The Impact of Corporate Governance on the Quality of Integrated Reporting: International Evidence

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Abstract

This paper aims to investigate the impact of corporate governance on the quality of integrated reporting. Corporate governance includes internal (board size, board independence, and board diversity) and external (audit quality and enforcement) governance factors. This paper develops an index to capture the quality of integrated reporting by employing the completeness of information required by the International Integrated Reporting Council (IIRC). For an international sample, the paper manually collects 160 integrated reports along with internal and external governance factors and employs multivariate analyses to examine the association between these governance factors and the quality of integrated reporting. The empirical results suggest that firms with a larger board of directors, a larger proportion of female members on board, and located in countries with enforcement for integrated reporting requirements have a higher quality of integrated reporting. Our conclusions still hold after accounting for several conditions, including the industry-fixed and year-fixed effects. Together, these results suggest that both internal and external governance factors are important determinants for the quality of integrating reporting. These results have several theoretical and practical implications as they fulfill the absence of relevant studies on addressing the impact of internal and external corporate governance factors on the quality of integrated reporting.

1. Introduction

Investors need business-related information to inform their decisions. Therefore, these investors are relying on different resources. Yet, annual reports have been recognized as a core source for many years (Beattie et al., 2004), despite some arguments on whether annual reports are suitable due to their financial-focused, backward-focused, and periodicity. In mitigating these constraints, integrated reporting is introduced as a communication tool between the corporate and its stakeholders about using resources to create value (Eccles & Krzus, 2014; Krzus, 2011). The integrated

reporting framework (IIRC, 2013) combines the information about corporate governance and other material elements in a coherent whole, explaining how they affect the ability of an organization to create and sustain value in the short, medium, and long term. Corporate governance mechanisms should effectively manage the connectivity between the integrated reporting framework's material elements to reflect the corporate social, environmental, economic, and financial contexts (IIRC, 2013). With the recent induction of integrated reporting, there is a need for research that looks at different dimensions of integrated reporting and how corporate governance might influence firms to provide high-quality integrated reporting.

Our paper introduces the completeness of integrated reporting as an underlying concept to build up an index to assess the quality of integrated reporting. Therefore, this paper studies the impact of corporate governance factors (internally and externally) on the constructed index. By doing so, this paper closes a gap in the extant body of literature on integrated reporting.

These factors include both internal governance characteristics (board size, board independence, and board

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diversity) and external governance characteristics (audit quality, enforcement of integrated reporting regulations). The quality of integrated reporting is measured by the completeness of disclosed information of the specified items by IIRC's (2013) framework, which brings together financial, environmental, social, and governance information in a clear, concise, consistent, and comparable format. In doing so, our paper develops an index that can quantify the quality of integrated reporting (Li, 2010; Hassan & Marston, 2019).

Based on 160 firm-year observations, our findings show that firms with a larger board of directors, a larger proportion of female members on board, and mandatory enforcement have a higher quality of integrated reporting. In all regression analyses, the paper accounts for firm characteristics: firm size, profitability, leverage, and growth.

The rest of the paper is structured as follows: the paper discusses relevant literature and develops the hypotheses in the following section. Section 3 discusses the methodology, including the sample selection and data collection, introduces the variables' measurements, and its empirical model. Section 4 discusses the empirical findings. Section 5 concludes and suggests avenues for future research.

2. Literature Review and Hypothesis Development

2.1. Internal Governance Factors

2.1.1. Board Size

Based on agency theory, board size is a key factor in determining the board of directors' performance and addressing the agency problem (Brown et al., 2011; Gillan, 2006; Karamanou & Vafeas, 2005). On that basis, two competing arguments can explain the impact of the size of the board on the quality of integrated reporting. First, larger boards will incur much more incremental costs than benefits from the larger capacity because of their poorer communication, inflexibility, and inefficiency (Elshandidy & Neri, 2015). Further, larger boards are not easy to manage; it is difficult to coordinate each member's schedule, encourage all directors to participate, and ensure effective communication among these directors (Jensen, 1993). However, a smaller board of directors will have more accountability and higher administrative efficiency compared to a larger board. Therefore, a larger board may waste much time deciding, and its effectiveness and quality of integrated reporting will be affected.

