CrossMark

The tone of business model disclosure: an impression management analysis of the integrated reports

Gaia Melloni[1] · Riccardo Stacchezzini[2] ·
Alessandro Lai[2]

Abstract   The rising emphasis on the business model (BM) as a reportable element
reflects the view that it constitutes one of the key starting points for investors'
analysis. In spite of this, recent academic and professional studies describe current
reporting on BMs as uninformative: too optimistic, generic and incomplete. The
International Integrated Reporting Council (IIRC) claims that these limitations may
be overcome by means of an "Integrated Report", an innovative report which is
expected to offer a complete and balanced representation of how organizations
create value by mean of their BMs. The paper investigates the informativeness of
BM disclosure questioning whether companies adopt impression management (IM)
strategies by manipulating the tone of the BM disclosures provided in their reports.
We perform a manual content analysis of all the reports identified in the IIRC
website and a multivariate statistical analysis to assess if a positive tone of BM
disclosure is significantly associated with weak corporate governance, bad perfor-
mance and low verifiability of the disclosure itself. Our findings support the idea
that managers use BM disclosure as an IM strategy. This evidence has relevant
implications for both accounting scholars and practitioners, since it questions the
role of integrated reporting in improving corporate reporting on BMs.

Keywords   Business model · Integrated reporting · Impression management ·
Corporate governance · Thematic manipulation · Disclosure verifiability

✉ Gaia Melloni
    gaia.melloni@unibocconi.it

✉ Alessandro Lai
    alessandro.lai@univr.it

    Riccardo Stacchezzini
    riccardo.stacchezzini@univr.it

[1]   Department of Accounting, Bocconi University, Milan, Italy

[2]   Department of Business Administration, University of Verona, Verona, Italy

🖄 Springer

1 Introduction

The "Business model" (BM) is a fundamental concept in understanding how companies operate and create value: it embodies the organizational and financial architecture of a business and explains the way firms convert resources and capabilities into value (Teece 2010; Zott et al. 2011; Achtenhagen et al. 2013). Investors consider BM reporting "critical" to understanding firms' performance (CIMA et al. 2013) as it provides an integrated description of how a firm generates its revenues (Greiner and Ang 2012).

Accounting scholars have started to draw attention on the concept of BM and the potential pros and cons deriving from adopting this concept as a basis for measurement standards or for requirements for narrative reporting (e.g. Beattie and Smith 2013; Page 2014; Singleton-Green 2014), and the term BM has been incorporated in the regulation of corporate reporting. Regulators have embarked on several initiatives to improve the quality of business model disclosure (BMD). Among the different, the International Accounting Standards Board (IASB) has issued an exposure draft of "guidance on a framework for management commentary", and BMD is within the scope of such framework. Similarly, the UK Corporate Governance Code requires listed companies to include in their annual report an explanation of their BM, defined as "the basis on which the company generates or preserves value over the longer term" (FRC 2010, § C.1.2).

In spite of these initiatives, the Chartered Institute of Management Accountants (CIMA), the International Federation of Accountants (IFAC) and Pricewaterhouse Cooper (PwC) describe current reporting on BM as "inconsistent, incomparable, and incomplete" (CIMA et al. 2013). In line with critics highlighted by practitioners, Page (2014) argues that current reporting on BM may be labelled as "anodyne", "boilerplate", and likely to degenerate to "motherhood statements". These concerns relate to the risk that firms may report only optimistic, generic, vague, and incomplete description of their BM, emphasizing the strengths and obfuscating the weaknesses.

The issue of a symbolic use of disclosure to advance corporate image is under the lens of the accounting scholars that investigate impression management (IM) strategies (Merkl-Davies and Brennan 2007; Brennan et al. 2009; Merkl-Davies et al. 2011). In particular, IM studies aim to assess the use of "self-serving biases" (Cho et al. 2010, p. 431), i.e. "reporting bias introduced by the opportunistic behavior of managers who select a style of presentation and choice of content that is beneficial to them" (Merkl-Davies and Brennan 2007, p. 126) In this respect, accounting scholars use IM methods to test hypotheses inspired by agency theory with the aim of detecting the presence of disclosure biases introduced by firms in an attempt to manipulate audiences' perceptions of their image (Neu 1991; Neu et al. 1998).

Motivated by the concern of over-optimistic disclosure regarding BMs, the present paper contributes by investigating BM reporting by firms that decided to voluntarily adopt the so-called "Integrated Report" (IR) proposed by the International Integrated Reporting Council (IIRC). According to the International IR Framework (IIRF), the IR adopters should consider BM as a fundamental content

element, providing a balanced description of both positive and negative aspects of their value creation process. In this sense, the IIRF seeks to provide an answer to criticisms raised by those that claim that the limitations of current BMD are attributed to the lack of consistent guidance. According to CIMA et al. (2013, p. 2): "a clearer definition and related guidance can help bring greater consistency to organizations' approaches to reporting and the information used to support their discussions".

Companies producing an IR are expected to provide high quality disclosure on their BM, the paper thus aims to understand whether IR actually offers informative disclosure on firm's BM. Drawing on IM studies, the informativeness of the disclosure is explored in terms of "thematic manipulation" (Brennan et al. 2009). This means that we assess the presence of positive disclosure bias by investigating if positive tone is associated with specific corporate characteristics which provide incentives to manipulate BMD. We aim to provide an answer to the following research question: *Do companies adopt IM strategies by manipulating the tone of the BMD provided in their IR?*

From a methodological point of view, the detection of IM strategies is studied by performing an in-depth manual content analysis and a multivariate statistical analysis of the disclosure provided by all the firms that have published their IR in the IIRC website, testing both the relationship between the tone of disclosure and corporate governance (Osma and Guillamón-Saorín 2011) and between the tone of disclosure and performance (Clatworthy and Jones 2003; Schleicher and Walker 2011). We further consider characteristics that are related to disclosure verifiability (Dobler 2008) as possible determinants of IM strategies: different levels of verifiability allow for dissimilar discretion in the use of positive disclosure tone. In brief, we expect that bad performance, weak governance and low disclosure verifiability may favour manipulation of the BMD tone, thus compromising its informativeness.

To the authors' knowledge, this is the first work that studies the characteristics and the determinants of BMD provided in the IR.

The rest of the paper is articulated as follows: in the *second section* we present the theoretical and practical background of BMD, highlighting how regulators, practitioners, and scholars have dealt with BMD. In the *third section* we present the theoretical framework and the hypotheses development to test the presence of IM. The *fourth section* shows the context of the analysis, i.e. the IIRC project and the requirements of the International IR Framework in terms of BMD. The *fifth section* shows our data collection process and the methodology by which the content analysis and multivariate statistical analysis are performed. The *sixth section* presents the results of the analysis. Finally, the *seventh section* discusses the results and presents the contributions and limitations of the study.

2 Accounting for business models: practical and academic background

The term BM first gained prominence during the rise of e-commerce in the 1990s. Subsequently, the term was widely used to describe the innovative ways of "doing business" that flourishes with the rise of the Internet. As a consequence the concept of BM has started to become increasingly popular in business research in particular in information systems, management and strategy studies (Timmers 1998; Amit and Zott 2001; Applegate 2001; Teece 2010; Achtenhagen et al. 2013).

