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The determinants of materiality disclosure in integrated corporate reporting

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Abstract. The aim of this study is to test what drives the way in which companies disclose materiality in their Integrated Reports (IRs). Materiality is one of the main themes (and challenges) in the IR discourse, and it will probably play a central role in the actual success of the International Integrated Reporting Council framework. Companies managing to actually implement the materiality principle, will produce IRs which are concise and able to provide relevant information on the future performance of the company. Otherwise, IR will probably fail to meet the high expectations several stakeholders have toward it. Our results shows that materiality disclosure is not company-specific but it is rather industry-induced, thus providing support of the stream of literature indicating industry as the main driver of company voluntary disclosure.

Keywords: materiality, integrated report, accounting
JEL Classification Numbers: M41

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Introduction

There is a growing consensus, among scholars (see Arnold et al., 2012; Eccles and Krzus, 2010; Frias-Aceituno et al., 2012) and standard setters ((IIRC, 2013; GRI, 2013)) that the traditional financial accounting disclosure system does not provide the necessary information for investors to take informed decisions. In the current business environment, company disclosure needs to be concise and to focus on non-financial information, in order to allow investors to predict the long-term financial performance of the company (see Plumlee, 2003; Li, 2008; Miller, 2010).

Integrated Reporting (IR), according to the framework by the International Integrated Reporting Council (IIRC), aims at meeting these challenges. One of the main guiding principles proposed by the IIRC is materiality, which is key both to reach conciseness and to push companies towards the disclosure of information on their long-term performance. In particular, the Consultation Draft (CD) by the IIRC proposes the materiality determination process in order to allow companies to effectively identify material issues.

This study aims at analyzing which are the determinants of materiality disclosure in the Integrated Reports produced by the IIRC pilot program companies. In particular, two different hypotheses are proposed: according to the first one, materiality disclosure is determined by the industry in which the company operates; according to the second one, materiality is a company-specific characteristic and is driven by the characteristics of the board of directors.

Materiality disclosure, in this article, does not refer to the correct identification of material issues by companies nor to the goodness of the materiality determination process. Rather, it refers to the extent to which companies communicate through their IRs the materiality determination process and the issues they consider to be material. It would be impossible for a researcher external from the company to judge whether a certain issue is actually material, and the reason is that it does not exist an objective way to define which are the material issues. Only the company can determine which are the relevant issues, taking into account, among the others, its strategy and business model.

To study which are the determinants of materiality disclosure is a relevant research theme for two reasons. First, it may provide useful information to standard setters (namely, the IIRC) on how different companies (more specifically: the IIRC pilot program companies, which are likely to be particularly interested to the IR and materiality issues) are reacting to the guidelines currently proposed. Is it materiality an industry driven characteristic of reports or it is rather company specific and influenced by the corporate governance structure of companies? This has important consequences for future developments of the framework. If, on the one hand, industry turns out to be the most important variable, then the IIRC may consider issuing some specific guidelines for companies operating in specific industries. On the other hand, if the characteristics of the board are driving materiality, the standard setter may dig deeper and investigate which are the reasons why companies with different corporate governance structures react differently. The second reason why the analysis on the determinants of materiality disclosure is important is that it allows testing the predictions of previous literature on the influence of corporate governance on company disclosure quality. We may consider a higher level of materiality disclosure as one of the key elements of corporate disclosure quality, as an IR which follows this principle is more likely to be concise and to provide the necessary information to predict the long term performance of a company. In this perspective, we may test whether our results are consistent with previous literature on voluntary
disclosure (see Cooke, 1992; Monteiro e Aibar-Guzman, 2010; Patten, 2002; Hassan and Ibrahim, 2012; Brammer and Pavelin, 2006).

The paper is organized as follows. Section 1 provides a discussion of the evolution of the literature on materiality for financial and non-financial information disclosure. It also touches upon some standards (such as the one by the IIRC), which aims at providing guidance to companies for the issuance of their IR. In Section 2, we develop our hypotheses on the determinants of materiality disclosure (Hypothesis 1 argues that materiality disclosure is industry driven, while according to Hypothesis 2 it is company-specific). Section 3 discusses the methodology employed, focusing in particular on the way in which materiality disclosure has been measured. Section 4 provides a description and discussion of the results. Finally, Section 5 concludes.