Despite there being no direct empirical evidence on the impact of board size on the quality of integrated reporting, we will rely on extant evidence that looks at the effect of board size on disclosure levels. Some literature (e.g., Cheng & Courtenay, 2006) finds that board size has no significant influence on disclosure levels; however, some other literature (e.g., Byard et al., 2006) finds that board size is negatively related to the disclosure levels. Most of the empirical research (Elshandiy & Neri, 2015; Mallin & Ow-Yong, 2012; Ntim et al., 2013; Mokhtar & Mellett, 2013) finds a positive relationship between board size and disclosure level. Therefore, the association between board size and quality of integrated reporting quality is hypothesized as follows:

H1: There is a positive relationship between the board size and the quality of integrated reporting.

2.1.2. Board Independence

Independence of the board is recognized as another important characteristic of internal corporate governance based on agency theory and previous literature (Brown et al., 2011; Gillan, 2006). Board independence refers to the number of independent directors on the board. An independent director is explained as a director on the board who has neither a management role in the company nor a material financial relationship with the company or a related party (Patelli & Prencipe, 2007). Due to the unique quality of independent directors, they are considered a prominent control mechanism in the board of directors (Patelli & Prencipe, 2007). Independent directors are beneficial to diminishing agency problems because these directors can limit the chance of collusion with managers or controlling shareholders (Jensen, 1993). With limited time to follow day-to-day activities, independent directors will have incentives for a more transparent policy (e.g., Ntim et al., 2013).

Disclosure literature shows that independent directors (efficiency of the board) impact firms' decisions over whether to disclose information to investors or not. The available evidence suggests that to reduce agency costs between managers and investors, more independent directors are associated with high levels of disclosure (within the UK, Elshandidy & Neri, 2015) and within the South African context (e.g., Ntim et al., 2013). Furthermore, Elshandidy and Neri (2015) found that within strongly governed firms (based on their board efficiency), governance factors have a more influential role in motivating UK and Italian firms' managers to increase mandatory and voluntary disclosures they do within weakly governed firms. This discussion leads us to formulate the following hypothesis:

H2: There is a positive relationship between the independence of the board of directors and the quality of integrated reporting.

2.1.3. Diversity of the Board

Well-diversified board is usually considered to have fewer agency problems, so the quality of integrated reporting

is supposed to be enhanced (Robinson & Dechant, 1997). Diversity of the board means board members are not similar to each other. They can be different in gender, age, educational background, and nationality. Robinson and Dechant (1997) define the diversity of the board as the differences in characteristics of board members, and these differences can help them solve problems in various areas and facilitate effective global relationships. Generally, two numeric variables can measure diversity: the percentage of foreigners and female members on the board (Frías-Aceituno et al., 2013; Herli et al., 2021). Considering integrated reporting is an advanced concept, and its adoption needs solid professional knowledge, our paper focuses on the impact of female directors on the board. Prior research suggests that females view things from different perspectives than males; they are regarded to have the characteristic of empathy (Frías-Aceituno et al., 2013; Herli et al., 2021). This will affect their professional opinion on integrated reporting. Based on previous arguments, the paper formulates the hypothesis below:

H3: There is a positive relationship between a well-diversified board of directors and the quality of integrated reporting.