In spite of the lack of a single definition of the term BM (Magretta 2002), there is a widespread acceptance that it refers to the process of value creation (Greiner and Ang 2012; Beattie and Smith 2013; CIMA et al. 2013; EFRAG 2013).

In the field of accounting, BM discourse is relatively a new topic and in recent years has attracted increasing attention in relation to corporate reporting (ICAEW 2010, p. 9). The use of the concept of BM in financial reporting has emerged mainly in relation the IASB's current approach to the measurement of financial instruments. Under IFRS 9 "Financial Instruments", the firm's BM is one of the factors determining whether financial assets are measured at amortised cost or fair value. Besides, the BM approach is of particular interest because of the IASB project on "Investment Entities" (amendments to IFRS 10, IFRS 12 and IAS 27). This project introduces an exception to consolidation for entities whose only business purpose is to make investments. In line with it, the definition of business purpose is crucial to understand whether an entity is an "investment entity": in this case, it does not have to consolidate its controlled entities (IASB 2014). Furthermore, BM discourse has also entered the discussion of the accounting for insurance contracts, for which the IASB is expected to publish a new standard in amendment of the current IFRS 4 "Insurance Contracts".

These developments initiated a lively debate on measurement models: some practitioners suggested that different firms should account for the same asset in different ways depending on firm's BM. This led to reframe BM as an alternative criterions for choosing the appropriate measurement approach (ICAEW 2010) and a growing number of accounting scholars have concentrated their attention on the appropriateness of using BMs as a "basis for measurement" (e.g. Penman 2007; Brougham 2012).[1]

Scepticism emerged around the definition of 'BM' and its applicability to financial reporting. For example, Page (2014) demonstrates that the term BM has no settled or agreed meaning, and he does not consider it as suitable for a measurement standard like IFRS 9 "Financial instruments". Discussing Page's work, Ronen (2014) substantially confirmed these criticisms. Other studies widened the debate by discussing the role of BM concept as a driver of measurement issues in financial reporting (Leisenring et al. 2012; Singleton-Green 2014).

The growing attention of regulators and practitioners to the narrative sections of corporate reporting led to the realisation that discussing the "BM" is also a "disclosure issue" and not only a measurement one: BM is considered as a

---

[1] The pros and cons of fair value measurements and alternative approaches are presented, *inter alia* in Barth (2004), Penman (2007), Benston (2008), Ramanna and Watts (2007) and Ryan (2008).

specific content element of corporate reporting (ICAEW 2010). Different initiatives are focussing on the regulation of BMD. In December 2010 the IASB issued a Practice Statement on "Management Commentary", stating that "the management should provide a description of the business to help users of the financial reports to gain an understanding of the entity and of the external environment in which it operates. That information serves as a starting point for assessing and understanding an entity's performance, strategic options and prospects" (IASB 2010, § 26).[2] Another example is the "UK Corporate Governance Code" (FRC 2010, § C.1.2) that characterises the BM as "the basis on which the company generates or preserves value over the longer term (the business model)" and states that "the directors should include in the annual report an explanation of the basis on which the company generates or preserves value over the longer term and the strategy for delivering the objectives of the company".

Despite these initiatives, a recent study by CIMA et al. (2013) describes current reporting on BM as "inconsistent, incomparable, and incomplete". They find that 77 % of the FTSE 350 mentions BM in their accounts, but only 40 % provide insightful detail about those models. Only 8 % integrate BM reporting with strategy and business risks. Academic studies on BMD substantially confirm these critics and highlight the risk that it may degenerate in generic and optimistic disclosure. Page (2014) argues that "business model disclosures are no less likely to be anodyne or boiler-plate than other mandated disclosures covering such topics as risk management" (Page 2014, p. 692). By identifying parallels in other branches of corporate reporting (corporate governance and risk reporting), Page discusses reasons for not including the term BM in reporting guidance corroborating the idea that all these type of disclosure are uninformative. Similarly, Bambagiotti Alberti et al. (2009) provide evidence of the risk of a "fashion effect" around the term BM as used by the IASB Discussion Paper on Management Commentary by verifying the "if" and "where" the term BM (and its synonyms) is used within the annual reports of the Italian listed companies.

To summarize, recent academic and professional studies describe current reporting on BM as uninformative. In order to assess whether BMD offered in the IR is subject to the same shortcomings, we investigate the presence of thematic manipulation strategies by drawing on IM studies. As the next section describes, the IM framework offers methodological support for investigating the actual informativeness of the disclosure provided in the IR.

---

[2] In particular, "depending on the nature of the business, management commentary may include an integrated discussion of the following types of information: (a) the industries in which the entity operates; (b) the entity's main markets and competitive position within those markets; (c) significant features of the legal, regulatory and macro-economic environments that influence the entity and the markets in which the entity operates; (d) the entity's main products, services, business processes and distribution methods; and (e) the entity's structure and how it creates value" (IASB 2010, § 26).

3 Theoretical framework, research question and hypotheses

3.1 Agency theory and impression management strategies

Agency theory posits a conflicting relationship between managers and investors: the former benefit from information that the latter do not have access to, and this asymmetry results in adverse selection and moral hazard problems (Fama and Jensen 1983; Jensen 1986; Jensen and Meckling 1976). In the corporate disclosure setting, this means that managers may exploit the information asymmetry about firm's achievements and prospects providing a misrepresentation in the communication process toward investors.

IM is a manifestation of the agency problem, as it refers to the process by which individuals, motivated by a desire to present a self-serving view, attempt to control the impressions of others (Leary and Kowalski 1990, p. 34). Originating in the psychology literature (Schlenker 1980; Riess et al. 1981; Schneider 1981), accounting scholars refer to IM strategies as the managers' attempt to present information in a manner that distorts readers' perceptions of corporate image and achievements (Neu 1991; Neu et al. 1998; Hooghiemstra 2000).

IM can occur in different forms, and accounting literature has depicted a variety of IM methods used in corporate reporting (Merkl-Davies and Brennan 2007; Brennan et al. 2009; Merkl-Davies et al. 2011): thematic manipulation (e.g. the use of positive or negative words and sentences), attribution of organizational outcomes (e.g. the attribution of responsibility for negative outcomes to external circumstances), syntactical manipulation (e.g. the use of complicated language to obfuscate corporate performance), and performance comparisons (e.g. the selection of benchmarks that portray firm performances as being better than the industry average) are only some of the techniques highlighted in accounting research.