1. Background

Increasing the level of non-financial disclosure by companies is of paramount importance in order to rebuild the distrust towards companies’ behavior (see AccountAbility, 2003; Lydenberg, 2012) and to allow investors and stakeholders to take more informed decisions. However, companies need to be careful in avoiding the “information overload”, which causes investors and stakeholders being required to process an ever-increasing amount of data. The information overload is certainly one of the main limitations of Sustainability Reporting, and one of the issues Integrated Reporting aims at tackling.

Annual reports do not disclose some information (mainly, non-financial information) that investors need and they do not provide enough information to allow investors to predict the long-term financial performance of the company (see Plumlee, 2003; Li, 2008; Miller, 2010). Both of these two issues are challenged by IRs, which rely to a large extent on the principle of materiality in order to overcome them.

Even if, as it will be more carefully discussed below, materiality definitions in the context of financial and non-financial information differ substantively, at the broader level of analysis it is possible to find a similarity between the definitions of materiality in the two contexts: they both refer to the decision usefulness of the information for the intended user of the report, coherently with the user utility theory (see Faux, 2012; Guthrie and Parker, 1990; Dierkes and Antal, 1995).

According to AccountAbility (2006), “materiality requires that the Assurance Provider states whether the Reporting Organization has included in the report the information about its sustainability performance required by its stakeholders for them to be able to make informed judgments, decisions and actions”. This definition relies on the concept of the “decision usefulness of the information for the intended report’s user”. Mutatis mutandis, the definition is pretty similar to those found for the financial context. AccountAbility (2006) focuses on “stakeholders” rather than on “investors” and on “judgments, decisions and actions” rather than on “investment decisions”. Nevertheless, the underlying criterion is the same both for financial and NFI context: the decision usefulness of the information.

According to GRI (2011b), “the report should cover topics and Indicators that: reflect the organization’s significant economic, environmental, and social impacts or that substantively
influence the assessments and decisions of stakeholders”.

The focus on the usefulness of the information for the intended user of the report (user utility theory) is well represented also in the definition by Spacek (1969): “a material fact is a fact to which an average, reasonably prudent person would attach importance in determining a course of conduct to be taken or followed upon learning the fact, such as in deciding whether or not to buy or sell stock, or to lend or refuse to lend money, or to cancel a loan”. This definition, which Faux (2012) defines “legalistic” is broad enough to be applied both to financial and to non-financial information. The focus is on the outcome – in terms of action taken – of the user of the information.

With the introduction in the debate of the IR, the issue of how to define materiality gained more relevance. The IIRC (2012) argues that “a matter is material if it is of such relevance and significance that it could substantively influence the assessments and decisions of the organization’s highest governing body, or change the assessments and decisions of intended users with regard to the organization’s ability to create value over time.” The IIRC introduces the concept of usefulness not only for the external users of the report but also for the “organization’s highest governing body”. This is coherent with the attention the IIRC devotes to the process of integrated reporting, which ought to provide relevant information for the company decision makers and, in some cases, also shapes the corporate governance of the company.

Given the strategic importance materiality plays in the IIRC framework, IIRC (2012) continues the definition by proposing some suggestions in order to define materiality: “in determining whether or not a matter is material, senior management and those charged with governance consider whether the matter substantively impacts, or has the potential to substantively impact, the organization’s strategy, its business model, or one or more of the capitals it uses or affects.”

When applied to the NFI context, the definitions of “financial” materiality lose much of their utility, as it is impossible to employ the same quantitative criteria of financial information also for NFI. Financial information refers to a market in which goods and services are being exchanged and often have a well-defined price.

Conversely, objects represented by NFI cannot be “priced” in a market, simply because an efficient market does not exist. How much is it worth a death in the workplace? How much is it worth damaging the reputation of the firm? This is impossible to define, at least by relying on an active market. Since a quantitative value does not exist, we cannot apply the thresholds suggested in the financial information context, making it more difficult to separate material from non-material information.

Besides this aspect, while financial reports are intended to provide information mainly to investors, non-financial reports address to a broader array of subjects (i.e. the stakeholders). Given the broadness of the definition of stakeholders (see Freeman, 1984), it may be the case that a certain piece of information is material for a certain stakeholder and not material for another. If this is the case, should the company disclose the information because material or not? Faux (2012) writes that “users are individuals and may consider information differently, one individual may consider that an event warrants some form of negative action, another may consider the event positively and still another may consider the same event to be irrelevant”.