2.2. External Governance Factors

2.2.1. Enforcement

Based on related literature on institutional theory, regulation significantly impacts the information-releasing process (Granovetter, 1985). Regulation influences a country's legal status, and corporations are constrained by legal force (Glaeser & Shleifer, 2002). Furthermore, regulations are set by the government, which is also a critical stakeholder to corporations. A firm's governance should reflect these regulations. Since different legal systems lead to different origins and norms, different attitudes may appear toward regulations of integrated reporting (Glaeser & Shleifer, 2002). So far, though IIRC's framework, integrated reporting is still a reporting form with great freedom except in South Africa (IIRC, 2013). Whether to prepare and what to include can be varied worldwide with different legal regulations (Krzus, 2011). Some literature suggests that regulations have strong relations to the quality of information disclosure of integrated reporting (Eccles & Krzus 2014). However, Jensen and Berg (2012) test the relation between the legal system and integrated reporting and find no significant association to suggest the impact of a country's legal system on whether to provide integrated reporting. Moreover, to a large extent, integrated reporting is widely adopted as a voluntary reporting system that benefits many stakeholders; regulations or levels of enforcement may not significantly control it. Based on the above arguments, the paper formulates the hypothesis below:

H4: Regulation/enforcement has no impact on the quality of integrated reporting.

2.2.2. Audit Quality

External auditors can be considered one of the external factors for corporate governance (Brown et al., 2011; Gillan, 2006). From an agency theory perspective, the appointment of professional and independent auditors can be treated as one of the most effective monitoring mechanisms. A high level of audit quality is helpful in mitigating agency costs and motivating a company to disclose more information (Inchausti, 1997). Audit quality can be indicated by whether the external auditor is one of the big four or not because large audit firms are willing to provide a higher quality of audit service to maintain their reputation (Bassett et al., 2007; Elshandidy et al., 2018; Han et al., 2012). Auditors in large audit firms are more independent and set stricter disclosure requirements for their clients.

Most prior studies confirm that audit firm size (big audit firms) is positively related to the quality of disclosure/ compliance level or negatively associated with manipulating reporting (Bassett et al., 2007; Elshandidy & Neri, 2015; Elshandidy et al., 2018; Han et al., 2012). Based on the above discussion, a positive association between audit quality and quality of integrated reporting is expected in this paper, as has been formulated in the following hypothesis:

H5: The quality of external auditors has a positive impact on the quality of integrated reporting.

3. Methodology

3.1. Sample Selection and Data Collection

Since the paper focuses on corporate governance's effects on the quality of integrated reports, all firms should be scored regarding the quality of their integrated reporting. Thus, only those firms with a well-built system for integrated reporting should be considered. The sample of this paper is selected using the formal website of IIRC. Thus, there are 223 firms titled integrated reporters on the official website of IIRC. Among these 223 firms, only 160 firm-year observations have qualified integrated reports for the years 2013 and year 2014. After reviewing all of these reports, we find that 123 firm-year observations are belong to South Africa and 37 firm-year observations are belong to other jurisdictions, including European (21 firms), North American (8 firms) firms, Asian (4 firms) firms, and South American (4 firms) firms. We have decided to distinguish between South African firms from others because South Africa has an enforcement system to adopt the IIRC framework, while other countries in our sample apply such a framework voluntarily. We further also made another distinction related to the industry

type. Therefore, we codded industry membership into financial and non-financial, given the different regulations that organized these industries (Elshandidy et al., 2018; Eng & Mak, 2003), resulting in 124 and 36 as non-financial and financial firms, respectively.

160 reports of integrated reporting are manually collected to construct the quality of integrated reporting (as discussed in the following sub-section). Internal and external governance factors are manually collected from these reports or world-bank websites. Other financial data are collected from Datastream.

