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Exploring forward-looking information in integrated reporting: A multi-dimensional analysis

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A multi-dimensional analysis

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Abstract

Purpose – The purpose of this paper is to investigate the effect of firm characteristics on forward-looking disclosure (forward-looking information (FLI)) within the context of integrated reporting (IR). The study assesses the extent of FLI provided in integrated reports and empirically fills the research gap into the topics of FLI disclosed in the IR.

Design/methodology/approach – A manual content analysis is run to investigate the level and the topics of FLI in 282 integrated reports available in the International Integrated Reporting Council (IIRC) website. A disclosure index composition consisting of 27 information items is developed from the list of content elements comprised in the Integrated Reporting Framework (IIRC, 2013). Three hypotheses are proposed and eight models are tested within a multivariate regression analysis in order to explore the effects of three main variables (firm size, profitability and leverage) on FLI.

Findings – The study confirms that firms are reluctant to provide FLI in integrated reports. The results show that profitability and firm size have a statistically significant relationship with the level of specific topics of FLI. Conversely, leverage is found to be insignificant in explaining the extent of FLI.

Research limitations/implications – To improve the reliability of findings presented in this study, several others may be conducted by inspecting more variables that may affect the extent of FLI or by increasing the number of companies included in the sample.

Practical implications – The results provide comprehensive insights into the current forward-looking disclosure practices of early adopters in integrated reports and can be a useful evidence for preparers of it. This paper has also practical implications especially for managers and regulators (e.g. IIRC) since it encourages further efforts to promote FLI if firms want that the disclosure offered in the IR is perceived as "informative" by their significant stakeholders.

Originality/value – The research adds to the prior disclosure literature concerning FLI since acquired results are ambiguous. There are a very restricted number of studies that have explained the variation of FLI in the light of firm characteristics and no study has analyzed this research topic within the context of IR.

Keywords Firm characteristics, Disclosure, Integrated reporting, Forward-looking information

Paper type Research paper

1. Introduction

As a crucial source of disclosure, forward-looking information (FLI) has been receiving a growing attention in recent disclosure studies. The dynamic and increasing evolution of economic conditions emphasizes the potential deficiencies of historical information of listed companies because it cannot satisfy investors' diversified information needs along with economic development. In some cases, historical information is unable to provide stakeholders with sufficient insight regarding critical success factors, opportunities, risks and management plans from a forward-looking perspective. It is also believed that FLI would improve investors' ability to assess future cash flows, to forecast future earnings and to make better investment decisions (Hussainey *et al.*, 2003; Brockman and Cicon, 2013). FLI is the category of voluntary information that allows users to assess a company's future prospects and forecasts about the future of the business state of affairs (Bujaki *et al.*, 1999). It includes management's plans, assessments of opportunities and risks, forecasted data and business predictions about the company's operations and "the organization's expectations about the external environment the organization is likely to

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face in the short, medium and long term" (International Integrated Reporting Council (IIRC), 2013). Furthermore, FLI regards financial estimates such as future earnings, expected returns and anticipated cash flows and sales volume (Alkhatib, 2012; Alkhatib and Marji, 2012; Uyar and Kilic, 2012a, b). In many cases, it is possible to recognize FLI by the use of words such as "predict," "expect," "estimate," "anticipate," "forecast" or other comparable terms (Aljifri and Hussainey, 2007; Alkhatib, 2014). Hussainey (2004) argued that the categorization of FLI is not as easy as stated above because some kinds of information classified as historical could carry statements concerning the future. According to the Institute of Chartered Accountants in England and Wales (2003), FLI entails any information that might have an effect on subsequent financial statements and on the company's future performance (Bozzolan *et al.*, 2009; Robert, 2010; Beyer and Dye, 2012; Uyar and Kilic, 2012b; Liu, 2015).

The move from a report of historical financial results to a focus on the longer-term viability of the entity and on the strategies (e.g. goals, targets and actions) represents a key characteristic of the integrated reporting (IR) according to the International Integrated Reporting Council (IIRC). An integrated report should demonstrate how the strategy of the organization is linked to its key performance indicators (KPIs), as well as how it has performed against those KPIs in the current year and its future targets. In our study, we developed hypotheses about the relationship between FLI and firm characteristics that might influence disclosure strategies followed by organizations whose reports are available in the Integrated Reporting Emerging Practice Examples Database. In particular, this paper examines the effect of firm characteristics on the level of FLI disclosed in 282 integrated reports, considering different measures of FLI. With this purpose, firm characteristics which have a direct impact on the level of FLI are taken into account by a detailed inspection of the related disclosure literature. Our study contributes to the prior studies on disclosure strategies (Quagli, 2008) by showing that the amount of FLI presented in integrated reports is influenced (or not) by firm characteristics. It should be noted that a very limited number of studies have examined the impact of firm characteristics on disclosure of FLI and no study has analyzed this research topic within the context of IR yet.

Within such a context, this study measures the amount of FLI in integrated reports and empirically investigates the firm characteristics that may affect the extent of FLI disclosed. The paper is organized as follows. Section 2 describes the concept of FLI within the framework of IR and the previous literature on forward-looking disclosure. Moreover, research hypotheses based on the existing studies are developed here. Section 3 explains the research design and defines the sample data collection and the research methodology used to achieve the research objectives. Section 4 examines the results of the empirical analysis. Section 5 summarizes the research findings and outlines the main conclusions of the study, limitations and suggestions for future research.