Finally, the user utility approach, both in the financial and non-financial information context, does not take into account the fact that some information may not give rise to any action in the short term, but may form part of a future decision process (Faux, 2012). If this is the case,
someone may argue that an information ought to be disclosed because material even if it does not lead the user to take any action, thus apparently violating the indications of the user utility theory.

Before the introduction of the IR, the debate on materiality in the NFI context was certainly scarcer. The issue was taken into consideration by AccountAbility and GRI, but it did not have the relevance it gathered today. The GRI proposes a list of indicators and issues the company ought to report on. The more of these indicators a company manages to cover, the higher will be the report’s rating. Inevitably, following this approach the issue of materiality loses some relevance, despite being listed among the “Reporting Principles for defining Content” by the GRI.

Conversely, the IR, especially in the IIRC framework, confers a central role to materiality. The IR “conciseness” is one of the key feature stressed by the framework, and to gather a clear and accepted definition of materiality is, in the IR context, fundamental and much more important than for previous standards.

The latest (and probably the more complete) framework for the identification of material issues is provided by the IIRC (2013) in the “Background paper for <IR>” about materiality. The IIRC (2013) stresses the importance of materiality since, as we argued above, it is one of the main principles that ought to guide the creation of an IR. According to IIRC (2013), the process leading to the definition of materiality “requires a high degree of judgment and involves numerous strategic considerations. This requires senior management and those charged with governance collectively to exercise judgment to determine which matters are material for purposes of <IR> and to ensure that they are appropriately disclosed given the specific circumstances of the organization, including the application of generally accepted measurement and disclosure methods as appropriate” (IIRC (2013)).

The IIRC (2013) takes a step further towards the identification of which are the intended users of IR and, as a consequence, to whom a certain matter or information ought to be considered material in order to be disclosed in the report. According to IIRC (2013), “while the communications that results from <IR> will be of benefit to a range of stakeholders, they are principally aimed at providers of financial capital in order to support their financial capital allocation assessment”. This clarification is embedded into the definition of materiality, which is the following: “a matter is material if it is of such relevance and importance that it could substantively influence the assessments of providers of financial capital with regard to the organization’s ability to create value over the short, medium and long term”.

As argued by the detractors of the user utility theory (see Faux, 2012), there may be issues relevant to certain stakeholders but, at the same time, not relevant to other stakeholders. This creates a problem for the organization. The decision taken by the IIRC to choose the “providers of financial capital” as main intended users of the IR helps in reaching a clearer framework that can be useful for companies. The sustainability reporting (CSD) and the IR contains NFI and are aimed at communicating the performance of the organization to a wider array of stakeholders. Nevertheless, the decision taken by the IIRC is a necessary and “unavoidable” first step towards the identification of material information.
2. Hypothesis Development

The aim of this paper is to answer to the following research question: which are the determinants of materiality disclosure in Integrated Reports? As it was already discussed in the introduction, “materiality disclosure” does not refer to the correct identification of material issues by companies. Rather, it refers to the extent to which companies communicate through their IRs the materiality determination process (not necessarily performed following the 2013 IIRC guidelines discussed in the previous paragraph) and the issues they consider to be material. Ultimately, the construct “materiality disclosure” deals with the quantity of information provided about materiality but is also one of the determinants of the quality of the company disclosure. IRs carefully explaining and discussing how the company came to identify its material issues provide better information to the stakeholders and investors, for the reasons described above and summarized by the IIRC framework (IIRC, 2013).

The issue of the determinants of materiality disclosure is relevant because it may provide useful information to the standard setters (namely, the IIRC) and because it allows to test previous literature the determinants of disclosure quality in the context of integrated disclosure. We propose two different hypotheses, which are not mutually exclusive: according to the first one, materiality in IR is industry driven; according to the second one, it is determined by company-specific characteristics and more specifically by board characteristics.

There is a specific stream of literature studying whether the companies’ voluntary disclosure is determined by the industry in which the company operates. Cooke (1992) analyses a sample of Japanese companies finding that companies operating in the “manufacturing” industries do actually disclose more voluntary information compared to companies operating in “non-manufacturing” industries. Such results are confirmed by a later study performed by the same author on a sample of Swedish companies, finding that voluntary disclosure is higher for companies operating in the manufacturing and services industries compared to those operating in the trading industry. Similarly, Monteiro e Aibar-Guzman (2010) argues that a number of studies fond that the industry membership has an influence on the level of environmental disclosure. Further, they argue that it is generally assumed that companies from environmentally sensitive industries tend to disclose more environmental information than firms from non-environmentally-sensitive industries.