3.2. Variables Measurement

3.2.1. Dependent Variables: Quality of Integrated Reporting

Our dependent variable is the quality of integrated reporting (QIR). Our paper measures QIR based on IIRC (2013), which identifies some essential elements for integrated reporting (i.e., organizational overview and external environment, governance, the business model, risks and opportunities, strategies and resources allocation, performance, outlook, basis of presentation, and general reporting guidance). Our measure relies on whether the integrated reporting of a firm each year in each country covers some/all elements specified by such framework. Practically, our paper uses the completeness (coverage) of each firm's integrated reporting as an indicator of its quality. In doing so, we categorize IIRC (2013) elements into two principal factors: (1) background and appearance and (2) content-specific. For factor 1 (background and appearance), we assess the exitance of the following elements: cover page, overview, basis for preparation and presentation, and general reporting guidance. For factor 2 (coverage of the report), we assess the report's content-specific, which includes the following elements: external environment, governance, business model, risks, opportunity, strategy and resources allocation, performance, and outlook. We give an equal weight of 1 point to each of these elements, making the maximum score for a firm's integrated report 12 (100%). Table 1 shows how the quality of integrated reporting was constructed and measured (Table 1).

3.2.2. Independent Variables: Internal and External Governance Factors

This paper has five independent variables captured by both internal and external corporate governance. So, the characteristics of the board of directors (size, independence, and diversity), as internal governance factors, along with enforcement and audit quality, as external governance factors, are included. The paper uses board size, board independence,

Table 1: The Construction of the Integrated Reporting Quality

No	Cont Element	Score
Background and Appearance of the Report		
1	Cover page	1
2	Organizational Overview	1
3	Basis for Preparation and Presentation	1
4	General Reporting Guidance	1
Coverage of the Report		
5	External Environment	1
6	Governance	1
7	Business Model	1
8	Risks	1
9	Opportunities	1
10	Strategy and Resources Allocation	1
11	Performance	1
12	Outlook	1
Total possible score = QIR raw		12
Score as natural logarithm = QIR proxy 1 Score as % = QIR proxy 2		2.484 100

and board diversity to stand for board of directors. Based on previous literature, board size is measured by the natural log of the number of directors on the board (Elshandidy & Neri, 2015). Board independence is measured by the percentage of independent non-executive directors among all board members. Board diversity is measured by the percentage of females on the board (e.g., Frías-Aceituno et al., 2013). Enforcement is measured as a dummy variable that takes the value of 1 if the country has an enforcement system to adopt integrated reporting mandatorily and 0 otherwise. The last variable is audit quality, measured by whether a firm is audited by one of the Big 4 auditing firms (Deloitte & Touche LLP, PricewaterhouseCoopers LLP, Ernst & Young Inc, and KPMG Inc) or not. Also, a dummy variable is used here; 1 represents the external auditor of Big 4, and 0 otherwise. These proxies are manually collected from each firm's integrated report or world bank's website.

3.2.3. Control Variables: Firm and Country Characteristics

Based on relevant literature (Elshandidy & Neri, 2015; Nguyen, 2020; Nguyen & Nguyen, 2020; Ulupui et al., 2020), we control for six firm-characteristic variables. Firm size is measured by the natural log of total assets. Profitability is

measured by return on equity. Leverage is measured by the ratio of total debt/common equity. Growth is measured by net sales of two sequential years to get the revenue growth rate for each year. Similarly, an economic condition largely affects a firm's corporate behaviors (Granovetter, 1985). Economic condition is measured by the natural log of the GDP. These proxies are collected from Datastream.

3.4. Empirical Model

$$QIR_{it} = \beta_0 + \beta_1 BZ_{it} + \beta_2 BI_{it} + \beta_3 BD_{it} + \beta_4 ENF_{it} + \beta_5 AQ_{it}$$
$$+ \sum_{i=1}^{4} \beta_i \ Control_{il} + \sum_{i=1}^{2} \beta_i \ IN_{il} + \sum_{l=1}^{2} YR_{il} + \varepsilon_{it} \quad (1)$$

To test our hypotheses, we use the Ordinary Least Squares (OLS) regression model, as follows:
where:

QIR   the quality of integrated reporting, calculated as per the 12 elements provided in Table 1

BZ   board size, measured by the natural logarithm of the total number of directors in the board

BI   board independence, measured by the proportion of independent non-executive directors relative to all board members

BD   board diversity, measured by the proportion of female directors relative to all board members

ENF   enforcement, measured as a dummy variable, taking a value of 1 if a country mandatory adopts the integrated reporting and 0 otherwise

