6ROE + β7 LOSS + β8 BIG4 + ε.
The regression model is FORDSPER= β0 + β1 IR_POST + β2 SIZE + β3 ANFLLW + β4 VAREARN + β5 LEV + β6ROE + β7 LOSS + β8 BIG4 + ε.
The variable *DUMMY_YEAR* is implemented for conventional time-fix effect, but is not tabulated for convenience purposes. Furthermore, the standard errors are cluster by firm. All continuous variables are winzorised at 1% and 99% The stars signs behind the bolded numbers indicate the *1 percent level, **5 percent level and ***10 percent level of statistical significance of the respective variable.
All the variables are defined in the Appendix 1 for convenience purposes.

The results are presented in table 3 for the first hypothesis, which sets to analyze whether the analyst forecast characteristics are improved in the wake of IR adoption. In the first column under *FORERROR*, the variable of interest *IR_POST* is negative but not statistically significant (-0.076; p=0.140). The second column under *FORDSPER* the variable of interest *IR_POST* is negative but also not significant (-0.016, p= 0.897). Hence, the expectation embodied in the first hypothesis is rejected.

The results from the first hypothesis indicate that the forecast accuracy and dispersion did not improve after the enactment of Kings Code III, in which the IR became mandatory. A possible explanation for this result is based on the fact that IR framework and concept is still relatively new for the practitioners. As noted by Setia et al. (2015), the IR framework in South Africa encounters some obstacles due to the relatively limited guidance provided to the management to adopt IR. Consequently, the IR produced by the management might not embody the concept of integrated disclosure fully. This is reflected in the score of alignment of IR, in which almost half

of the sample have a below average score. Hence, it is reasonable to expect that the IR with low alignment with the established framework does not contain all info needed for analyst to formulate accurate earnings forecast. Further analysis in the third hypothesis will clarify whether alignment does influence the accuracy of the forecast.

	TABLE 4. Regression Results H2	
	CoC	
Variables	Coefficient	p-value
IR_POST	-0.031	0.242
SIZE	-0.031	0.117
LEV	**0.146***	0.067
BTM	**0.087***	0.056
LTG	**0.151***	0.000
LNDISPER	-0.001	0.709
ROA	-0.108	0.157
VAREARN	0.001	0.943
DUMMY_YEAR	**Yes**	
N	350	
Adj. R-squared	0.272	

The regression model is CoC = β0 + β1 IR_POST + β2 SIZE + β3 LEV + β4 BTM + β5 LTG + β6 LNDISP + β7 ROA + β8 VAREARN + ε.

The variable DUMMY_YEAR is implemented for time-fix effect, but is not tabulated for convenience purposes. Furthermore, the standard errors are cluster by firm.

All continuous variables are winzorised at 1% and 99%. The stars signs behind the bolded numbers indicate the *1 percent level, **5 percent level and ***10 percent level of statistical significance of the respective variable. All the variables are defined in the Appendix 1 for convenience purposes.

The second hypothesis examines whether the IR provide qualitative disclosure in which can mitigate the information asymmetry between the management and stakeholders. Consequently, the uncertainty surrounding the firm will decrease which can potentially lower the cost of capital. Based on the results presented in Table 4, the variable of interest *IR_POST* is negative but not significant (-0.031, p= 0.242). Therefore, the second hypothesis formulated in the alternative form is rejected based on the results presented. This means that the firms listed on the JSE in general did not see any reduction in cost of capital after the adoption of IR.

TABLE 5. Regression Results H3

Panel A: Results Forecast Characteristics

Variables	FORERROR		FORDSPER	
	Coefficient	p-value	Coefficient	p-value
IR_ALIGN	**-0.042***	0.087	-0.104	0.497
SIZE	0.004	0.770	-0.050	0.776
ANFLLW	0.002	0.632	-0.058	0.205
VAREARN	**-0.093***	0.018	0.045	0.439
LEV	**-0.138***	0.067	-1.008	0.280
ROE	0.076	0.547	**-1.731***	0.011
LOSS	**0.030***	0.045	0.695	0.224
BIG4	0.098	0.172	**-1.093***	0.021
N	53		53	
Adj. R-squared	0.334		0.326	

Panel B: Results Cost of Capital

Variables	CoC	
	Coefficient	p-value
IR_ALIGN	**-0.013***	0.008
SIZE	-0.002	0.700
LEV	0.026	0.531
BTM	0.012	0.542
LTG	**0.096***	0.088
LNDISPER	-0.005	0.339
ROA	**0.117***	0.074
VAREARN	**-0.010***	0.000
N	49	
Adj. R-squared	0.267	