In sum, companies operating in different industries may disclose their performance to a different extent because of the different pressures they receive from the public opinion, from the existing and perspective regulations and, in general, from stakeholders. For instance, companies operating in the oil extraction industry are likely to receive more pressures from stakeholder for the communication of their environmental performance than financial institutions. This is due to the very nature of their business and because of the occurrence of events influencing the public opinion (e.g. the Deepwater Horizon oil spill in 2010). Coherently with this reasoning, Patten (2002) argues: “firms from industries that have high sensitive to potential environmental legislation, usually categorized as the petroleum, chemical, metals, and paper industries tend to make more extensive disclosures than companies from less environmentally sensitive industries”. Hassan e Ibrahim (2012) studied the theme from an environmental perspective as well, finding that there may be a positive relationship between industry membership and the level of disclosure of environmental information. More specifically, according to the authors, the environmental disclosure by companies operating in the carbon-intensive industries is higher (both in terms of quantity and
quality) than the disclosure by non-carbon-intensive industry companies. Finally, Brammer and Pavelin (2006) find that that companies in the high technology and finance sectors are significantly less likely, and that firms in the chemical and pharmaceutical and construction sectors are significantly more likely to make environmental disclosures than firms in other sectors. Conversely, An et al. (2011) find that industry is not a significant variable in determining the way in which companies disclose their intellectual capital.

In sum, previous studies generally find that industry plays a significant role in determining the quality and quantity of corporate social and environmental (thus, mostly non-financial) disclosure. By relying on these studies, we hypothesize that industry does influence the materiality disclosure.

We propose the following hypothesis:

*Hypothesis 1: The industry in which the company operates will influence IR materiality disclosure.*

It is generally agreed upon that the board of directors plays a central role in influencing company disclosure. First of all, from the agency theory perspective, company disclosure is one of the main tools to harmonize the interests of managers and shareholders. Annual reports are the main source of information for the board to judge managers and to eventually punish them through turnover. If we think about the issue from an IR perspective, the board is expected to play an ever more central role. IR enlarges the scope of the traditional financial information disclosure by including non-financial information, which are of interest to a broad range of stakeholders. Therefore, according to Frias-Aceituno et al. (2012), IR will play a central role in the definition of agency relationship between the board of directors and other stakeholders, thus contributing to comprehensive accountability. Similarly, according to Kostant (1999), some scholars have proposed that the role of directors is to serve as stewards of communication among corporate stakeholders that is essential for efficiency and cooperation in today's economy.

From a stakeholder theory perspective (Freeman, 1984), the board is charged with finding a way to balance the interests of the different organization’s stakeholder (Ingley and Van der Walt, 2004). This leads to more responsibility for the board (Ingley, 2008), when the stakeholder theory is assumed. Coherently with this perspective, some authors argued that the Board of Directors, as the firm’s governing body, is responsible for safeguarding the interests of the different stakeholders, among other means, through the dissemination of information, in order to reduce information-related problems and to prevent opportunistic behavior (Lev, 1992; Richardson and Welker, 2001; Frias-Aceituno et al., 2012).

We propose the following hypothesis:

*Hypothesis 2: The companies’ board of directors will influence IR materiality disclosure.*

More specifically, we analyze the relationship between board of directors and materiality deeper, examining four different characteristics of the board of directors and proposing the following hypotheses.
**Board Size**

According to Frias-Aceituno et al. (2012), IR requires the input of directors with different types of expertise (financial, social, environmental). This is due to the fact that the IR, by its own nature, aims at informing a wider range of stakeholders and at providing information about different issues and themes. Following this line of reasoning, it follows that larger boards will be able to produce better integrated reports. Since materiality is one of the main characteristics of IR, it follows that larger boards are expected to give more importance to the issue of materiality in their IR, in order to achieve better disclosure.

Larger boards are likely to include a wider range of stakeholders (see Aggarwal and Nanda, 2004). As a direct consequence, we expect larger boards to engage more often in discussions about which are the material issues for the company, as different board members are representing different interests of stakeholders. The materiality determination process is therefore more likely to be implemented in a deeper manner by these larger boards and to be communicated and described in IRs.

Finally, larger boards have been shown to be correlated with higher levels of corporate social performance. This is likely to have an effect also on the way in which the company communicates with its stakeholders.