AQ   audit quality, measured as a dummy variable, taking a value of 1 a firm is audited by one of the Big 4 auditing firms, and 0 otherwise

FS   firm size, measured by the natural logarithm of total assets

LE   firm leverage, measured by the natural logarithm of the ratio of total debt/common equity

PR   firm profitability, measured by the ratio of returns on equity

GR   firm growth, measured by the natural logarithm of net sales growth

ECO   country economics condition, measured by the natural logarithm of a country's GDP

IN   industry-fixed effects, measured by a dummy variable for each industry type (non-financial firms and financial firms)

YR   year-fixed effects, measured as a dummy variable for each year of the sample period (2013 and 2014)

Additionally, β_0 presents the intercept, and β_{1-5} represents coefficients on internal and external governance factors for a firm$_i$ at year$_t$.

4. Empirical Findings

4.1. Descriptive Analysis

Table 2 reports the descriptive statistics for all this paper's variables; it reports the mean, median, standard deviation, and minimum and maximum for each variable. As per the table, the close values between the mean and median of all our continuous variables indicate that these variables are normally distributed, and there is no serious outlier to be reported.

4.2. Correlation Analysis

Table 3 shows the results of the Pearson correlation matrix, which reports the association between each pair of this paper's variables—concentrating on the quality of integrated reporting (principal dependent variables) and internal and external governance factors (the principal independent variables). This table reports that board size, board diversity, and enforcement are significantly and positively associated with the two proxies for the quality of integrated reporting at a confidence level of 99%. The results, nonetheless, do not support a significant relationship between board independence and audit quality with any of the two proxies for the quality of integrated reporting at any of the significance levels.

4.3. OLS Regressions Analysis

Table 4 reports empirical regression results for the associations between internal and external governance factors and the quality of integrated reporting. All estimates are based on Ordinary Least Squares (OLS), controlling for year-fixed and industry-fixed effects. The Table looks at these associations using two proxies for the quality of integrated reporting (the natural log of each firm's raw score (proxy 1) and the percentage of each firm's raw score (proxy 2)). Each proxy is indicative of the completeness of each firm's integrated report against the main content proposed by the IIRC framework of 2013, as discussed in Table 1.

The result shows that board size is significantly and positively associated with the quality of integrated reporting, with a coefficient of 0.171 (with proxy 1) and 0.110 (with proxy 2), both at a 95% confidence level. This finding is consistent with some prior literature; for example, Frías-Aceituno (2013) finds that larger boards can promote transparency policy more than smaller firms in integrated reporting. Contrary to Yermack's (1996) argument that

Table 2: Descriptive Analysis

	N	Mean	Median	Std. Dev	Min	Max
Dependent Variables						
QIR raw	160	8.125	8.00	1.783	4.00	12.00
QIR proxy 1	160	2.069	2.079	0.2330	1.386	2.484
QIR proxy 2	160	67.708	66.667	14.858	33.334	100
Independent Variables						
BS	160	2.355	2.397	0.308	1.386	3.178
BI	160	53.890	54.54	17.948	4.166	92.307
BD	160	18.889	20.00	11.538	0.00	50.00
ENF	160	0.768	1.00	0.422	0.00	1.00
AQ	160	0.875	1.00	0.331	0.00	1.00
Control Variables						
FS	160	14.555	14.47	2.247	10.069	20.410
LE	160	3.651	3.82	1.577	−2.995	6.456
PR	160	13.966	13.005	25.058	−70.60	170.63
GR	160	−0.161	−0.415	2.320	−3.966	4.205
ECO	160	9.112	8.776	0.728	8.197	10.908

a smaller board size usually indicates better information disclosure, firms with smaller sizes may suffer agency problems more because of less governance effectiveness. This finding supports Hypothesis 1.