2. Literature review and hypotheses development

There have been several studies regarding the effect of firm characteristics on disclosure (Kent and Ung, 2003; Alsaeed, 2006) and this topic has received a considerable attention in the academic literature. Especially, there are many studies that try to investigate what motivates companies to disclose FLI. Other studies examined empirically the benefits of FLI and the relationship with the corporate future performance (Clarkson *et al.*, 1994; Bryan, 1997). Furthermore, some previous studies focused on determinants of the disclosure level of FLI and principally on the relations between earnings forecast and firm characteristics. More specifically, a number of studies have analyzed the association between firm characteristics and FLI (Meek *et al.*, 1995; Patton and Zelenka, 1997; Celik *et al.*, 2006; Aljifri and Hussainey, 2007; Abed *et al.*, 2011). For example, a paper (Kent and Ung, 2003) demonstrated that larger companies with less volatile earnings are inclined to disclosure more FLI than smaller companies with comparatively volatile earnings.

We found some common elements that are used to classify further the determinants of disclosure. In the literature, these factors are categorized into two main categories: namely those that are controlled by the management (internal factors) and those that are beyond the control of management (external factors). Based on the majority of the prior studies concerning the disclosure of FLI, we select the association between the extent of disclosure and firm-specific determinants (internal factors). The research topic of this study is the determination of which and how firm characteristics affect the level of FLI. The majority of studies analyzed the association between FLI and firm-specific attributes directly affecting the disclosure behavior of companies but empirical evidence on this topic is uncertain and sometimes fails to provide conclusive results (Donnelly and Mulcahy, 2008). Firm-specific determinants of FLI are determined by a detailed examination of the relevant disclosure literature that led us to formulate the following hypotheses.

2.1 Profitability

The association between profitability and voluntary disclosure has been investigated in the prior literature (Oyelere *et al.*, 2003; Marston, 2003; Marston and Polei, 2004; Wang and Claiborne, 2008) and much evidences in empirical research confirmed the role of profitability as a determinant of corporate disclosure (Cerf, 1961; Wallace *et al.*, 1994; Skinner, 1994; Frankel *et al.*, 1995; Lang and Lundholm, 1996; Tasker, 1998). However, other studies (Ahmed and Courtis, 1999) argued that empirical evidence on the relationship between profitability and disclosure is unclear and provides mixed results. Otherwise, several studies agreed on the existence of a positive association between profitability and voluntary disclosure (Hussainey *et al.*, 2003; Wang and Hussainey, 2013). For example, Hussainey *et al.* (2003) observed that higher profitability might encourage management to disclose more financial information on the ability to maximize the shareholders' value. Furthermore, a number of prior studies analyzed the relationship between firm characteristics and forecast information (Meek *et al.*, 1995; Patton and Zelenka, 1997; Celik *et al.*, 2006; Aljifri and Hussainey, 2007; Abed *et al.*, 2011). For example, Aljifri and Hussainey (2007) stated a significant correlation between profitability and the level of FLI. Moreover, a positive relationship between FLI and performance was observed in the previous literature on forecast disclosures (Firth, 1979; Cooke, 1989; Hossain *et al.*, 1995; Prencipe, 2004; Hassanein and Hussainey, 2015). The majority of literature claimed that firms with higher profit margin are more likely to disclose additional FLI than those with lower return on equity (ROE) (Cahan and Hossain, 1996). On the contrary, Walker and Tsalta (2001), Kent and Ung (2003) and Hossain *et al.* (2005) found no such correlation between performance and the extent of FLI while other prior studies documented a negative association between forecast disclosures and profitability (Celik *et al.*, 2006; Aljifri and Hussainey, 2007; Abed *et al.*, 2011). For instance, according to Wallace and Naser (1995), profitable companies may not provide further information because their investors are particularly gratify. A significant negative correlation between profitability and the level of disclosure has been demonstrated previously also by Belkaoui and Kahl (1978). Other studies instead (Raffournier, 1995; Ettredge *et al.*, 2002; Aljifri, 2006) verified an irrelevant relationship between profitability and information reporting. Similarly, according to Alsaeed (2006), profitability was found to be insignificant in signaling the variation of voluntary disclosure.

In line with the prior literature (Vanstraelen *et al.*, 2003; Hossain *et al.*, 2005; Beretta and Bozzolan, 2008; Bravo *et al.*, 2009), this study considers ROE as profitability-related measure and derives it by dividing net income by average total equity. Based on the previous literature, a firm's profitability has been stated to be positively associated with FLI. Hence, with respect to the majority of disclosure literature mentioned above, the following hypothesis (*H1*) is stated:

H1. There is a positive relationship between ROE and the level of FLI.

2.2 Firm size

Size of the firm is the most widely used variable in the existing literature to explain firm's disclosure levels. Much evidence in prior studies on the determinants of corporate disclosure documented the existence of an interactive effect between firm size and forward-looking disclosure (Cerf, 1961; Cooke, 1992; Uyar and Kilic, 2012b; Alkhatib, 2012; Alkhatib and Marji, 2012). Particularly, a stream of empirical research found that larger companies are more inclined to disclose greater amounts of disclosure (Wallace *et al.*, 1994; Beattie *et al.*, 2004; Hassan *et al.*, 2006; Alsaeed, 2006) and to follow better disclosure practices (Ahmed and Courtis, 1999). In particular, empirical findings from previous studies demonstrated that FLI is positively related with company size (Walker and Tsalta, 2001; Kent and Ung, 2003; Vanstraelen *et al.*, 2003; Leventis and Weetman, 2004; Gao *et al.*, 2005; Hossain *et al.*, 2005; Celik *et al.*, 2006; Lim *et al.*, 2007; Hossain and Hammami, 2009; Abed *et al.*, 2011). For example, Kent and Ung (2003) inspected the voluntary disclosure of future earnings information in annual reports for Australian listed companies and found that larger companies with less volatile earnings tend to provide more future earnings information than smaller companies with relatively volatile earnings. There are several reasons for such a positive relationship. For instance, Hassan *et al.* (2006) argued that large companies might have a lot of resources to sustain additional information costs if they provide more relevant disclosure to different users.

Just two studies, instead, demonstrated the absence of significant relationship between firm size and FLI (Aljifri, 2006; Aljifri and Hussainey, 2007) because the findings have shown that companies of varying sizes tend to have no differences in their forward-looking disclosure.