We propose the following hypothesis:

**Hypothesis 2 a:** Board size will be positively associated with IR materiality disclosure.

**Board Independence**

According to previous accounting literature in the field of earnings management, more independent boards will have an impact on earnings management by firms. More specifically, they will significantly reduce earnings management and therefore they will increase the quality of the information (see, for a review, Prencipe and Bar-Yosef, 2009). If we extend this reasoning to the context of IR, we can hypothesize that more independent board will try to influence positively the quality of company disclosure (thus of IR) by increasing the importance given to materiality disclosure in IR.

Most importantly, following Frias-Aceituno et al. (2012), we argue that independent board members often have a greater interest in ensuring proper conduct by the firm and the fulfillment of its objectives (see García-Sanchez et al., 2011). Thus, they are expected to apply greater objectivity and independence in their activity (Prado-Lorenzo and García-Sánchez, 2010). This greater focus on the monitoring of the conduct of firms, together with the willingness of increasing their reputation (see Fama and Jensen, 1983) will increase the quality of company disclosure. Additionally, as argued by Frias-Aceituno et al. (2012), because their actions are less affected by the actions of competitors than are executive directors (Prado-Lorenzo and García-Sánchez, 2010), they are more receptive to new information demands (Garcia-Sanchez et al , 2011).

We propose the following hypothesis:

**Hypothesis 2 b:** Board independence will be positively associated with IR materiality disclosure.
Board Activity

The literature examining the impact of board activity on disclosure quality does not provide any definitive result. On the one hand, some studies find that Boards which meet more frequently perform their supervisory functions more effectively, while corporate earnings are less manipulated (Xie et al., 2003) and there are fewer problems of asymmetric information in the quarterly earnings announcements (Kanagaretnam et al., 2007). On the other hand, other studies, such as Karamanou and Vafeas (2005), have concluded there is no relation between the activity of the Board and the quality of financial information disclosed. Frias-Aceituno et al. (2012), in their empirical analysis on the impact of board characteristics on the probability for a company to produce an IR, find that board activity is not correlated with the probability of a company to produce an IR.

Since there is no consensus among theory and since Frias-Aceituno et al. (2012), which study a research theme very similar to ours as it deals with IR, find that there is no relation, we propose the following hypothesis:

Hypothesis 2 c: Board activity will not be associated with IR materiality disclosure.

Board Diversity

Board diversity is defined as the disparity of the characteristics presented by the board’s members (see Frias-Aceituno et al., 2012). According to the same authors, board diversity promotes problem solving, increases leadership effectiveness and more effectively facilitates global relationships. According to Coffey and Wang (1998), board diversity is ultimately positively correlated with CSP. More specifically, corporate social disclosure has been shown to be positively correlated with board diversity by the studies of Andrews et al. (1989) and Guthrie and Parker (1990). Board diversity may be interpreted as ethnic diversity (see Haniffa and Cooke, 2005) or gender diversity (see Betz et al., 1989, Harris, 1989, Ibrahim and Angelidis, 1991). In both cases, and according to all the studies cited, board diversity have a positive impact on various forms of corporate social performance and corporate social disclosure.

We propose the following hypothesis:

Hypothesis 2 d: Board diversity will be positively associated with IR materiality disclosure.

3. Methodology

In order to test our hypotheses we ran a cross sectional regression model on the sample companies, where the dependent variable is materiality disclosure and the independent variables of interest are industry and board characteristics (size, independence, diversity, activity).

The most challenging and, at the same time, interesting part of our work has been to find a way to measure materiality disclosure. In order to do so, we employed the content analysis methodology, which allows transforming qualitative into quantitative data in a systematic and objective manner (see Berelson, 1952). Such methodology has been extensively employed in the management field, in particular as a way to measure disclosure quality (see Guthrie et al. (2004))
and, in the specific context of non-financial information, to measure environmental disclosure (see Wiseman, 1982; Cormier and Magnan, 2003; Al-Tuwajri et al., 2004; Aerts and Cormier, 2009; Kuo et al. 2012).

Because of the novelty of our research question, no previous studies tried – to the best of our knowledge – to measure materiality disclosure in the IR context. Nevertheless, the application of the content analysis methodology allows us to reach consistent and robust results about the measurement of the dependent variable. This is confirmed by the fact that the three proxies for materiality disclosure (Materiality word count, Materiality word count in the IR assurance statement and Relevance) are positively and significantly correlated with each others, thus instilling confidence that they are actually measuring the same underlying construct: materiality disclosure.