Furthermore, Table 4 shows that the coefficient on board diversity suggests a significant and positive relationship with the quality of integrated reporting (0.032 with proxy 1 and 0.002 with proxy 2), suggesting that boards with higher female representation are likely to have higher levels of quality on their integrated reporting. This finding is consistent with Frías-Aceituno et al. (2013), who verified that better-diversified boards could promote integrated reports, especially those diversified by women. As Hillman et al. (2002) suggested, females may see things from different aspects from men, which may be the key factor leading to their significance. In conclusion, more female directors in board members will enhance the quality of integrated reporting. This finding support Hypothesis 3.

Additionally, the OLS regression result in Table 4, shows significant and positive associations between enforcement and quality of integrated reporting (captured by our two proxies), suggesting that firms belonging to countries where the level of enforcement for the integrated reporting is mandatory are likely to engage in exhibiting a higher level of integrated reporting quality, as compared with firms belong to countries where such level of enforcement for integrated reporting framework is left up to the best practices

(voluntary). Though integrated reporting only has suggested format and content elements by IIRC (2013), those South African firms that comply with the King Code of Governance (King III) indeed have more normative reports. This may be because the constraint effect of regulation and long-term practice under regulation leads to better performance in this area. This finding does not support Hypothesis 4.

While the previous empirical results support the acceptance of H1, H3, and H4, the results, as reported in Table 4, do not suggest significant associations between board independence and audit quality with the quality of integrated reporting.

Regarding control variables, our results suggest a moderate effect while observing the association between governance factors and the quality of integrated reporting, except for the status of economic development, which is significantly and positively related to the quality of integrated reporting. Furthermore, our results suggest that both industry membership and time period are positively and significantly associated with both proxies of the quality of integrated reporting. These two factors are studied further in the following section (robustness checks).

The goodness fit of the empirical model is verified from several perspectives. Both R^2 and adjusted R^2 suggest that the internal and external governance factors can explain a large percentage of integrated reporting quality. Additionally, the empirical model is significant, as indicated by the

Table 3: Correlation Analysis

	QIR proxy1	QIR proxy2	BS	BI	BD	ENF	AQ	FS	LE	PR	GR	ECO
QIR proxy 1	1.000											
QIR proxy 2	0.991***	1.000										
	(0.000)											
BS	0.212***	0.224***	1.000									
	(0.007)	(0.004)										
BI	0.023	0.022	–0.111	1.000								
	(0.770)	(0.782)	(0.162)									
BD	0.244***	0.255***	0.157**	0.181**	1.000							
	(0.002)	(0.001)	(0.047)	(0.022)								
ENF	0.332***	0.314***	–0.112	–0.054	0.079	1.000						
	(0.000)	(0.000)	(0.158)	(0.500)	(0.321)							
AQ	0.059	0.069	0.130	0.138*	–0.068	–0.073	1.000					
	(0.462)	(0.385)	(0.102)	(0.082)	(0.391)	(0.360)						
FS	–0.026	–0.008	0.561***	0.127	–0.031	–0.386***	0.393***	1.000				
	(0.745)	(0.922)	(0.000)	(0.111)	(0.693)	(0.000)	(0.000)					
LE	–0.081	–0.081	0.193**	–0.021	0.056	–0.174**	–0.132*	0.151*	1.000			
	(0.308)	(0.307)	(0.015)	(0.795)	(0.480)	(0.028)	(0.097)	(0.057)				
PR	0.063	0.056	–0.046	0.082	0.152**	0.125	0.153*	0.034	–0.101	1.000		
	(0.431)	(0.478)	(0.566)	(0.301)	(0.056)	(0.116)	(0.054)	(0.669)	(0.205)			
GR	–0.023	–0.029	–0.064	0.008	0.044	–0.174**	–0.039	0.033	–0.056	0.132*	1.000	
	(0.770)	(0.715)	(0.424)	(0.916)	(0.578)	(0.028)	(0.624)	(0.681)	(0.482)	(0.096)		
ECO	–0.196**	–0.191**	0.174**	0.118	–0.021	–0.849***	0.019	0.408***	0.184**	–0.096	0.205***	1.000
	(0.013)	(0.015)	(0.028)	(0.138)	(0.795)	(0.000)	(0.816)	(0.000)	(0.020)	(0.228)	(0.009)	

Note: *, **, and *** are used in this table to represent significance levels of 10%, 5%, and 1%, respectively.