These studies offer methodological support in the process of testing whether managers adopt IM strategies to distort investors' perceptions of a "weak" corporate image and achievements. The present paper focuses on the IM strategy labelled as "thematic manipulation", and in particular on the use of positive tone in the disclosure provided in an attempt to create a "good" image of the firm. This technique is investigated by Adelberg (1979), which tests whether managers obfuscate their failures and underscore their successes. Courtis (1995) posits that management is not neutral in how it presents information, preferring to communicate in a manner that hides bad news. Clatworthy and Jones (2003) refer to "good news" and "bad news" and investigate the emphasis on the positive aspects of the performances reported in the annual reports of UK firms. Cho et al. (2010) investigate the language of US corporate environmental disclosure by focusing on the "optimism" of such disclosure. Schleicher and Walker (2010) study the "bias in the tone" of disclosure, focussing on forward looking narratives of UK annual reports. Focusing on annual results press releases of Spanish firms, Osma and Guillamón-Saorín (2011) analyse the use of positive language, keywords and statements to convey a positive view of performances.

3.2 Research question and hypotheses development

Drawing on the mentioned studies, the research question—already mentioned in the introductive section (Sect. 1)—is the following one: Do companies adopt IM strategies by manipulating the tone of the BMD provided in their IR? This research question is informed by agency theory,[3] that appears to be an appropriate theoretical framework because investors are considered the main users of IRs and IR is aimed at helping them make a "meaningful assessment of the long-term viability of the organisation's business model and strategy" (IIRC 2011, 2012a, b, 2013a, b).

From a methodological point of view, the detection of IM strategies is studied by focusing on the association between the tone of the disclosure and specific corporate characteristics that are conjectured to impact on the use of thematic manipulation.

Corporate governance is one of these characteristics: Mather and Ramsay (2007) study the association between board independence and IM in financial reports of Australian firms and show that the presence of stronger boards mitigates IM strategies. Similarly, Osma and Guillamón-Saorín (2011) demonstrate that "strong governance" improves transparency and reduce self-serving disclosure by management.[4] They measure the "strength" (and "weakness") of firms' governance by referring to board characteristics such as board size (number of directors) and board structure (the proportion of independent directors on the board). The composition of audit committee is another factor that characterizes the strength of firms' corporate governance systems, and previous studies have demonstrated a positive association between the audit committee independence and the quality of corporate reporting (Klein 2002; Xie et al. 2003).

In line with previous studies on the effects of corporate governance on IM (Mather and Ramsay 2007; Osma and Guillamón-Saorín 2011) and, more generally, on disclosure quality (Klein 2002; Xie et al. 2003), we expect corporate governance to be "stronger" when the number of the members of the board of directors is limited and the audit committee is (more) independent. Considered together, these governance characteristics are expected to reduce IM strategies by increasing the monitoring role of the board and of the audit committee on managers. On the contrary, in the case of "weak" corporate governance, managers have greater discretion in using a positive tone in narrative disclosure. We thus test the following hypotheses.

Hypotheses on governance variables:

Hp1a: Bigger board is associated with a more positive tone of BMD.

Hp1b: Less independent audit committee is associated with a more positive tone of BMD.

---

[3] Agency theory is one of the frameworks that provide the theoretical underpinning for research focusing on corporate disclosure preparer and that is considered to be suitable for undertaking investigations on IM strategies (Merkl-Davies and Brennan 2007).

[4] The effects of board characteristics on disclosure quality is also tested by studies not informed by IM framework (Gul and Leung 2004; Cheng and Courtenay 2006; Cerbioni and Parbonetti 2007; Lim et al. 2007; Michelon and Parbonetti 2012).

Another corporate characteristic that is likely to impact on the use of thematic manipulation is performance. Among the different, Clatworthy and Jones (2003) and Schleicher and Walker (2010) test whether firms with declining performance provide a more positive tone than firms with increasing performance.

In line with these studies, we expect that, if managers are implementing IM strategies, they will use optimistic disclosure to obfuscate a decrease in their performances. In other words, we argue that in case of a declining profitability, managers are expected to "balance" this negative perception of the firm by using a positive tone in narrative disclosure.

Hypothesis on performance variable:

Hp2: Declining performance is associated with a more positive tone of BMD.

In order to verify whether BMD is subject to thematic manipulation, we do not limit the analysis to factors associated to "firm characteristics" but we also consider some characteristics of the disclosure itself. In this respect, we draw on Mercer (2004), who asserts that the disclosure credibility must be appraised separately for each single disclosure item and may vary within a single firm across different disclosure item. This explains why we test the association between the tone and specific disclosure characteristics which are expected to favor practices of IM.

Schleicher and Walker (2010) argue that managers with a willingness to engage in IM are likely to target forward looking statements because of the existing evidence on their usefulness, predictive value, and value-relevance (Bryan 1997; Schleicher and Walker 1999). In this respect the disclosure of forward looking is more subject to managerial manipulation. In particular, Dobler et al. (2011) claim that "unverified disclosure" like forecasts are subject to greater discretion with respect to "verified disclosure" referring to past events. Another important characteristic affecting the verifiability of the disclosure is the type of information: quantitative information is considered to be more verifiable than non-quantitative (Dobler 2008; Dobler et al. 2011).

Drawing on these studies, it appears that managerial discretion in using disclosure manipulation is higher when the information to be disclosed is less verifiable. In particular, we verify if the supply of less verifiable information (i.e. forward looking and non-quantitative) favours the use of positive tone by managers.

Hypotheses on disclosure verifiability:

Hp3a: Forward looking disclosure is associated with a more positive tone of BMD.

Hp3b: Non-quantitative disclosure is associated with a more positive tone of BMD.

4 The context of analysis

According to the IIRC—a global coalition of regulators, investors, companies, standard setters, members of the accounting profession and NGOs—the adoption of an IR results in the communication about value creation over time.

Despite its voluntary nature, the interest on IR is significant. The IIRC has signed important agreements with international standards setters (e.g. the Memorandum of Understanding (MoU) with IASB, and the Global Reporting Initiative's MoU with IIRC - GRI and IIRC 2013).[5]

By 14th January 2014, 148 firms had joined the IIRC Pilot Programme on IR since its launch in 2011. The group of organizations participating in the Pilot Programme has the opportunity to demonstrate global leadership in this emerging field of corporate reporting. The IIRC Pilot Programme underpins the development of the International Integrated Reporting Framework (IIRF), thereby allowing participants to test the framework during their reporting cycle.

The purpose of the IIRF (firstly published in 2011, then revised in 2012 and 2013) is to "help organizations determine how best to disclose their unique value creation story in a meaningful and transparent way" (IIRC 2011, 2012a, b, 2013a, b).

BMs are identified as the central theme for the IR. In all the versions of the IIRF, the BM is considered to be a "Content Element" that should be included in any IR. An IR should answer the question: "What is the organization's business model?" (IIRC 2011, 2012a, b, 2013a, b). This is consistent with the aim of IR, that is to facilitate a "meaningful assessment of the long-term viability of the organization's BM and strategy" (IIRC 2011, 2012a, b, 2013a, b).

The IIRF offers a visual representation of what a BM consists of (IIRC 2013b, p. 13[6]). It exists at the core of an organization and it constitutes its "system of inputs, business activities, outputs and outcomes that aims to create value over the short, medium and long term" (IIRC 2011, 2012a, b, 2013a, b). The idea at the basis of the BMD in the IR is that "every organization requires one or more of the capitals as inputs to its BM. These capitals are then consumed or transformed by activities that produce a range of outputs. The extent to which these outputs create or destroy value depends on the outcomes they generate and the perspective taken" (IIRC 2011, 2012a, b, 2013a, b).