3.1 Sample

Our sample companies are those joining the IIRC pilot program on the 30th of April 2013. Even if there are also many other companies issuing IRs without being part of the IIRC pilot program, we chose to limit our analysis to those. In fact, we aim at analyzing only those companies which are more likely to have tried to implement the IIRC framework and, therefore, to have taken the issue of materiality more deeply into consideration.

At the time when our sample was selected, there were 82 organizations in the pilot program. We excluded the professionals’ associations (4 organizations), the consulting companies (7 organizations) and some companies for which we were not able to find the board characteristics (6 organizations). The final sample is therefore composed of 65 companies.

We investigated the characteristics of the Integrated Reports produced by the IIRC sample companies, referred to the 2012 performance and published in 2013. When the IR was not available, we selected the company SR. Even if this is a second-best option, the SR is for sure the report more likely to include the materiality disclosure for issues and non-financial information and should not bias our results.

3.2 Dependent Variable

Our dependent variable is materiality disclosure, thus the extent to which the company provided information about the materiality determination process and about the materiality of non-financial information and issues.

By relying on the content analysis methodology, we employed three different variables to proxy for the materiality disclosure construct:

1) word count of the terms “material”/”materiality” divided by total number of pages of the report (MaterialityWC). The data were “hand-collected” in order to be sure that the words “materiality” or “material” are counted only when actually referring to non-financial information, to issues or to the materiality determination process. Therefore the term has not been counted when referring to financial information or in completely different contexts (e.g. “raw materials”). Coherently with the content analysis perspective, reports using more
often the terms “material” or “materiality” in the context defined above can be considered to have a higher level of materiality disclosure;

2) Word count of the terms “material”/“materiality” in the assurance statement divided by total number of words of the IR assurance statement (MaterialityWCinAssurance). This variable captures the importance given to materiality discussion in the reports’ assurance statement. Assurances spending more words on the issue of materiality are correlated with higher levels of materiality disclosure in the reports. The variable adds value to the measurement process because the assurance statement is issued by an entity which is external from the company, thus allowing to consider a different perspective;

3) Relevance (Relevance). This is a categorical variable (0 to 5), which describes the relevance of materiality disclosure in the report, thus the extent to which the report disclosed information about materiality. More specifically, the variable is 0 if there is no reference to materiality; 1 if the report only states that materiality has been a principle followed for the production of the report; 2 if it includes a brief discussion of what is considered to be material; 3 if, beyond the discussion of what is material, it communicates the material issues emerging from the analysis; 4 if the description of the process and its results were described more carefully; 5 if the report devoted particular attention to the materiality issue.

To ensure the reliability of the Relevance variable, four independent coders (graduate students) replicated the relevance assessment performed by the researchers. The coders attained 92% agreement on the score attributed by the researcher which is in line with the recommended level of 90% (Jenkins, 1994).

We are confident that the three ways in which we operationalized our dependent variables are actually capturing the underlying construct (materiality disclosure), because of three main reasons. First, we employed the content analysis methodology, which has been extensively employed by previous research in order to gather data and information on both financial and sustainability reporting (see Al-Tuwaijri et al., 2004; Aerts and Cormier, 2009). Second, the data have been hand-collected, and this increases the reliability of the variables. If would have employed content analysis software we would have probably got a higher number of firm-year observations but with a lower quality (for instance, the Relevance variable requires a certain degree of judgment from a researcher and even the word count variable would have lost some reliability). Third, the three variables (MaterialityWC, MaterialityWCinAssurance and Relevance) are positively and significantly correlated with each other, thus providing empirical evidence that they are actually measuring the same construct (see Table 1).