The regression model is FORERROR= β0 + β1 IR_ALIGN + β2 SIZE + β3 ANFLLW + β4 VAREARN + β5 LEV + β6ROE + β7 LOSS + β8 BIG4 + ε.
The regression model is FORDSPER= β0 + β1 IR_ALIGN + β2 SIZE + β3 ANFLLW + β4 VAREARN + β5 LEV + β6ROE + β7 LOSS + β8 BIG4 + ε.
The regression model is CoC = β0 + β1 IR_ALIGN + β2 SIZE + β3 LEV + β4 BTM + β5 LTG + β6 LNDISP + β7 ROA + β8 VAREARN + ε.
All continuous variables are winzorised at 1% and 99%. The sample employed in this section is confined to the firms listed on the financial sector with SIC Code 6000-6999. The stars signs behind the bolded numbers indicate the *1 percent level, **5 percent level and ***10 percent level of statistical significance of the respective variable. All the variables are defined in the Appendix 1 for convenience purposes.

Recall that the third hypothesis sets to sharpen the analysis whether there are differences between IR of high alignment with the framework and IR of low alignment with the framework. In Table 5 Panel A under the first column,

FORERROR, the variable of interest *IR_ALIGN* is negative and statistically significant at 10 percent level (-0.042; p= 0.087). The result suggests that IR with higher alignment score leads to higher forecast accuracy compared with IR with lower alignment score. This is in line with the expectations that higher alignment with IR contains more useful information for financial analysts.

The second column under *FORDSPER*, the variable of interest *IR_ALIGN* is negative but not significant (-0.104; p=0.497). This indicates that the level of alignment with the IR framework does not influence the dispersion of forecast among analysts. Combining the result of the first hypothesis, in which analyst forecast dispersion is also not significant, suggests that IR is an important source of information to sharpen the forecast. However, as Lang & Lundholm (1993) indicated previously that analysts tend to use different sources of information to provide more accurate forecast. Therefore, the forecast provided by individual analyst will differ from one another due to the different input employed.

The variable of interest *IR_ALIGN* in Table 5 Panel B is negative and significant at 1 percent level (-0.013; p= 0.008). The result echoes the expectation embodied in the third hypothesis that higher alignment with the IR framework provide the stakeholders with more qualitative disclosure that can reduce the information asymmetry and perceived uncertainty. Therefore, it is reflected in lower cost of capital.

5.3 Additional analysis of IR in financial sector

Recall that the final sample does not include firms pertaining to the financial sector due to the unique characteristics and nature of the sector. In this section, the firm-year observations pertaining to the financial sector that have been excluded previously will be analyzed separately. It is worth mentioning that the level of alignment, which is reflected in the third hypothesis, will not be tested. This is due to the limitations arising from the measurement of *EY Excellence in Integrated Reporting Awards* (EY, 2013) that includes very limited amount of firms pertaining to the financial sector. In the view of the aforementioned, only the first and the second hypothesis will be tested.

TABLE 6. Regression Results

Panel A: Results Forecast Characteristics

Variables	FORERROR		FORDSPER	
	Coefficient	p-value	Coefficient	p-value
IR_ALIGN	0.002	0.654	**-0.364***	0.054
SIZE	-0.001	0.867	0.091	0.609
ANFLLW	**-0.004****	0.023	**-0.181****	0.024
VAREARN	-0.142	0.979	0.009	0.491
LEV	0.098	0.828	**1.931****	0.007
ROE	-0.050	0.336	0.564	0.702
LOSS	**0.145*****	0.000	**1.619****	0.018
BIG4	-0.008	0.547	-0.541	0.563
DUMMY_YEAR	**Yes**		**Yes**	
N	46		134	
Adj. R-squared	0.284		0.245	

Panel B: Results Cost of Capital

Variables	CoC	
	Coefficient	p-value
IR_ALIGN	0.026	0.205
SIZE	0.002	0.510
LEV	0.029	0.203
BTM	0.002	0.867
LTG	**0.192*****	0.000
LNDISPER	-0.002	0.890
ROA	-0.120	0.427
VAREARN	**0.004*****	0.000
DUMMY_YEAR	**Yes**	
N	126	
Adj. R-squared	0.276	

The regression model is FORERROR= β0 + β1 IR_POST + β2 SIZE + β3 ANFLLW + β4 VAREARN + β5 LEV + β6ROE + β7 LOSS + β8 BIG4 + ε.
The regression model is FORDSPER= β0 + β1 IR_POST + β2 SIZE + β3 ANFLLW + β4 VAREARN + β5 LEV + β6ROE + β7 LOSS + β8 BIG4 + ε.
The regression model is CoC = β0 + β1 IR_POST + β2 SIZE + β3 LEV + β4 BTM + β5 LTG + β6 LNDISP + β7 ROA + β8 VAREARN + ε.
The sample employed in this section is confined to the firms listed on the financial sector with SIC Code 6000-6999. All continuous variables are winzorised at 1% and 99%.. The variable DUMMY_YEAR is implemented for conventional time-fix effect purposes, but is not tabulated for convenience purposes. Furthermore, the standard errors are cluster by firm. The stars signs behind the bolded numbers indicate the *1 percent level, **5 percent level and ***10 percent level of statistical significance of the respective variable. All the variables are defined in the Appendix 1 for convenience purposes.