The IIRF indicates that the explicit identification of the key BM elements "enhance the effectiveness and readability of the description of the BM" (IIRC 2011, 2012a, b, 2013a, b). In detail, firms are expected to describe their BM in terms of "inputs", "business activities", "outputs" and "outcomes". Disclosure on "inputs" should show how those inputs relate to the "capitals" (i.e. financial capital; manufactured capital; human capital; intellectual capital; natural capital; social and relationship capital) on which the organization depends, or that provide a source of differentiation for the organization. Disclosure on "business activities" relates to the ways a firm transforms inputs into outputs and differentiates itself in

---

[5] In their MoU, the IASB and the IIRC share the view that communication about businesses' value creation should be the next step in the evolution of corporate reporting (IASB and IIRC 2013, p. 2). The purpose of the MoU is to "promote the global harmonization and clarity of corporate reporting frameworks, principles and requirements", thus legitimizing the role of IIRC in promoting developments in corporate reporting.

[6] A very similar version of the representation offered in the final version of the IIRF (http://www.theiirc. org/wp-content/uploads/2013/12/13-12-08-THE-INTERNATIONAL-IR-FRAMEWORK-2-1.pdf) appears in the previous versions of the Framework (IIRC 2011, 2012a, b, 2013a).

the market place. Disclosure on "outputs" relates to the products and services that are intended to generate revenue for the organization. Disclosure on "outcomes" shows the internal and external consequences for the capitals as a result of an organization's business activities and outputs.

The IIRF stresses the importance of providing a "balanced" and "complete" representation of a firm's BM. Information is "balanced" when it "has no bias in the selection or presentation of information [and it] is not […] manipulated to change the probability that it will be received either favorably or unfavorably […] giving equal consideration to both strengths and weaknesses of the organization, both positive and negative performance" (IIRC 2013b, § 3.44–3.45). To be "complete" information should "include all material information, both positive and negative" (IIRC 2013b, § 3.47).

The presence of the guidelines on BMD provided in all the versions of the IIRF is particularly important in light of the criticisms raised by accounting professionals on the lack of adequate guidance on how to define and disclose details of a company's BM (CIMA et al. 2013). This supports our choice to investigate the disclosure on BM provided by IR adopters.

5 Methodology

5.1 Sample selection and data collection

We analyse all the reports available in the "Integrated Reporting Emerging Practice Examples Database" as at 15th September, 2014. This database contains reports which illustrate emerging practice on IR, and it is publicly accessible from the IIRC official web site. Note that we do not rely on the IIRC selection of examples of BM contents, but we download from the IIRC website all the 79 reports available in the database and read each of them to find if they devote a section of the reports to describe the BM. 25 reports are thus excluded as they do not provide a specific description of the BM. The content of the remaining 54 reports, belonging to 51 different firms (three firms uploaded two reports referring to different years), are analysed. The reports belong to firms from all the continents (54 % from Europe; 20 % from Africa; 17 % from America; 9 % from Asia and Australia) and to different industry groups: following the ICB classification, Oil and Gas, Basic Materials, Industrials and Utilities represent 46 % of the sample, Consumers goods, Consumer services and Health Care, 28 %, Technologies and Telecommunications, 11 % and Financials, 15 %. The reports refer to year 2011 (52 %), 2012 (35 %) and 2013 (13 %); three of them belong to firms that are not listed whilst the remaining belong to listed ones.

We manually collect data from firms' IR that relate to disclosure variables used in the multivariate analysis, whilst data on the other variables (governance, performance and other corporate characteristics) are collected from Bloomberg database for years 2011, 2012 and 2013.

5.2 Data analysis

We perform two level of analysis: (1) a manual content analysis and univariate analysis of the relationships between disclosure variables; (2) a multivariate analysis to test our hypotheses on the relationship between the tone of disclosure and a set of variables that refer to corporate governance, performance and disclosure verifiability. Details on both the analyses are presented in the following two subsections.

5.2.1 Manual content analysis and univariate analysis

In line with methodological studies on content analysis (Krippendorff 2013) we develop and test our coding scheme along the following steps: definition of the sampling and recording units; definition of the categories used to codify the text; coding of the text; reliability assessment.

Our sampling units are firms' IR sections devoted to BM. We read all the IR and focus the analysis on the extracts of IR with narratives devoted to BM. We choose "text units" (Beattie et al. 2004) as recording units. This means that we highlight and code every sentence of the BM section and when a sentence embeds more than a single statement, we consider each single statement (i.e. text unit) separately as recording unit. We extend the analysis to figures and diagrams that describe BMs in their content given that the IIRF recommends to depict graphically the BM (IIRC

Table 1 Examples of disclosure tone of IR statements, and other disclosure characteristics of BMD

	IR statements with positive tone	IR statements with non-positive tone (i.e. negative or neutral)
Quantitative and forward looking disclosure	The Asian market currently represents only about 6–7 % of total global pharmaceutical spend, but this is estimated to rise to 20 % by 2020 (Source: Credit Suisse/IMS)[a]	We estimate that each semiconductor company would need to spend over $100 million dollar every year to reproduce what [...] does[a]
Quantitative and non-forward looking disclosure	The business group realized sales of € 356 million, 10 % higher compared to previous year[b]	Our largest single region is North America, accounting for 33 % of total net sales while emerging markets account for 34 %[a]
Non-quantitative and forward looking disclosure	There are also opportunities to invest in new distribution channels: partnership with banks, more direct marketing and utilization of social media[a]	If life expectancy increases more quickly than projected, we may also have to increase reserves to cover future payments, reducing our earnings[b]
Non-quantitative and non-forward looking disclosure	We've always been clear about our way of doing things, of seeing opportunities to create value that others don't[a]	We distributed the Apple I Pad in the UK and to our enterprise customers in Europe[a]

Source: extracts of IR available on the IIRC web site

[a] The topic category is "inputs, business activities and outputs"

[b] The topic category is "outcomes"

2011, 2012a, b, 2013a, b). This led to the analysis of 4426 text units belonging to the 54 reports (on average 82 text units per report).

The coding scheme incorporates both the linguistic attributes (i.e. tone, type, time) and the content (i.e. topic) of BMD as categories. Each text unit is placed into four categories: tone, type, time and topic. With reference to the "tone" of disclosure we distinguish between positive and non-positive (i.e. negative or neutral one) tone. In particular, the tone of the disclosure is interpreted in terms of the positive or non-positive connation of the statement. More specifically, statements are codified as "positive" when they connote good news for the company, or the environment in which the company operates (Clatworthy and Jones 2003, p. 175). Regarding the "type" of measure each piece of information is coded as quantitative or non-quantitative (i.e. qualitative); with reference to the "time" orientation, forward looking information or non-forward looking (i.e. past or present) are the possible coding for this information. Finally, we use BM "topics" as categories. We classify each text unit into two topic categories: one category includes the inputs, business activities and outputs; the other one includes the outcomes in line with the IIRF recommendations.