Literature review suggests a broad variety of criteria for measuring the size of a company, e.g. capital employed and sales turnover (Firth, 1979), total assets and turnover (Cooke, 1991) and the market capitalization (Debrency *et al.*, 2002). In our study, we measure the firm size (SIZE) by natural logarithm of book value of total assets. Based on some of the prior studies, we hypothesize that:

H2. There is a positive relationship between SIZE and the level of FLI.

2.3 Leverage

Leverage is another variable generally employed in the previous literature to investigate the determinants of corporate disclosure. Empirical results from prior studies provided mixed evidence on the association between leverage and disclosure behavior. For example, some studies demonstrated a statistical significant relationship between disclosure and leverage (Malone *et al.*, 1993; Hossain *et al.*, 1994; Wallace *et al.*, 1994), while others failed to find any support for the proposed linkage between the two variables (Chow and Wong-Boren, 1987; Ahmed and Nicholls, 1994; Wallace and Naser, 1995; Hossain *et al.*, 1995; Raffournier, 1995; Celik *et al.*, 2006).

Yet, much results of prior studies (Belkaoui and Kahl, 1978; Malone *et al.*, 1993; Wallace *et al.*, 1994; Zarzeski, 1996; Ahmed and Courtis, 1999) confirmed that highly leveraged firms tend to disclose more information than less leveraged firms in order to satisfy creditors' needs for disclosure (Alkhatib, 2012; Uyar and Kilic, 2012a). For example, O'Sullivan *et al.* (2008) recognized leverage as a variable that influences positively the amount of voluntary disclosure. Also some of the researchers in "agency theory" claimed that the higher the debt to equity levels, the greater the amount of information a company may communicate (Watts, 1977). For instance, Jensen and Meckling (1976) and Smith and Warner (1979) observed that companies with high debt ratio show a higher level of agency costs, suggesting a positive relationship between leverage and the amount of financial disclosure. It is argued that such companies are more likely to share a great quantity of information with their lenders to reduce financial costs. Moreover, some of the literature

concerning corporate disclosure confirmed a positive relationship between debt ratio and the amount of FLI (Ahmed and Courtis, 1999; Bravo *et al.*, 2009; Aljifri and Hussainey, 2007). Conversely, Celik *et al.* (2006) failed to find any validation for the correlation between leverage and FLI.

Leverage (LEV) is measured with reference to the debt to equity ratio that is defined as total debt divided by book value of equity. The results of some of the previous studies lead us to the following hypothesis (*H3*):

H3. There is a positive relationship between LEV and the level of FLI.

3. Methodology

The level of FLI is measured by examining firms' integrated reports that are available in the Integrated Reporting Examples Database as of December 1, 2015. We selected this database because it contains examples of emerging practice in IR from businesses worldwide and it is publicly accessible from the IIRC official website. The population of reports belongs to organizations from various industry sectors (i.e. Telecommunication, Consumer Goods, Oil and Gas, Basic Materials, Utilities, Financial, Technologies, Industrial, Health Care). This provided us with a population of 282 reports available at the end of 2015. All data used in the analysis were manually collected from the available reports (referring to 2011, 2012, 2013, 2014 and 2015) and from Bloomberg databases for these years.

Each IR was individually scrutinized in order to determine FLI voluntary strategies lead by companies. Two steps of investigation allowed to answer the research questions. First, a summative content analysis was performed to measure the quantity and the contents of FLI by developing a multi-dimensional (i.e. concerning different contents related to FLI) framework of investigation with reference to the IIRC (2013) Framework. Then, the collected evidences were used to develop a multivariate statistical analysis assessing the effects of three firm characteristics on FLI disclosure. Quantity of FLI disclosed in IR was measured by the method of content analysis that has been widely applied to quantify the extent of disclosure in previous studies (Harte and Owen, 1991; Cunningham and Gadenne 2003; Beattie *et al.*, 2004; Abed and Roberts, 2011). The research follows the Krippendorff's (2013) methodology to run content analysis by codifying information pieces to measure the extent of disclosure. Content analysis needs the selection of the recording units (i.e. "text units") that is defined as a word or a sentence/phrase, a paragraph or a page proportion containing a single piece of information (Beattie *et al.*, 2004; Beattie and Thomson, 2007; Campbell and Abdul Rahman, 2010). This research takes "word" as the recording unit because it is deemed a more reliable unit of analysis than the number of sentences/phrases or the number of paragraphs (Hackston and Milne, 1996). Every word of sentences/phrases referring to FLI was highlighted and coded in the integrated reports. A scoring system based on the content analysis is constructed to measure the level of different contents related to FLI disclosed in every IR and an unweighted approach is implemented (Cooke, 1998). This approach gives the same importance to all items of FLI to avoid subjective judgment in assigning weights to information items, since this research concerns the level of disclosure rather than the relevance of disclosed items. As a result, each word of sentences/phrases referring to FLI is computed one point under the scoring system. Pictures, captions to pictures of activities, graphs and diagrams are kept out from the analysis as their inclusion would imply a high level of subjectivity (Ahmed and Sulaiman, 2004). Hence, the content analysis encompasses only narrative text (qualitative and quantitative).

As in the prior literature, in this study, we use the disclosure index approach based on the presence or absence of an item (Johnson *et al.*, 2001; O'Sullivan *et al.*, 2008; Cheung *et al.*, 2010). A disclosure index is applied to inspect forward-looking disclosure by assigning a value of 1 in case an item of FLI is disclosed and 0 if it is not. Without a definite academic

literature concerning the contents of FLI, we built a checklist of specific information items using the guiding principle "Strategic focus and future orientation" according to the IIRC (2013). The categories referring to the topics of information are drawn from the IIRC Framework. In order to verify the dependent variables, we organized FLI in six categories which correspond to the six content elements that are included in an integrated report. According to the IR Framework (IIRC, 2013), the categories are divided in 27 disclosure items. The list of items is presented in Table I.