The results presented in Table 6 indicate that only forecast dispersion (*FORDSPER*) is line with the expectations from the preceding sections of the paper. The variable

of interest, *IR_POST*, is negative and significant at 10 percent level (-0.364; p= 0.054). This suggests that the dispersion of forecast among analyst is lower after the IR adoption. The forecast accuracy and cost of capital are not statistically significant.

6. Conclusion

Capitalizing on the current gap in the academic literature regarding the emergence of IR framework, this research attempts to offer insight on the topic at hand. The increasing demands from stakeholders to obtain both non-financial information and financial information have left the management with challenges to revise disclosure policies and practices. In the view of the aforementioned, the supplementary disclosure of non-financial information has been increasing and widely considered the new standard. For example, most annual reports now include a section covering CSR and sustainability practices, among other pertinent information. However, the management is criticized for the disjointedness between the non-financial and financial components of the report. This led to the concept of integrated disclosure and the establishment of IR framework. Many prior academic studies have provided insight on the disclosure practices of non-financial information such as CSR, but little empirical study has been conducted on the IR. This research therefore attempts to provide empirical evidence on the effect of IR adoption, whether IR provides a systematic disclosure framework to solve the current challenges of practitioners.

The sample of this research is confined to the firms listed on the JSE, in which all firms are required to produce an IR after 2010. The underlying expectation of this research is that the IR provides the stakeholders with valuable information. Therefore, it can be expected that after the adoption of IR in 2010, the firms listed on JSE benefit from improve forecast accuracy, lower forecast dispersion and lower cost of capital. Unfortunately, the results show that the forecast accuracy and dispersion did not improve after the adoption of IR. Furthermore, the cost of capital was not lowered.

In the view of the results, it is worth mentioning that not all IR adheres to the framework or the concept of integrated disclosure right after the adoption due to the novelty and the unfamiliarity of the concept. Therefore, not all IR produced will be on the same quality. This leads to the addition of alignment aspect in this research. The focus is on the period after the adoption in which the effect of IR is analyzed based on the level of alignment with the framework. The results reveal

that an IR with a higher level of alignment leads to improve forecast accuracy and lower cost of capital. However, the forecast dispersion does not improve even when an IR is of higher alignment.

The results of the research are consistent to a certain extent with the expectations and hence provide a valuable insight on the research question that underpins this paper. Although the results indicate that the first time adoption of IR did not improve the analyst earnings forecast characteristics and lower the cost of capital, further analysis reveals that the IR with higher alignment with the framework does benefit from improved earnings forecast accuracy and lower cost of capital. In the view of the aforementioned, the research question formulated at the beginning of this paper can be answered positively that the IR framework improves the quality of disclosure.

Recall previously, that there is currently a gap in the academic studies regarding the IR. Many academic literatures to date only describe the IR framework and do not provide empirical insight. This paper attempts to humbly contribute to the existing body of academic literature regardless of the outcome of the research. With positive results that align with the expectations, the research provides additional value that extends beyond the confinement of academic literature. In other words, the results provide insight on the topic to the relevant practitioners. The results show benefits regarding forecast accuracy and cost of capital for the firms that produce IR of high alignment with the framework. Hence, it is essential that the IR adhere fully to the guidelines of the established framework in order to achieve the objectives and capitalize on the benefits of IR framework. Furthermore, the results support the proponents of IR and strengthen the momentum towards integrated corporate disclosure and thinking.

There are often limitations in an academic research that might be overlooked despite the best efforts to lay the foundation and develop the proper research design. The fact that the results of this research are based solely on the firms

originating from South Africa cannot be ignored. That means the results might be difficult to generalize to other jurisdictions beyond South Africa.

Another limitation of this research is the limited sample used to analyze the alignment aspect. Due to the reliance of external assessment (EY, 2013), the sample is drastically reduced compared with the original sample for the main analysis. With such a limited sample, it is possible that the results are not representative for the entire population. In the view of the aforementioned, a possibility for a future empirical study or an extension of this research is the development of an enhanced alignment model that captures all the elements of the IR framework to assess the level of alignment of each IR manually. In doing so, the sample employed for the alignment aspect can be more extensive and therefore possibly refining the results presented in this paper.

Notwithstanding the aforementioned, this paper provides a preliminary but valuable insight on this new trending topic among practitioners and stakeholders. This paper paves the way for further research on this interesting topic.