Table 1 reports examples of disclosure tone of IR statements. In order to offer a clear and complete understanding of our classification process, the table does not only distinguish between positive statements and non-positive ones, but also shows differences between quantitative and non-quantitative disclosure and forward looking and non-forward looking disclosure. Furthermore, the topic category (inputs, business activities and outputs or outcomes) is also detected.

The reliability of the classification procedure was assessed following Krippendorff (2013). A list of detection and classification rules was defined and discussed among the authors, and classification criteria for each category were subsequently identified. Afterwards, a preliminary test of the coding procedure was conducted to highlight unclear coding rules and to standardize the classifications used by the researchers: the authors independently examined ten IR. The results of the individual classifications were compared and the differences discussed. The outcome of this pre-test activity was a final set of detection and classification rules. Using this set of rules, another IR was coded by authors to test the alignment of the research team on the coding procedure. After the validation of the procedure, each author independently coded each of the IR. When differences in the coding occurred they were discussed to agree on the final coding. To check for inter-rater reliability, the different authors used the specified coding system on the documents of the entire sample and they repeated the analysis at different time periods. The coefficient of agreement (i.e. the ratio of the number of pairwise interjudge agreements to the total number of pairwise judgments) found was above the acceptance level that ensuring the reliability to the coding procedure (Krippendorff's alpha coefficient of agreement = 0.87).

Pairwise Chi square tests were used to assess whether tone is associated with quantitative versus qualitative disclosure; forward versus non-forward looking disclosure and disclosure on outcomes versus disclosure on inputs, business activities and output.

5.2.2 Multivariate statistical analysis

In the *multivariate analysis*, OLS regression models are estimated using data of years 2011, 2012 or 2013 depending on the release year of the report. We study the relationship between the positive tone of disclosure and corporate governance, performance and disclosure verifiability variables. We estimate the following regression model:

$$D\_TONE = \alpha_0 + \underbrace{\alpha_1 B\_SIZE + \alpha_2 AC\_IND}_{Governance} + \underbrace{\alpha_3 DECL\_PERF}_{Performance}$$
$$+ \underbrace{\alpha_4 D\_TIME + \alpha_5 D\_TYPE}_{Disclosure\,Verifiability}$$
$$+ \underbrace{\alpha_{6k} INDUSTRY_k + \alpha_7 LN\_SIZE + \alpha_8 D\_TOPIC + \alpha_9 LN\_LENGTH}_{Controls} + \varepsilon$$

(Model 1)

The dependent variable in the regression is disclosure tone (*D_TONE*), a variable that represents the report's average tone score. It is measured as the number of positive text units deflated by the total number of text units.

Governance variables are defined and measured as follows: board size (*B_SIZE*) is the number of members of the board of directors and audit committee independence (*AC_IND*) is the proportion of audit committee independent members. Declining performance (*DECL_PERF*) is a dummy variable set equal to one if firm return on equity is decreasing and 0 otherwise. Disclosure verifiability variables are measured as follows: disclosure time orientation (*D_TIME*) is the time orientation score measured as number of non-forward looking information deflated by the total number of text units; *D_TYPE* is the type of information score measured as the number of quantitative information text units deflated by the total number of text units. Higher disclosure verifiability corresponds to higher values of both *D_TIME* and *D_TYPE*.

Previous IM studies consider industry and size as controlling factors of disclosure choices as big size and membership in particular industry group could be linked to variation in the tone of the disclosure provided (e.g. Cho et al. 2010; Osma and Guillamón-Saorín 2011). We distinguish four industry groups (*IND_1* = Oil & Gas, Basic Materials, Industrials and Utilities; *IND_2* = Consumer Goods, Health Care and Consumer Service; *IND_3* = Technology and Telecommunication; *IND_4* = Financials). The regression model includes three industry dummies and excludes *IND_4*. Similarly, we include *LN_SIZE* in the regression measured as the natural logarithm of the value of balance sheet total assets.

We also consider control variables that refer to the content of BMD. Disclosure topic (*D_TOPIC*) is a dummy variable that is equal to one if disclosure refers to outcomes and to 0 otherwise (i.e. if it refers to inputs, business activities or outputs). Disclosure length (*LN_LENGTH*) is defined as the natural logarithm of the number of text units in the BM section of each firm. Clustered standard errors at firm level are used.

In order to assess the robustness of the results we run 8 *sensitivity tests*.

Firstly, all being equal we consider only one governance and one disclosure variable estimating the following four OLS models:

$$D\_TONE = \alpha_0 + \alpha_1 B\_SIZE + \alpha_2 DECL\_PERF + \alpha_3 D\_TIME + Controls$$
$$(\text{Model 2})$$

$$D\_TONE = \alpha_0 + \alpha_1 B\_SIZE + \alpha_2 DECL\_PERF + \alpha_3 D\_TYPE + Controls$$
$$(\text{Model 3})$$

$$D\_TONE = \alpha_0 + \alpha_1 AC\_IND + \alpha_2 DECL\_PERF + \alpha_3 D\_TIME + Controls$$
$$(\text{Model 4})$$

$$D\_TONE = \alpha_0 + \alpha_1 AC\_IND + \alpha_2 DECL\_PERF + \alpha_3 D\_TYPE + Controls$$
$$(\text{Model 5})$$

Additionally, we perform the same multivariate analysis (Model 1) but considering different governance variables: board independence (*B_IND*) measured as the proportion of board independent directors and audit committee size (*AC_SIZE*), measured as number of members of the audit committee.

$$D\_TONE = \alpha_0 + \alpha_1 B\_IND + \alpha_2 AC\_SIZE + \alpha_3 DECL\_PERF + \alpha_4 D\_TIME$$
$$+ \alpha_5 D\_TYPE + Controls$$
$$(\text{Model 6})$$

We then test two distinct OLS models differentiating between board characteristics (Model 7) and audit committee ones (Model 8). We test the following OLS models:

$$D\_TONE = \alpha_0 + \alpha_1 B\_SIZE + \alpha_2 B\_IND + \alpha_3 DECL\_PERF + \alpha_4 D\_TIME$$
$$+ \alpha_5 D\_TYPE + Controls$$
$$(\text{Model 7})$$

$$D\_TONE = \alpha_0 + \alpha_1 AC\_SIZE + \alpha_2 AC\_IND + \alpha_3 DECL\_PERF + \alpha_4 D\_TIME$$
$$+ \alpha_5 D\_TYPE + Controls$$
$$(\text{Model 8})$$

We run an additional sensitivity test considering the variable *EUROPE*: a dummy that is equal to 1 if firms have been incorporated (i.e. legally constituted) in Europe and 0 otherwise. We thus control for the effect of continent specific institutional factors; this choice is motivated by the findings of the emergent literature on IR ascribing differences in the IR disclosure practices to institutional factors (Jensen and Berg 2012).

$$D\_TONE = \alpha_0 + \alpha_1 B\_SIZE + \alpha_2 AC\_IND + \alpha_3 DECL\_PERF + \alpha_4 D\_TIME$$
$$+ \alpha_5 D\_TYPE + \alpha_{6k} INDUSTRY_k + \alpha_7 LN\_LENGTH + \alpha_8 D\_TOPIC$$
$$+ \alpha_9 LN\_SIZE + \alpha_9 EUROPE + \varepsilon$$

(Model 9)

Finally, the Variance Inflator Factor (VIF) test was performed to assess whether multicollinearity was affecting the results in each single Model (1–9). A maximum VIF value in excess of 10 is taken as an indication that multicollinearity may be affecting the estimate and the largest value among all independent variables is often used as an indicator of the severity of multicollinearity (Neter et al. 1996).