Table 4: Regression Results for the Impact of Governance Factors on Quality of Integrated Reporting

Variables	ES	H	Dependent Variable: QIR (proxy1)			Variables	Dependent Variable: QIR (proxy2)		
			Coefficient	P-value	VIF		Coefficient	P-value	VIF
BS	(+)	1	0.171**	(0.016)	1.77	BS	0.110**	(0.015)	1.77
BI	(+)	2	−0.001	(0.912)	1.18	BI	−0.001	(0.875)	1.18
BD	(+)	3	0.032*	(0.036)	1.17	BD	0.002**	(0.022)	1.17
ENF	(+/−)	4	0.321***	(0.000)	3.92	ENF	0.187***	(0.000)	3.92
AQ	(+)	5	0.0246	(0.676)	1.45	AQ	0.016	(0.657)	1.45
FS	(+)		0.005	(0.646)	2.85	FS	0.005	(0.550)	2.85
LE	(−)		−0.007	(0.509)	1.14	LE	−0.005	0.463	1.14
PR	(+)		0.0005	(0.942)	1.13	PR	0.0007	(0.986)	1.13
GR	(?)		0.002	(0.976)	1.19	GR	−0.002	(0.951)	1.19
ECO	(+)		0.080*	(0.072)	3.96	ECO	0.042	(0.139)	3.96
IN	(?)		0.120***	(0.010)	1.47	IN	0.076**	(0.018)	1.47
YR	(?)		0.063*	(0.057)	1.43	YR	0.041*	(0.053	1.43
Intercept	(?)		−127.81*	(0.058)		Intercept	−83.73*	(0.053)	
F-value			4.90***			F-value	4.75***		
R^2			0.2858			R^2	0.2792		
Adj. R^2			0.2275			Adj. R^2	0.2204		
Mean VIF					1.85	Mean VIF			1.85
Observations			160			Observations	160		

Note: *, **, and *** are used in this table to represent significance levels of 10%, 5%, and 1%, respectively.

F-Value at a *p*-value of 0.000. Furthermore, to check the multicollinearity issue, Table 4 reports the variance inflation factor (VIF) to test whether the assumption of independent variables is not seriously correlated. The VIF results show no value exceeding 10 (Elshandidy et al., 2018), suggesting no multicollinearity problem.

To conclude, a board with a larger size, a greater proportion of female members, and a country with regulations of compulsory integrated reporting disclosure promote a higher quality of integrated reports.

4.4. Robustness Checks

To check whether our main conclusions based on Table 4 (discussed in the previous section) still hold, we perform some robustness checks to examine the sensitivity of our reported results. Particularly, we rerun all analyses conditional on year-period (Panel A of Table 5) and industry type (Panel B of Table 5). The results of Panel A of Table 5 suggest that our main conclusions are qualitatively unchanged and mainly driven by the year 2013. Likewise, Panel B of Table 5 indicates that board size, board diversity, and enforcement

are significantly associated with integrated reporting quality, mainly driven by non-financial firms. In Panel A for 2014, enforcement is the only factor of governance associated with the quality of integrated reporting. Panel B of Table 5 relies on only governance factors for financial firms due to collinearity among the control variables. It reports that board size is mainly the only governance factor significantly associated with integrated reporting quality.

5. Conclusion

This paper examines five hypotheses that link internal and external governance factors to the quality of integrated reporting. This paper finds that firms with a larger board of directors, and more female board members, located in countries with compulsory integrated reporting regulations usually have higher quality integrated reporting. Besides this, the industry type has significant influences on integrated reporting too. Non-financial firms perform better than financial ones in reporting quality.