Appendix

Appendix 1. *Description of control variable employed in the regression models*

Analyst forecast characteristics

Variable	Definition	Prior studies
SIZE	Proxy for the size of the firm	Lang & Lundholm 1996; Hope, 2003; Irani & Karamanou, 2003; Vanstraelen et al., 2003; Zhang, 2006; Dhaliwal et al., 2012
ANFLLW	The number of analysts following the firm	Hope, 2003; Irani & Karamanou, 2003; Vanstraelen et al., 2003; Dhaliwal et al., 2012
VAREARN	Earnings variance	Irani & Karamanou, 2003; Dhaliwal et al., 2012
LEV	Leverage	Hope, 2003; Vanstraelen et al., 2003; Zhang, 2006;
ROE	Return on equity	Lang & Lundholm 1996;Hope, 2003; Vanstraelen et al., 2003
LOSS	Indicator variable for loss firms	Hope, 2003; Irani & Karamanou, 2003; Dhaliwal et al., 2012
BIG4	Big4 audit firms, namely PwC, EY, Deloitte and KPMG	Hope, 2003; Behn et al., 2008

Cost of capital

Variable	Definition	Prior studies
SIZE	Proxy for the size of the firm	Francis et al., 2005; Sharfman & Fernando, 2008; Kothari et al., 2009; El Ghoul et al., 2011;Dhaliwal et al., 2014; Wu et al., 2014
LEV	Leverage	Hail, 2002; Francis et al., 2005; Sharfman & Fernando, 2008; Kothari et al., 2009; Lopes & Alencar 2010; El Ghoul et al., 2011;Dhaliwal et al., 2014; Wu et al., 2014
BTM	Book to market ratio	Kothari et al., 2009; El Ghoul et al., 2011; Dhaliwal et al., 2014; Wu et al., 2014

LTG	Long term growth	Lopes & Alencar 2010; El Ghoul et al., 2011
LNDISP	Natural logaritm of analyst forecast dispersion	El Ghoul et al., 2011
ROA	Return on asset	Lopes & Alencar, 2010; Dhaliwal et al., 2014
VAREARN	Earnings variance	Dhaliwal et al., 2014
LMVAL	Natural logartim of market value of equity	Richardson & Welker, 2001; Botosan & Plumlee, 2002;

Appendix 2. *Pearson Correlation for variable IR_ALIGN*

	FORERROR	IR_ALIGN	SIZE	ANFLLW	VAREARN	LEV	ROE	LOSS	BIG4
FORERROR	1.000								
IR_ALIGN	-0.094	1.000							
SIZE	**-0.143***	0.084	1.000						
ANFLLW	**-0.104**	0.221	**0.583***	1.000					
VAREARN	0.018	-0.065	-0.019	0.009	1.000				
LEV	**0.157***	-0.026	0.073	-0.015	-0.001	1.000			
ROE	**-0.196***	0.034	0.062	0.075	**0.326***	0.051	1.000		
LOSS	**0.191***	0.190	-0.039	**0.107**	**-0.279***	**0.106**	**-0.536***	1.000	
BIG4	0.038	0.165	**0.336***	**0.168***	-0.020	0.056	0.028	-0.015	1.000

	FORDSPER	IR_ALIGN	SIZE	ANFLLW	VAREARN	LEV	ROE	LOSS	BIG4
FORDSPER	1.000								
IR_ALIGN	-0.143	1.000							
SIZE	**-0.318***	0.084	1.000						
ANFLLW	**-0.363***	0.221	**0.583***	1.000					
VAREARN	**-0.124***	-0.065	-0.019	0.009	1.000				
LEV	**-0.088***	-0.026	0.073	-0.015	-0.001	1.000			
ROE	**-0.312***	0.034	0.062	0.075	**0.326***	0.051	1.000		
LOSS	**0.232***	0.190	-0.039	**0.107**	**-0.279***	**0.106**	**-0.536***	1.000	
BIG4	**-0.284***	0.165	**0.336***	**0.168***	-0.020	0.056	0.028	-0.015	1.000

	CoC	IR_ALIGN	SIZE	LEV	BTM	LTG	LNDISP	ROA	VAREARN
CoC	1.000								
IR_ALIGN	-0.181	1.000							
SIZE	**-0.177***	0.084	1.000						
LEV	**0.155***	-0.026	0.073	1.000					
BTM	**0.276***	0.097	**-0.145***	**-0.122***	1.000				
LTG	**0.349***	-0.019	0.003	0.008	0.033	1.000			
LNDISP	**0.115**	-0.143	**-0.318***	**-0.088***	**0.348***	0.0567	1.000		
ROA	**-0.180***	0.060	0.022	**-0.259***	**-0.381***	-0.014	**-0.319***	1.000	
VAREARN	**-0.027***	-0.065	-0.019	-0.001	-0.040	-0.047	**-0.124***	**0.331***	1.000

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