6 Results

6.1 Content analysis and univariate analysis

Of the 4426 text units analysed, the content analysis reveals that 42.93 % have a positive tone whilst 57.07 % have a negative or neutral tone. Only 12.11 % of BMD is forward looking information and quantitative information is limited to 25.58 %. Our results are consistent with the ones of Beattie et al. (2004). Indeed, also their study demonstrated that firms disclose little forward looking information (13 % of

Table 2 Content analysis and univariate analysis

Tone of disclosure	No. of text units	Time orientation		Type		Topic	
		Forward looking	Non-forward looking	Non-quantitative	Quantitative	Inputs, business activities and outputs	Outcomes
Non-positive	2526	232	2294	1867	659	1680	846
	57.07 %	*5.24 %*	*51.83 %*	*42.18 %*	*14.89 %*	*37.96 %*	*19.11 %*
Positive	1900	304	1596	1.427	473	931	969
	42.93 %	*6.87 %*	*36.06 %*	*32.24 %*	*10.69 %*	*21.03 %*	*21.89 %*
Total	4426	536	3890	3294	1.132	2611	1815
	100.00 %	*12.11 %*	*87.89 %*	*74.42 %*	*25.58 %*	*58.99 %*	*41.01 %*
Pear. $\chi^2(1)$ stat.		47.324		0.812		137.405	
Pear. $\chi^2(1)$ prob.		0.000		0.368		0.000	

This table presents the absolute frequencies and relative frequencies (in italics) of text units distinguishing between tone, time, type and topic. It also represents the contingency table and reports the results of the Pearson's Chi squared test of independence (Pear. χ^2). The degrees of freedom are in brackets

the total amount of disclosure analyzed in their paper). Similarly, also the amount of quantitative information is limited as they showed that 28 % of the information embeds quantitative indicators.

The topics of BMD are spread as follows: 41.01 % of the text units are on outcomes, and the remaining 58.99 % on inputs, business activity and outputs (Table 2). These results represent first evidence on the quality of BMD: in particular consistently with Beattie et al. (2004, p. 222) we show that "quantified forward-looking disclosure is a rarity".

Results of the univariate analysis on the relationship between disclosure tone and its time orientation show that the first is significantly associated to the latter. We further show that BMD tone is significantly related to the disclosure topic (Table 2). Pearson χ^2 probabilities are below 0.05 in both the cases, showing that tone is not independent from these disclosure characteristics. On the contrary, no significant statistical relationships are highlighted between tone and type of information. These results provide first evidence on the association between disclosure verifiability and the tone of BMD. In particular we show that whilst the release of forward looking is associated to an increasing optimism of BMD, it appears that this is not the case for non-quantitative information as we show no univariate relation between disclosure tone and type of information. Finally, these results shed light on the importance to include variables referring to the topic of information in the multivariate analysis as significant association was demonstrated between disclosure tone and topic.

Table 3 Descriptive statistics

Variable	Obs.	Mean	SD	Min	Max
Dependent variable					
D_TONE	54	0.433	0.224	0.000	1.000
Governance variables					
B_SIZE	47	11.383	2.763	6.000	18.000
AC_IND	43	97.248	9.011	60.000	100.000
Disclosure verifiability variables					
D_TIME	54	0.885	0.141	0.200	1.000
D_TYPE	54	0.251	0.269	0.000	1.000
Control variables					
LN_LENGTH	54	3.912	1.001	1.610	6.142
D_TOPIC	54	0.405	0.193	0.000	1.000
LN_SIZE	54	10.677	2.134	7.024	16.218

This table provides the descriptive statistics (mean, standard deviation, minimum and maximum) of the sample. Variables definition: *D_TONE* is the tone disclosure score (number of positive text units/total number of text units); *B_SIZE* is the number of board directors; *AC_IND* is proportion of audit committee independent members; *D_TIME* is the time disclosure score (number of non-forward looking text units/total number of text units); *D_TYPE* is the type disclosure score (number of quantitative text units/total number of text units); *LN_LENGTH* is the natural logarithm of total number of text units; *D_TOPIC* is the topic disclosure score (number of text units on outcomes/total number of text units). *LN_SIZE* is the natural logarithm of the volume of balance sheet total assets (in thousands of US-dollars)

Table 4 Pair wise correlations

	D_TONE	B_SIZE	AC_IND	D_TIME	D_TYPE	LN_LENGTH	D_TOPIC	LN_SIZE
D_TONE	1.000							
B_SIZE	0.156	1.000						
AC_IND	−0.030	−0.122	1.000					
D_TIME	−0.550*	−0.035	−0.123	1.000				
D_TYPE	−0.001	0.102	−0.160	0.250	1.000			
LN_LENGHT	−0.188	−0.212	0.009	0.119	−0.024	1.000		
D_TOPIC	0.257	0.049	−0.111	−0.296*	0.376*	−1.157	1.000	
LN_SIZE	−0.015	0.245	0.002	−0.045	0.032	−0.170	0.034	1.000

This table provides the pairwise correlation coefficients between the variables. All the variables are defined and measured as in Table 3. A correlation coefficient marked * indicates that the correlation is statistically significant at the 5 % level

Table 5 Multivariate analysis: main OLS regression (*Model 1*) and sensitivity tests (*Models 2–5*)

Dependent variable: D_TONE	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coef.	Rob. SE	Coef.	Rob. SE	Coef.	Rob. SE	Coef.	Rob. SE	Coef.	Rob. SE
B_SIZE	0.015*	0.009	0.017**	0.007	0.017*	0.009				
AC_IND	0.000	0.002					−0.001	0.002	0.001	0.003
DECL_PERF	0.153***	0.050	0.159***	0.046	0.187***	0.063	0.158***	0.052	0.190***	0.070
D_TIME	−1.056***	0.198	−0.970***	0.175			−0.997***	0.200		
D_TYPE	0.089	0.119			−0.090	0.137			−0.056	0.151
IND_1	0.099	0.061	0.104*	0.060	0.047	0.072	0.107	0.070	0.062	0.083
IND_2	0.390***	0.079	0.400***	0.072	0.362***	0.090	0.390***	0.080	0.358***	0.098
IND_3	0.157*	0.088	0.145*	0.080	0.092	0.137	0.188**	0.087	0.149	0.150
LN_LENGTH	−0.053*	0.031	−0.053*	0.030	−0.035	0.040	−0.059*	0.030	−0.042	0.039
D_TOPIC	−0.073	0.199	0.014	0.161	0.191	0.210	0.000	0.191	0.186	0.251
LN_SIZE	−0.000	0.011	−0.000	0.010	0.005	0.014	0.008	0.012	0.014	0.018
_cons	1.218	0.427	1.065	0.294	0.063	0.242	1.309	0.416	0.086	0.438
Number of obs.	39		42		42		39		39	
Prob > F	0.000		0.000		0.001		0.000		0.010	
R-squared	0.699		0.689		0.461		0.659		0.429	
Adjusted R-squared	0.576		0.601		0.309		0.553		0.252	