All integrated reports are analyzed to verify the number of words containing FLI disclosed by each firm. Each IR is scrutinized searching for every set of words ranking in the FLI categories and then words giving FLI are counted. For valid regressions to be drawn, it is important that the classification procedure be reliable and valid (Weber, 1990; Krippendorff, 2013). To test the intercoder reliability, the inter-rater reliability Krippendorff's α coefficient was calculated. The average value found of this coefficient is equal to 0.89 which is above the 0.80 acceptable level required (Gujarati, 2006). This suggests that the coding procedure is reliable, i.e. there is agreement between the coders about their quality estimation made. To develop and test the disclosure index

Categories	Topics of information
I. Organizational overview and external environment (ORG)	1. The organization's culture, ethics and values
	2. The organization's ownership and operating structure
	3. The organization's principal activities and markets
	4. The organization's competitive landscape and market positioning
	5. The organization's position within the value chain
	6. Significant factors affecting the external environment and the organization's response
II. Governance (GOV)	7. The organization's leadership structure including the skills and diversity
	8. Specific processes used to make strategic decisions and to establish and monitor the culture of the organization
	9. Particular actions those charged with governance
	10. The relationship between culture, ethics and value with key stakeholders and capital
	11. Remuneration and incentives
III. Business model (BUS)	12. Key inputs
	13. Key business activities
	14. Key outputs
	15. Key outcomes
IV. Risks and opportunities (RISK)	16. Specific external source of risks and opportunities
	17. Specific internal source of risks and opportunities
	18. The organization's assessment of the likelihood that a risk or opportunity will come to fruition and the magnitude of its effect if it does
	19. The specific steps being taken to mitigate or manage key risks or to create value from key opportunities
V. Strategy and resource allocation (STR)	20. The organization's short, medium and long term strategic objectives
	21. The strategies to achieve strategic objectives
	22. The resource allocation plans to implement the strategy
	23. The linkage between the organization's strategy and resource allocation plans
	24. What differentiates the organization to give it competitive advantage and enable it to create value
VI. Performance (PERF)	25. The organization's effects on the capitals
	26. The state of key stakeholder relationship and how the organization responds to key stakeholder's legitimate needs and interests
	27. The linkage between current performance and the organization's outlook

Table I. Disclosure index composition

the basic steps are: define the recording unit (word); define the categories; test coding of a sample of text; assess reliability (the variables generated from the coding represent what we intended it to represent); revise coding rules in order to code all the text in the same way; repeat test coding and revising until reliability is satisfactory; and assess achieved reliability.

Forward-looking disclosure strategies are investigated by the consideration of different information attributes: information quantity, information coverage and the distinction of information among the six mentioned categories referring to different topics of information (Menicucci, 2013). As a result, various measures of FLI are involved as dependent variables in the empirical analysis to inspect the relationship between firm characteristics and FLI strategies. The measure of quantity (FLI_QNT) is included in the analysis taking into account the natural logarithm of the total amount of words containing FLI. Other measures of information are also considered. The measure of coverage (FLI_COV) is measured as the number of words concerning FLI deflated by the total number of words disclosed. Moreover, we employ some measures which embody the proportion of FLI referring to each of the categories described in Table I. Therefore, forward-looking disclosure strategies are examined by looking at different characteristics of FLI: quantity (FLI_QNT); coverage (FLI_COV); information about organizational overview and external environment (FLI_ORG), governance (FLI_GOV), business model (FLI_BUS), risks and opportunities (FLI_RISK), strategy and resource allocation (FLI_STR), performance (FLI_PERF). Each of these measures is alternatively included in the statistical analysis.

In order to investigate the level of FLI first and second to identify its determinants, we adopted both a descriptive and a multivariate analysis. As in many prior disclosure studies, multivariate analysis is carried out using an OLS regression model in order to explore the joint effect of firm characteristics on the level of FLI in the integrated reports of the selected companies. Eight models are tested in the analysis, and each one includes a different assessment of FLI (dependent variable). Specifically, the regression analysis includes separately eight measures of FLI (FLI_QNT, FLI_COV, FLI_ORG, FLI_GOV, FLI_BUS, FLI_RISK, FLI_STR and FLI_PERF) as dependent variables and three independent variables. On the basis of previous literature, we employ the variables described in the hypotheses development as measures of firm characteristics. Therefore, the independent variables considered in this study are the following: ROE (profitability, measured by ROE); SIZE (firm size, measured by natural logarithm of total assets); and LEV (leverage, measured by total debt to equity).

The definition of dependent, independent and control variables employed in the analysis are presented in Table II.

An OLS regression model is estimated to test the hypotheses of this study:

$$\mathrm{FLI} = \alpha_0 + \alpha_1 \mathrm{ROE} + \alpha_2 \mathrm{SIZE} + \alpha_3 \mathrm{LEV} + \alpha_4 \mathrm{FLI\_TONE} + \alpha_5 \mathrm{FLI\_EVID} + \varepsilon$$

FLI refers to forward-looking information disclosed by each firm. Different measures of FLI are alternatively included in the analysis (FLI_QNT, FLI_COV, FLI_ORG, FLI_GOV, FLI_BUS, FLI_RISK, FLI_STR, FLI_PERF). ROE refers to profitability and it is calculated as the ratio of net income to total equity. SIZE refers to the size of firm and it is measured with reference to the natural logarithm of balance sheet total assets. Leverage (LEV) is measured as the total debt divided by equity.