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| Insert Table 1 here |

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3.3. Independent Variables

The independent variables are the following:
• **Board size (Board Size):** it is the total number of board members at the 31\(^{st}\) of December 2012. The information has been gathered through the Bloomberg database and, when the information was not available, through the analytical analysis of companies’ annual report;

• **Independent directors (PctIndDirectors):** it is the percentage of independent directors sitting in the board;

• **Board Meetings (Boardmeetings):** it is the number of meetings held during the fiscal year 2012;

• **Women on board (PctWomenonboard):** this is our proxy for board diversity and is calculated as the percentage of women sitting on the board of directors;

• **Industry (Industry):** this variable classifies each company based on its inclusion in one of the 10 ICB industries (Oil&Gas, Basic Materials, Industrials, Consumer Goods, Health Care, Consumer Services, Telecommunications, Utilities, Financials and Technology);

• **Total Assets (TotAss):** this is the proxy for size, calculated as the total assets at the 31\(^{st}\) of December 2013. We use it as a control variable as larger firms may be more incline to disclose materiality more carefully. The variable was also included by Frias-Aceituno et al. (2012) in their analysis of the probability for a company to issue a IR;

• **ROA (ROA):** it is our proxy for profitability, calculated following Frias-Aceituno et al. (2012).

### 3.4 Regression models

In order to test our hypotheses we run three different regressions, where the independent variables are, in any of the three models: Board size, PctIndDirectors, Boardmeetings, PctWomenonboard, Industry, TotAss, ROA and MTB. The dependent variable, on the other hand, is Materiality WC in Model 1, Materiality WC in Assurance in Model 2 and Relevance in Model 3.

**Model 1**

\[
\text{MaterialityWC} = \alpha + \beta_1 \text{BoardSize} + \beta_2 \text{PctIndDirectors} + \beta_3 \text{BoardMeetings} + \\
+ \beta_4 \text{PctWomenonBoard} + \beta_5 \text{TotalAssets} + \beta_6 \text{ROA} + \varepsilon
\]

**Model 2**

\[
\text{MaterialityWCinAssurance} = \alpha + \beta_1 \text{BoardSize} + \beta_2 \text{PctIndDirectors} + \beta_3 \text{BoardMeetings} + \\
+ \beta_4 \text{PctWomenonBoard} + \beta_5 \text{TotalAssets} + \beta_6 \text{ROA} + \varepsilon
\]

**Model 3**

\[
\text{Relevance} = \alpha + \beta_1 \text{BoardSize} + \beta_2 \text{PctIndDirectors} + \beta_3 \text{BoardMeetings} + \\
+ \beta_4 \text{PctWomenonBoard} + \beta_5 \text{TotalAssets} + \beta_6 \text{ROA} + \varepsilon
\]
4. Results and Discussion

4.1 Descriptive statistics and correlation matrix

Table 2 reports the main descriptive statistics for the variables of interest. The three variables we employed in order to proxy for materiality disclosure (Materiality WC, Materiality WC in assurance and Relevance) are 0 in the case in which materiality was not disclosed at all and they have higher value in the case in which materiality disclosure is more detailed. More specifically, the variable Materiality WC ranges from 0 to 0.41%, meaning that IRs of the companies employing the words “material” or “materiality” more often used such words 0.41 times each 100 words. The Materiality WC in assurance variable ranges from 0 to 0.075% and Relevance, ranges from 0 to 5, with an average value of 1.4.

The values of the other independent variables seem to be in line with previous literature. On average, boards have 12 components, the percentage of independent directors is 67.9% and 18% of the board members are women. Finally, Total assets, ROA and Mtb have an average value of 348.255, 0.0039 and 26.22 respectively.

According to the correlation matrix, our right-hand variables are not correlated with any of the materiality disclosure variable, with the exception of ROA being positively correlated with Materiality WC in Assurance. About the other independent variables, there is only some positive correlation between the percentage of women in board and the percentage of independent directors. Finally, consistently with previous literature the two variables Mtb and ROA are positively and significantly correlated with each other.

4.2 Results

The regression models described in Table 4 are run on a total number of 65 observations. According to results, Hypothesis 2 is rejected while Hypothesis 1 is confirmed. Thus, materiality disclosure is an industry-induced characteristic. More specifically, in order to read properly the results, the three different elements need to be considered.

First, the coefficients of the variables representing the governance characteristics of the sample companies are, in general, not significant. Only the coefficient of the variable Pct independent directors is positive and significant in Model 6, consistently with Hypothesis 2b. This
result, however, is not confirmed by the other five models, in which the variable is not significant. Similarly, our proxy for diversity is significant in Models 3 and 4, but again when another proxy for materiality disclosure is employed, the result does not hold.

Second, the variables representing the industry in which the company operates are, conversely, for the most part significant, meaning that there is actually an influence of this variable on the materiality disclosure.

Third, the adjusted R² of the three models increases, when the variables representing the industry are introduced in the analysis. This means that the industry variable really adds predictive power to the models and that plays a significant role in the determination of the dependent variables.