This table presents the results of the OLS models (1–5). *DECL_PERF* is equal to 1 if firms' return on equity is decreasing and to 0 otherwise. *IND_1* = oil & gas; basic materials; industrials; utilities; *IND_2* = consumer goods; health care; consumer services; *IND_3* = telecommunications; technology; *IND_4* = Financials; cons is the constant term. All the other variables are defined and measured as in Table 3. All robust standard errors are clustered by firm. ***, **, * indicate that the estimated coefficients are statistically significant at 1, 5 and 10 % levels, respectively

6.2 Multivariate analysis

6.2.1 Descriptive statistics

The means, standard deviations, minimum and maximum of the continuous variables are presented in Table 3. Disclosure tone score (*D_TONE*) is on average equal to 0.433, which means that on average 43.3 % of the total text units report a positive tone. With reference to governance variables, board size (*B_SIZE*) is on average of 11 members and 97 % of the members of the audit committee are independent (*AC_IND*). Disclosure type score is equal to 0.251 with a mean of 25.1 % of the text units being quantitative whilst disclosure time score reaches the value of 0.885 (88.5 % of the text units are non-forward looking). The average disclosure topic score (*D_TOPIC*) is equal to 0.405 showing that BMD is focused on outcomes in 40.5 % of the text units. Un-tabulated descriptive statistics on discrete variable used in the analysis show that the performance is decreasing in 43 % of the firms (*DECL_PERF*). Industry groups distributions is described in the previous Sect. 5.1. Pair wise correlations among the same variables are presented in Table 4.

6.2.2 OLS main regression model and sensitivity tests

The results of the main OLS regression model are presented in Table 5 distinguishing between governance, performance, disclosure verifiability and control variables. In the first column the results of the regression by mean of Model 1 are presented.

Regarding the governance variables, the findings support our expectation: bigger board is associated with an increased optimistic tone as demonstrated by the positive and statistically significant coefficient of the variable *B_SIZE* (0.015, at 10 % level), in line with *Hp 1a*. There is a negative but not statistically significant relationship between *AC_IND* and *D_TONE*, not supporting *Hp 1b*.

Findings on performance variable support our hypothesis (*Hp 2*): a positive association between declining performance (*DECL_PERF*) and positive tone score (coefficient = 0.153 significant at 1 % level) is demonstrated.

With reference to disclosure verifiability, there is a negative and significant relationship between tone and time orientation of disclosure (*D_TIME*) consistent with our hypothesis that forward looking information is associated with increased optimism (*Hp 3a*): when the time disclosure score is lower the tone is significantly more positive (coefficient = −1.056 and statistically significant at 1 %). However, no statistically significant relationship is shown between disclosure tone and the type of information in the reports (*D_TYPE*), consistently with the results of the univariate statistical analysis.

Regarding control variables, we show that firms that belong to particular industry groups tend to be more optimistic in their disclosure (as shown by the positive and statistically significant coefficient of *IND_2* and *IND_3*). There is also a negative and statistically significant association between *D_TONE* and *LN_LENGHT*, showing that shorter reports tend to be more optimistic.

Results of the sensitivity tests considering only one governance and one disclosure variable (Models 2–5) are run to verify if the relationships found in the previous model are confirmed (Table 5). We find evidence supporting our hypotheses on the effects of *B_SIZE, DECL PERF* and *D_TIME* on *D_TONE*. No effect of *AC_IND* and *D_TYPE* is shown, as demonstrated in the main OLS regression (Model 1).

Findings on the sensitivity tests considering additional variables (Models 6–9) are presented in Table 6. As shown in Model 6, no effect of *B_IND* and *AC_SIZE* is demonstrated. As highlighted in the main OLS regression (Model 1), results of test of Model 7 and Model 8 confirm that *B_SIZE* is significantly associated to the positive tone of BMD whilst *AC_IND* is not. Finally, considering *EUROPE* as additional control variable (Model 9) we show that this variable is not significantly

Table 6 Multivariate analysis: sensitivity tests (*Models 6–9*)

Dependent variable: D_TONE	Model 6		Model 7		Model 8		Model 9	
	Coef.	Rob. SE	Coef.	Rob. SE	Coef.	Rob. SE	Coef	Rob. SE
B_SIZE			0.016**	0.008			0.015*	0.009
AC_IND					−0.000	0.003	−0.000	0.002
B_IND	−0.000	0.002	0.000	0.001				
AC_SIZE	0.031	0.029			0.030	0.028		
DECL_PERF	0.141***	0.045	0.156***	0.046	0.142***	0.045	0.158***	0.052
D_TIME	−1.177***	0.236	−1.021***	0.186	−1.179***	0.235	−1.019***	0.197
D_TYPE	0.152	0.128	0.078	0.116	0.154	0.130	0.081	0.118
IND_1	0.101	0.066	0.102*	0.059	0.102	0.067	0.084	0.076
IND_2	0.378***	0.091	0.394***	0.080	0.379***	0.086	0.364***	0.102
IND_3	0.195*	0.098	0.154*	0.088	0.197**	0.092	0.128	0.112
LN_LENGTH	−0.047	0.027	−0.052*	0.030	−0.049*	0.028	−0.054*	0.032
D_TOPIC	−0.119	0.199	−0.045	0.200	−0.126	0.191	−0.026	0.198
LN_SIZE	0.003	0.011	−0.001	0.011	0.003	0.012	0.001	0.012
EUROPE							0.044	0.062
_cons	1.296	0.294	1.120	0.326	1.33	0.387	1.108	0.435
Number of obs.	39		41		39		39	
Prob > F	0.000		0.000		0.000		0.000	
R-squared	0.686		0.696		0.686		0.705	
Adjusted R-squared	0.558		0.581		0.558		0.568	

This table presents the results of the models (6–9). *B_IND* measures the proportion of board's independent directors; *AC_SIZE* measures the number of the audit committee members; *EUROPE* is a dummy variable equals to 1 if the firms is incorporated in Europe and 0 otherwise. All the other variables are defined and measured as in Table 5. All robust standard errors are clustered by firm. ***, **, * indicate that the estimated coefficients are statistically significant at 1, 5 and 10 % levels, respectively

associated with BMD positive tone while confirming all the results obtained in Model 1.

To summarize, the eight sensitivity tests supports all the results of the main OLS regression model (Model 1). Bigger boards are associated with an increase in the use of positive tone in the BMD (Hp1a) and we also provide evidence of a positive association between declining performance and positive tone (Hp2). With reference to disclosure verifiability, we report evidence consistent with a positive and significant relationship between forward looking disclosure on the positive tone (Hp3a).