The model controls whether the amount of FLI disclosed is related with a positive tone of disclosure, which in turn may be associated with an increasing of quantity of FLI. The tone disclosure score on FLI (FLI_TONE) is assessed as the number of words referring to a positive statement deflated by the total number of words on FLI. FLI is positive since it comprises good news for the company and negative if it is non-positive or neutral. The second control

Variable	Description	Measure
Dependent variables		
FLI_QNT	Quantity of FLI	Natural logarithm of number of words on FLI
FLI_COV	Coverage of FLI	Number of words on FLI/Total number of words
FLI_ORG	FLI on "Organizational overview and external environment"	Number of words on FLI_ORG/Total number of words on FLI
FLI_GOV	FLI on "Governance"	Number of words on FLI_GOV/Total number of words on FLI
FLI_BUS	FLI on "Business model"	Number of words on FLI_BUS/Total number of words on FLI
FLI_RISK	FLI on "Risks and opportunities"	Number of words on FLI_RISK/Total number of words on FLI
FLI_STR	FLI on "Strategy and resource allocation"	Number of words on FLI_STR/Total number of words on FLI
FLI_PERF	FLI on "Performance"	Number of words on FLI_PERF/Total number of words on FLI
Independent variables		
ROE	Return on equity	Net income/Average total equity (%)
SIZE	Firm size	Natural logarithm of total assets (in US dollars)
LEV	Leverage	Total debt/Equity
Control variables		
FLI_TONE	FLI tone score	Number of positive words on FLI/Total number of words on FLI
FLI_EVID	FLI evidence score	Number of words on qualitative FLI/Total number of words on FLI
EUR	European country	Dummy variable equals to 1 if firm is included in an European country and equals to 0 otherwise

Table II. Explanation of variables and measurement

variable considered is the type of evidence (quantitative or qualitative). FLI is coded as quantitative when the statement includes numbers (monetary or non-monetary), and as qualitative in all other cases. The evidence disclosure score on FLI (FLI_EVID) is measured as the number of words on qualitative FLI deflated by the total number of words on FLI. The robustness of the results is assessed by comprising an additional variable that may explain the amount of FLI. According to the importance of the effect of a continent-specific institutional factor in IR (Jensen and Berg, 2012), the sensitivity test considers a dummy variable (EUR) that is equal to 1 if firms are included in European countries and 0 otherwise. Finally, the variance inflator factor (VIF) analysis is used to assess the potential collinearity between explanatory variables. The result of the VIF analysis in each of the regression models indicates the absence of multicollinearity (Neter *et al.*, 1996) since the collinearity among the independent variables is not significant in all the models (below the ten thresholds).

4. Results and discussion

This section examines the empirical methods used to verify the research hypotheses of the study and illustrates the results. It includes two statistical methods: a descriptive analysis and a regression one.

4.1 Descriptive analysis

Table III presents the results of descriptive analysis regarding the level of FLI disclosed by the selected firms and the measures of firm characteristics which are included in the analysis, using data from 2011 to 2015, depending on the year of the report.

Table III reports the minimum, maximum, mean and standard deviation of the continuous variables used in the multivariate statistical analysis. The results highlight that companies disclose a small number of words covering FLI. A wide range of variation of FLI is also found. The quantity of FLI has remarkable dispersion in the scores, as shown by the

Variables	Obs	Minimum	Maximum	Mean	SD
Dependent variables					
FLI_QNT	282	4.833	9.134	5.006	1.023
FLI_COV	282	0.003	0.163	0.030	0.028
FLI_ORG	282	0.000	0.847	0.325	0.238
FLI_GOV	282	0.000	0.713	0.189	0.183
FLI_BUS	282	0.000	0.794	0.230	0.250
FLI_RISK	282	0.025	1.000	0.257	0.191
FLI_STR	282	0.014	1.000	0.359	0.201
FLI_PERF	282	0.027	1.000	0.218	0.162
Independent variables					
ROE	282	−36.420	28.620	10.202	10.788
SIZE	282	7.488	17.936	9.522	2.769
LEV	282	0.090	5.650	1.065	1.256
FLI_TONE	282	0.000	1.000	0.490	0.216
FLI_EVID	282	0.000	1.000	0.890	0.329

Table III.
Descriptive analysis

minimum, maximum and standard deviation values. The extent of FLI (FLI_QNT) ranges from 4.833 to 9.134. On average, firms provide 5.006 words referring to FLI, which indicate a low level of disclosure concerning future prospects, strategy and expectations. Minimum and maximum values of FLI_COV show a low proportion of FLI disclosed in integrated reports. Within the sample data set, a wide range of variation is marked also with regard to the independent variables as represented by their minimum and maximum values. The firm size (SIZE) ranges from 7.488 to 17.936 with a mean of 9.522 and a standard deviation of 2.769. The profitability (ROE) ranges from −36.420 to 28.620 with a mean of 10.202 and a standard deviation of 10.788, while the leverage ratio (LEV) ranges from 0.090 to 5.650 with a mean of 1.065 and a standard deviation of 1.256.

There are some firms that report only non-positive FLI (FLI_TONE equals to 0) as well as others that report only positive information on FLI (FLI_TONE equals to 1). Similarly, some firms concentrate all FLI on the topic "Risk and opportunities" (FLI_RISK equals to 1) and, conversely, other firms fail to provide any FLI on "Organizational overview and external environment," "Governance" and "Business model" (FLI_ORG, FLI_GOV and FLI_BUS equal to 0). Interestingly, FLI referring to the six information categories indicates very significant differences across the firms that compose the sample. The percentage of FLI regarding each of all the categories covered in our study has considerable dispersion in the scores, as signified by the minimum, maximum and standard deviation values. For instance, FLI_ORG ranges from 0 to 0.847 with a mean of 0.325. On average, companies provide FLI about the "Organizational overview and external environment" topic (approximately 32.5 percent over the total FLI disclosed by firms), even though some firms do not divulge this kind of information.

4.2 Regression analysis

The existence of an econometric problem of data set applied in the multivariate statistical analysis is tested in the correlation matrix which presents pairwise correlations among the variables used in the regression analysis. By examining individual correlations between independent and dependent variables, the coefficients indicate that a multivariate regression analysis can be performed (Table IV).