These three empirical pieces of evidence points to the same direction: materiality disclosure is determined by industry, rather than by company-specific characteristics.

4.3 Discussion

Our empirical results show that the amount of information companies disclose in their IR about materiality is significantly influenced by the industry the companies operate in. In other words, materiality disclosure is not determined by company-specific characteristics but by external elements. This result is consistent with previous studies (see Cooke (1992), Monteiro e Aibar-Guzman (2010), Patten (2002), Hassan e Ibrahim (2012), Brammer and Pavelin (2006)), which find that the industry plays a relevant role in determining the amount of voluntary information disclosed by companies. According to this literature companies operating in different industries may disclose their performance to a different extent because of the different pressures they receive from the public opinion, from the existing and perspective regulations and, in general, from stakeholders.

Since our work is the first specifically dealing with the determinants of materiality information disclosure, the previous studies are only partially linked to ours. But if we consider materiality disclosure to be an important component of voluntary disclosure and, more importantly, as a major determinant of disclosure quality, our results are in line with this stream of literature. Thus, the industry in which the company operates does influence the quality and the quantity of the voluntary disclosure of the company. Therefore, we argue that the literature on the determinants of corporate voluntary disclosure arguing that industry is the key variable influencing companies disclosure is confirmed also in the context on IR.

As argued in the Background section, with the introduction in the debate of the IR, the issue of materiality has gained more relevance. More specifically, the IIRC devoted significant time and energy in the definition of materiality. These results we obtained may be of interest to the IIRC, as they show that the interpretation and implementation of the IIRC framework does change across different industries. The IIRC may consider issuing some industry-specific guidelines in order to provide guidance to companies about how to really implement their materiality determination process at best, given the constraints represented by the industry they are operating in.
5. Conclusion

This study analyzes which are the determinants of materiality disclosure in the Integrated Reports produced by the IIRC pilot program companies. In particular, two different hypotheses are proposed: according to the first one, materiality disclosure is determined by the industry in which the company operates; according to the second one, materiality is a company-specific characteristic and is driven by the characteristics of the board of directors.

Empirical evidence gathered through hand-collected data on materiality disclosure in IR suggests that the way in which companies disclose their materiality determination process and describe issues and non-financial information materiality is determined by the industry they operate in.

These results are of interest to academics because they allow to test whether the predictions of the literature on corporate voluntary disclosure also applies to the IR context. They are also of interest to standard setters (the IIRC), because they allow it to understand which are the determinants of the implementation of their guidelines.

The study has some limitations which may be solved in the future versions of the paper, such as the limited number of observations in the sample.
### Tables

#### Table 1
**Correlation Matrix**
The Table displays Pearson correlation matrixes. Coefficients' significance: * p < 0.15; ** p < 0.10; *** p < 0.05

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materiality WC</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materiality WC in Assurance</td>
<td>0.4644***</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Relevance</td>
<td>0.3744***</td>
<td>0.3250***</td>
<td>1</td>
</tr>
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#### Table 2
**Descriptive Statistics for Variables Used in the Analysis**
There are a total of 65 observations

<table>
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<th>Median</th>
<th>Standard Deviation</th>
<th>Min</th>
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<td>0.0719124</td>
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<td>0.3263</td>
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</table>
The Table displays Pearson correlation matrixes. Coefficients' significance: * p < 0.15; ** p < 0.10; *** p < 0.05

<table>
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<th>Variable</th>
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<th>(3)</th>
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## Table 4

### The determinants of Materiality

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<th>Relevance</th>
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<td>(0.000)</td>
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<td>(0.0559)</td>
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<td>Observations</td>
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<td>65</td>
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<tr>
<td>Prob &gt; F</td>
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<td>R2</td>
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</table>

The dependent variables are: Materiality WC (Model (1) and (2)), Materiality WC in Assurance (Model (3) and (4)), Relevance (Model (5) and (6)). Model (1), (3), (5) do not include industry as independent variable. All variables are winsorized at the 2% level. Number of observations in each model: 65. Standard errors in parenthesis. Coefficients' significance: * p < 0.15; ** p < 0.10; *** p < 0.05
References


Faux, J. 2012. Environmental event materiality and decision making. Managerial Auditing Journal 27 (3)


Miller, P.B. 2010. The effects of reporting complexity on small and large investor trading. The Accounting Review 85 (6), 2107–2143.