This paper has some limitations. First, with more firms expected to follow the integrated reporting system,

Table 5: Robustness Checks

Panel A: Regression Analysis Conditional on Sample Period								
			Dependent Variable: QIR (proxy 1)					
Variables	**ES**	*H*	**YR==2013**			**YR==2014**		
			Coefficient	*p*-value	**VIF**	**Coefficient**	*p*-value	**VIF**
BS	(+)	1	0.233**	(0.031)	1.75	0.134	(0.180)	1.88
BI	(+)	2	0.0068	(0.629)	1.19	−0.009	(0.507)	1.20
BD	(+)	3	0.0051**	(0.025)	1.14	0.014	(0.533)	1.28
ENF	(+/−)	4	0.248***	(0.030)	3.85	0.397***	(0.001)	4.16
AQ	(+)	5	0.0164	(0.853)	1.50	0.0275	(0.744)	1.45
FS	(+)		0.0066	(0.710)	3.02	0.0042	(0.813)	2.75
LE	(−)		−0.0174	(0.297)	1.23	0.0036	(0.819)	1.13
PR	(+)		−0.002	(0.874)	1.18	0.0001	(0.905)	1.16
GR	(?)		−0.017	(0.881)	1.26	−0.001	(0.793)	1.14
ECO	(+)		0.029	(0.657)	3.92	0.129**	(0.044)	4.04
IN	(?)		0.116*	(0.096)	1.47	0.122**	(0.070)	1.45
Intercept	(?)		0.760	(0.259)		0.131	(0.840)	
F-value			2.85***			2.35***		
*R*²			0.3186			0.2723		
Adj. *R*²			0.2068			0.1563		
Mean VIF					1.96			1.97
Observations			80			80		

Panel B: Regression Analysis Conditional on Industry Type								
			Dependent Variable: QIR (proxy 1)					
Variables	**ES**	*H*	**Non-financial firms**			**Financial firms**		
			Coefficient	*p*-value	**VIF**	**Coefficient**	*p*-value	**VIF**
BS	(+)	1	0.139**	(0.062)	1.55	0.378**	(0.017)	1.52
BI	(+)	2	−0.0005	(0.587)	1.19	0.003	(0.208)	1.11
BD	(+)	3	0.003**	(0.040)	1.17	0.0031	(0.579)	1.32
ENF	(+/−)	4	0.341***	(0.000)	3.24	0.168	(0.108)	1.14
AQ	(+)	5	0.034	(0.609)	1.40	−0.0046	(0.971)	1.53
FS	(+)		0.0007	(0.966)	2.04			
LE	(−)		−0.0133	(0.284)	1.13			
PR	(+)		0.0004	(0.955)	1.16			
GR	(?)		−0.0067	(0.430)	1.21			
ECO	(+)		0.1035**	(0.021)	3.30			
YR	(?)		0.0700*	(0.058)	1.06			
Intercept	(?)		14056*	(0.059)		0.726	(0.077)	
F-value			4.59***			2.21**		

Table 5: (Continued)

Variables	ES	*H*	Dependent Variable: QIR (proxy 1)					
			Non-financial firms			Financial firms		
			Coefficient	*p*-value	VIF	Coefficient	*p*-value	VIF
R^2			0.3108			0.2689		
Adj. R^2			0.2431			0.1470		
Mean VIF					1.68			1.32
Observations			124			36		

Note: *, **, and *** are used in this table to represent significance levels of 10%, 5%, and 1%, respectively.

increasing the sample size would allow future research to observe more variations and test the main causes. Future research can study the time-varying effects while observing the governance effect on the quality of integrated reporting. Second, the quality of integrated reporting is measured by employing the concept of completeness; future research can construct different proxies to capture the depth and content of integrated reporting (Elshandidy et al., 2018). Third, board diversity may not be restricted to gender diversity because education background and nationality may also be significant factors in the quality of reporting.

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