The results confirm that no collinearity problem subsists between the independent variables since multicollinearity can be considered a problem when the correlation is above 0.80 (Kennedy, 2008). The degree of correlation between each of the variables is not elevated

Variables	FLI_QNT	FLI_COV	FLI_ORG	FLI_GOV	FLI_BUS	FLI_RISK	FLI_STR	FLI_PERF	ROE	SIZE	LEV	FLI_TONE	FLI_EVID
FLI_QNT	1.0000												
FLI_COV	0.6361	1.0000											
FLI_ORG	−0.3251	−0.2843	1.0000										
FLI_GOV	0.0020	−0.0719	−0.2410	1.0000									
FLI_BUS	0.4896	0.4892	−0.5755	−0.2944	1.0000								
FLI_RISK	−0.2785	−0.2413	−0.2705	−0.1878	−0.3698	1.0000							
FLI_STR	−0.7743	−0.3518	−0.1583	−0.2079	−0.3792	−0.1478	1.0000						
FLI_PERF	0.4787	0.2597	0.2873	−0.1918	−0.2666	−0.3083	−0.4410	1.0000					
ROE	−0.1977	−0.0239	−0.2377	0.2908	0.1311	0.3691**	0.2440	−0.4416*	1.0000				
SIZE	0.0682	−0.0432	0.0461	−0.0074	0.0073	−0.0689	−0.1691	0.4284*	−0.0439	1.0000			
LEV	0.0100	0.0429	−0.0048	−0.0252	0.1127	−0.1282	0.0145	0.0214	−0.1064	0.3449*	1.0000		
FLI_TONE	0.0366	0.4478	−0.0287	0.4616	0.8160	0.5215	0.7088	0.2582	0.7088	0.3547	0.1713	1.0000	
FLI_EVID	0.1823	0.1382	0.2574	−0.1610	0.4774	−0.1613	0.3232	0.5261	0.1382	0.3328	0.3772	−0.0287	1.0000

Notes: *, **, ***Significant at 0.10, 0.05 and 0.01 levels, respectively

Table IV.
Correlation matrix

and the highest correlation found between LEV and SIZE is very acceptable. The coefficients indicate that the multivariate statistical analysis is valid and reliable. Additionally, the data reveal statistically significant correlations between ROE and FLI_PERF (at 0.10 level) and between ROE and FLI_RISK (at 0.05 level). Furthermore, a positive association between SIZE and FLI_PERF is demonstrated (at 0.05 level). Table V displays the results of the OLS regression analysis.

The OLS regression results reveal that the amount of FLI is affected by profitability (ROE) and firm size (SIZE).

The association between ROE and FLI varies (positive or negative) depending on the type of information. SIZE is found to have a positive and statistically significant relationship with FLI_PERF, whereas the other independent variable (LEV) does not demonstrate any significant effect on the level of disclosure related to the future (i.e. FLI). Table V contains regression data regarding each model. Model 1 and Model 2 display the impact of firm characteristics respectively on FLI_QNT and FLI_COV. Models 3-8 show the relationship between firm characteristics and different categories of FLI (FLI_ORG, FLI_GOV, FLI_BUS, FLI_RISK, FLI_STR, FLI_PERF).

For hypotheses testing, regression data show that ROE influences specific categories of FLI disclosed in integrated reports, but it has no association with FLI_QNT and FLI_COV. In particular, regression results confirm that ROE affects positively FLI_RISK (Model 6) as expected (*H1*) and negatively FLI_STR (Model 7) and FLI_PERF (Model 8). Thus, *H1* is not supported by empirical evidence for FLI_QNT (Model 1), FLI_COV (Model 2), FLI_STR (Model 7) and FLI_PERF (Model 8) and neither results concerning FLI_ORG (Model 3), FLI_GOV (Model 4) and FLI_BUS (Model 5) indicate any significant statistically association with ROE.

Regarding Model 7 and Model 8, the results reveal that ROE influences negatively FLI about "Strategy and resource allocation" (FLI_STR) and "Performance" (FLI_PERF). The value of the regression coefficients shows that companies with high profitability tend to disclose less FLI_STR (10 percent level) and less FLI_PERF (1 percent level). One probable reason for the results concerning these types of information is that managers may be reluctant to communicate information on future strategies and objectives, even if this information is extremely useful to improve analysts' forecasts and transparency in capital markets. These findings disprove *H1* but are consistent with a number of studies (Aljifri and Hussainey, 2007; Abed *et al.*, 2011) that found a negative relationship between profitability and forward-looking disclosure. On the other hand, the existence of a significant positive relationship between ROE and FLI_RISK is likely occurring because such firms would convey a positive message to their creditors about risk and opportunities for the efficient running of capital markets.

Conversely, *H1* is supported by Model 6 tested in our study. The results demonstrate a positive and statistically significant relationship between profitability and the variable FLI_RISK. The coefficient, significant at the level of 0.05, presents a value of 0.00635307 and the adjusted R^2 (0.161885) confirms that independent variables explain 16.18 percent of variation of the dependent variable. Hence, the OLS regression results demonstrate that profitable firms are more inclined to share FLI regarding "Risk and opportunities" with their stakeholders to assure them to assess opportunities and risks and to decrease risk premium in rate of ROE.

With reference to firm size effect, regression results show a positive and statistically significant relationship between SIZE and the variable FLI_PERF (Model 7), supporting *H2* and corroborating previous FLI evidence (Kent and Ung, 2003). The coefficient, significant at the level of 0.05, suggests that bigger firms are likely to convey more information about future results, plans and projects to help stakeholders to forecast future financial performance.

Regarding the last independent variable, our *H3* is not supported by the findings of our study. Regression analysis shows that LEV has an insignificant influence on the level of FLI.

	Coefficient	SE	*t*-ratio	*p*-value
Model 1 – dependent variable: FLI_QNT				
const	1,234.25	282.85	1.3636	0.00010
ROE	−19.0029	15.5426	−1.2226	0.22941
SIZE	0.00238434	0.00496738	0.4800	0.63413
LEV	−50.6125	159.032	−0.3183	0.75213
FLI_TONE	0.0327959	0.0924595	0.3547	0.72326
FLI_EVID	0.00587298	0.00427524	1.3737	0.17139
R^2	0.045336	Adjusted R^2	−0.034220	
Log-likelihood	−332.5707	*P*-value (*F*)	0.638473	
Schwarz criterion	679.8970	Akaike criterion	673.1415	
SE of regression	1,041.076	Hannan-Quinn	675.5840	
Model 2 – dependent variable: FLI_COV				
const	0.028939	0.00793447	3.6473	0.00083
ROE	−4.75126e-05	0.000436	−0.1090	0.91383
SIZE	−6.64397e-08	1.39345e-07	−0.4768	0.63639
LEV	0.00207317	0.00446116	0.4647	0.64493
FLI_TONE	0.0390608	0.0255483	1.5289	0.14555
FLI_EVID	0.0037015	0.0214269	1.0807	0.27879
R^2	0.008482	Adjusted R^2	0.074144	
Log-likelihood	86.68742	*P*-value (*F*)	0.957972	
Schwarz criterion	−158.6193	Akaike criterion	−165.3748	
SE of regression	0.028178	Hannan-Quinn	−162.9323	
Model 3 – dependent variable: FLI_ORG				
const	0.398411	0.0653797	6.0938	< 0.00001
ROE	−0.00523031	0.00356079	−1.4689	0.15080
SIZE	4.26628e-07	1.13246e-06	0.3767	0.70865
LEV	−0.0132128	0.0362612	−0.3644	0.71777
FLI_TONE	0.0111815	0.0033498	0.70299	0.22800
FLI_EVID	0.0075661	0.0035358	0.35577	0.15479
R^2	0.061267	Adjusted R^2	−0.019196	
Log-likelihood	2.870171	*P*-value (*F*)	0.523350	
Schwarz criterion	8.913904	Akaike criterion	−2.259658	
SE of regression	0.237301	Hannan-Quinn	4.647144	
Model 4 – dependent variable: FLI_GOV				
const	0.163089	0.0694181	2.3494	0.02441
ROE	0.0033847	0.00381453	0.8873	0.38080
SIZE	−4.9999e-07	1.2912e-06	−0.4101	0.68414
LEV	0.0342337	0.0390304	0.8771	0.38625
FLI_TONE	0.0163089	0.0378249	0.8843	0.28178
FLI_EVID	0.0006063	0.0292045	0.6997	0.08870
R^2	0.037923	Adjusted R^2	−0.042250	
Log-likelihood	−0.069829	*P*-value (*F*)	0.702997	
Schwarz criterion	14.89518	Akaike criterion	8.139659	
SE of regression	0.255505	Hannan-Quinn	10.58224	
Model 5 – dependent variable: FLI_BUS				
const	0.177080	0.0796281	2.7121	0.03011
ROE	0.0033847	0.00381453	0.8873	0.29183
SIZE	−2.9558e-07	1.1928e-05	−0.5107	0.56814
LEV	0.0432139	0.0399113	0.7971	0.39727
FLI_TONE	0.0278939	0.9855622	1.6611	0.10537
FLI_EVID	0.0098921	0.0096688	0.9523	0.82869

(*continued*)

Table V.
OLS regression analysis

	Coefficient	SE	*t*-ratio	*p*-value
R^2	0.047521	Adjusted R^2	−0.061156	
Log-likelihood	−0.069829	*P*-value (*F*)	0.802448	
Schwarz criterion	12.90616	Akaike criterion	7.639659	
SE of regression	0.199508	Hannan-Quinn	11.16244	
Model 6 – dependent variable: FLI_RISK				
const	0.20622	0.498635	4.1357	0.00020
ROE	0.00635307	0.00274001	2.3186	0.02621**
SIZE	−2.83342e-08	8.75699e-07	−0.0324	0.97437
LEV	−0.0131513	0.0280358	−0.4691	0.64183
FLI_TONE	0.828797	0.956590	0.7923	0.10537
FLI_EVID	0.1437015	0.349553	0.3899	0.00213
R^2	0.161820	Adjusted R^2	0.161885	
Log-likelihood	−271.3264	*P*-value (*F*)	0.092028	
Schwarz criterion	557.4084	Akaike criterion	550.6528	
SE of regression	225.1805	Hannan-Quinn	553.0954	
Model 7 – dependent variable: FLI_STR				
const	0.249659	0.0494301	5.0507	0.00001
ROE	−0.00503913	0.00271619	−1.8552	0.07177*
SIZE	−2.83342e-08	8.68087e-07	0.0787	0.93771
LEV	−0.00945779	0.277921	−0.3403	0.73560
FLI_TONE	0.08701738	0.0884581	0.1434	0.30462
FLI_EVID	0.02169807	0.0034799	0.8152	0.92228
R^2	0.087894	Adjusted R^2	0.091972	
Log-likelihood	13.51373	*P*-value (*F*)	0.339778	
Schwarz criterion	−12.27195	Akaike criterion	−19.02746	
SE of regression	0.181936	Hannan-Quinn	−16.58488	
Model 8 – dependent variable: FLI_PERF				
const	0.20622	0.498635	4.1357	0.00020
ROE	−0.00635307	0.00274001	2.3186	0.02621***
SIZE	6.83101e-08	8.75699e-07	−0.0324	0.97437**
LEV	−0.0131513	0.0280358	−0.4691	0.64183
FLI_TONE	0.09801753	0.0866654	0.2534	0.56452
FLI_EVID	0.04369889	0.0081597	0.9352	0.87226
R^2	0.693538	Adjusted R^2	0.153309	
Log-likelihood	−100.1545	*P*-value (*F*)	0.379926	
Schwarz criterion	251.9568	Akaike criterion	220.3089	
SE of regression	0.441663	Hannan-Quinn	233.1462	

Table V.

Notes: *,**,***Significant at 0.10, 0.05 and 0.01 levels, respectively

In particular, regression results disprove a correlation between this independent variable and all the measures of FLI considered in the analysis as dependent variables. This is in contrast with *H3* which states that the extent of FLI disclosed in integrated reports is positively related to leverage. Hence, *H3* is rejected, although our findings are consistent with a number of previous studies which suggested an insignificant relationship between this variable and disclosure of FLI. For example, Aljifri and Hussainey (2007) disproved an association between the level of forward-looking disclosure and debt ratio. As well, Celik *et al.* (2006) showed an insignificant relationship between leverage and the extent of FLI. Finally, no statistically significant effect is highlighted for the control variables FLI_TONE and FLI_EVID.

The results of the sensitivity test where we added the explanatory variable EUROPE are also explored. The results confirm the positive and statistically significant association

between ROE and FLI_RISK, in support of *H1*. FLI_STR and FLI_PERF are negatively and significantly associated with ROE, while SIZE is significantly related to FLI_PERF, in support of *H2*. The results do not demonstrate any significant relationship between LEV and FLI, not confirming *H3*. In brief, the results of the sensitivity tests support the findings of all the models. Finally, as underlined in Section 4, the robustness of the data collected is supported by the evidence of the VIF analysis in all the models where no problem of collinearity appears between explanatory variables.

5. Conclusions and further studies

The aim of this paper is to investigate the effect of three firm characteristics on forward-looking disclosure within the context of IR. First, the core results of the univariate analysis show that firms disclose little FLI. The evidence collected also confirms that integrated reports typically contain little quantitative FLI, in line with the previous disclosure literature. Furthermore, this first step of the analysis fills the research gap into the topics of FLI in the IR, providing an answer to prior calls for research on the quality of FLI provided in IR. The regression results for the sample of 282 firms show that profitability (ROE) and firm size (SIZE) are associated with FLI. On the contrary, our findings demonstrate that the independent variable LEV has no correlation with the level of FLI. Profitability is found to be significantly related to specific types of FLI disclosed in integrated reports. This result is consistent with previous empirical research that suggests a relationship between disclosure and firm performance (Merkley, 2014). In particular, the regression results demonstrated a negative and statistical significant association between ROE and the amount of FLI on "Strategy and resource allocation" (FLI_STR) and "Performance" (FLI_PERF). On the contrary, the findings confirm a positive association between ROE and FLI about "Risks and opportunities" (FLI_RISK), in line with *H1*. With reference to firm size (SIZE), the multivariate analysis verified that bigger firms tend to communicate more FLI_PERF than smaller ones, consistent with *H2*. Furthermore, the evidence does not show any significant relationship between FLI and leverage (LEV), not supporting *H3*. The univariate analysis shows a low disclosure level of FLI being IR largely a form of voluntary disclosure (with exceptions, i.e. South Africa and Brazil). IIRC (2013) proposed a framework to assist in the preparation of IR but no existing disciplines require companies to display FLI concerning specific items within IR. Anyway, these proposals are non-mandatory guidelines issued by IIRC for the preparation of a decision-useful IR and the extent of forward-looking disclosure is left to the discretion of management (Marquardt and Wiedman, 2005; Li, 2008; Athanasakou and Hussainey, 2014).

This study is deemed to contribute to the current literature concerning FLI. Even though there are a wide number of disclosure studies, only a few are focusing on disclosure in integrated reports. This research adds to the prior literature and it will improve the perception of the variables that could impact on FLI within the context of IR. There are a very restricted number of studies that have explained the variation of FLI in the light of firm characteristics and moreover acquired results are ambiguous. The findings imply a step forward in the disclosure literature and have several important implications. First, the results provide comprehensive insights into the current forward-looking disclosure practices of early adopters in integrated reports and can be a useful evidence for preparers of it, since no research paper has examined the determinants of FLI in such a context yet. Second, the study will assist investors in their decision-making process and will especially be significant for the institutional ones looking for profitable and secure investment opportunities. This paper has also practical implications especially for managers, who may strategically use this information when they design disclosure policies to influence investors. The study has also implications for regulators (e.g. IIRC) in the preparation of rules and recommendations about disclosure requirements since it encourages further efforts to promote FLI.

It is hoped that this study will enhance the understanding of the factors that affect FLI disclosure and will fuel the debate concerning the need for the establishment of specific guidelines regarding the disclosure of FLI in financial reporting. Based on this study, future research may be conducted by inspecting more variables potentially affecting the extent of FLI or by increasing the number of companies analyzed. In further studies, relationship among disclosure of FLI, structural variables, performance variables and the level of development of capital markets could be tested for some other emerging markets. By doing this, the quality and the reliability of the findings may be improved and thus users of annual reports may be better pleased.

As with any research, this study has some limitations which provide avenues for further research. First, the research is restricted to firms' reports that are available in the Integrated Reporting Emerging Practice Examples Database as of December 1, 2015. The dimension of the sample could be extended, by analyzing more companies as soon as their reports are available in the IIRC database. Second, the items composing the disclosure index were subjectively combined from the existing IIRC's Framework of good practice (Kabalski, 2012) regarding IR (IIRC, 2013). Third, the measure of FLI is based on an unweighted approach. As a result, the application of an equal weight for each word referring to FLI in the content analysis does not reflect the importance of disclosure as perceived by users. For instance, quantitative forward-looking disclosure items are more relevant than other types of information and some disclosure topics may have a greater value relevance over other items to one particular industry than to others. Regarding this limitation, future research may be carried out by assigning more weight to more relevant FLI for stakeholders' information needs.

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