Finally, the VIF test shows whether relevant multicollinearity is affecting the results. In our case, the largest VIF is equal to 2.79 (below the ten threshold) so multicollinearity among the predictor variables is not significant. Similarly, we perform the VIF tests in all the other models (Models 2–9), an also in these cases the highest value found was 2.99. Overall, these results shed light on the fact that multicollinearity is not influencing the results.

7 Discussion and conclusions

In this study, we investigate whether an IR offers informative disclosure on firm's BM. In particular, we aim to verify whether the BMD provided in the IR overcomes some of the limitations that accounting scholars and practitioners highlighted with reference to other reporting forms (e.g. management commentary on financial reports). Our focus is on the tone of disclosure: on the one hand, previous analyses label BMD as too optimistic (strengths are over-emphasized and weaknesses obfuscated), on the other hand, the tone is considered as an important characteristic to test the presence of thematic manipulation ascribable to IM strategies (Brennan et al. 2009).

The findings show that BMD is positive in the majority of the information reported in the IR and that positive tone is associated with a set of characteristics considered to be symptomatic of a disclosure manipulation. In this respect, we provide affirmative answer to our research question: companies seem to adopt IM strategies by choice of the tone of the BMD provided in their IR.

The results on governance variables show that board size affects the tone of BMD. In particular, this board characteristic, symptomatic of weak corporate governance, is associated with greater optimism in the disclosure provided. This finding is consistent with Osma and Guillamón-Saorín (2011) that show that board characteristics have an important role in explaining the use of optimistic disclosure. The results on the performance variable support our hypothesis that firms that are experiencing profitability decrease are more likely to provide optimistic BMD. Our finding is consistent with Clatworthy and Jones (2003) and Schleicher and Walker (2010) who show that firms with declining performance are more likely to report good news. With reference to disclosure characteristics related to verifiability, the results demonstrate a positive association between positive tone and forward looking disclosure. When disclosure is less verifiable (i.e. forward looking), the tone

tends to be more optimistic: this evidence is consistent with Dobler's (2008) suggestion that the greater discretion is related to unverifiable disclosure.

Our findings on the manipulation of the disclosure displayed in the IR have both theoretical and practical implications.

We provide evidence consistent with the view that BMD offered in the IR is used by managers in an attempt to be perceived favorably by their audience (i.e. investors). The results show that BMD is a potential *locus* for IM strategies. Proving the influence that both corporate governance and performance have on thematic manipulation, we also contribute to the literature studying the "determinants" of disclosure manipulation (Clatworthy and Jones 2003; Osma and Guillamón-Saorín 2011; Schleicher and Walker 2010).

The study corroborates the use of IM methods as valuable techniques for analysing IR narratives. As far as we are aware, it is the first work that draws on IM to investigate the disclosure provided in IR. Furthermore, we demonstrate the importance of characteristics of the disclosure itself (i.e. verifiability) in explaining the tone used in this kind of disclosure.

The paper has also implications for the research stream focussed on IR as a new reporting practice: in addition to extant studies focussed on explaining the choice to adopt (or not adopt) this voluntary form of reporting (Jensen and Berg 2012; Frias-Aceituno et al. 2013, 2014; Sierra-García et al. 2013; Lai et al. 2014), we show that corporate governance and performance have an impact on the characteristics of the quality of the disclosure provided by IR adopters.

By investigating the informativeness of BMD in the IR, we also provide empirical evidence on limitations of current reporting on BM (Page 2014). This result has also a practical implication since it casts some doubts on the role of the IR in improving reporting on BM. Although the Framework published by the IIRC offers a reference point for informative description of firms' BM, the disclosure provided by the IR adopters appears to be subject to some of the shortcomings that characterize other practices of BMD (e.g. the disclosure provided in the management commentary of annual reports). The IIRC may benefit from this kind of research as it could consider whether an improvement in the BMD may benefit from amendments of the Framework or should require a greater engagement of the early adopters such as members of the "business network" (i.e. the companies that participate to the IIRC Pilot Programme). Other organizations and standard setters interested in promoting high quality disclosure of BM may also gain insights from our research, as it shows that current reporting practices need improvement. Although IR adopters are expected to be the "best BMD reporters", our analysis shows that their disclosure shows evidence of impression management. In light of this, what could be expected by non-IR adopters? Standard setters should address this concern in order to select the most appropriate outlet for firms' BMD.

To conclude, our research has a number of limitations. Firstly, the dimension of the sample—that in this paper includes the entire "population" of IR adopters at the date of September 15th, 2014—could be increased by analysing more companies as soon as other IR adopters will make their reports available. Secondly, the paper does not discuss the effect of non-financial performances on disclosure tone. Our choice is driven by the fact that the IIRC identified investors as the preferential reader of

IR. As far as the attention of investors on environmental, social and governance (ESG) corporate performances is expected to grow up, next researches may incorporate the analysis of the effects of these performances on the quality of BMD. Thirdly, in spite of the evidence on the limited informativeness of firms' current BMD practices, we are not in the position to criticize the project of the IIRC and the efforts make by this Council to promote BMD. Finally, a comparison between IR adopters and non-adopters in terms of BMD provided was out of the scope of our research: it would be an interesting area for future investigations.

References

Achtenhagen, L., Melin, L., & Naldi, L. (2013). Dynamics of business models—strategizing, critical capabilities and activities for sustained value creation. *Long Range Planning, 46*(6), 427–442.

Adelberg, A. H. (1979). Narrative disclosures contained in financial reports: Means of communication or manipulation? *Accounting and Business Research, 35*(9), 179–190.

Amit, R., & Zott, C. (2001). Value creation in e-business. *Strategic Management Journal, 22*(6–7), 493–520.

Applegate, L. M. (2001). *Emerging e-business models: Lessons from the field*. Boston: Harvard Business School.

Bambagiotti Alberti, L., Giunta, F., & Verrucchi, F. (2009). Business model disclosure: Much ado about nothing evidence from annual reports of Italian Listed Companies, 9th global conference on business & economics, 16–17 October 2009, Cambridge University, UK.

Barth, M. (2004). Fair values and financial statement volatility. In C. Borio, W. C. Hunter, G. G. Kaufman, & K. Tsatsaronis (Eds.), *The market discipline across countries and industries* (pp. 323–333). Cambridge, MA: MIT Press.

Beattie, V., McInnes, B., & Fearnley, S. (2004). A methodology for analysing and evaluating narratives in annual reports: A comprehensive descriptive profile and metrics for disclosure quality attributes. *Accounting Forum, 28*(3), 205–236.

Beattie, V., & Smith, S. J. (2013). Value creation and business models: Refocusing the intellectual capital debate. *The British Accounting Review, 45*(4), 243–254.

Benston, G. J. (2008). The shortcomings of fair-value accounting described in SFAS 157. *Journal of Accounting and Public Policy, 27*(2), 101–114.

Brennan, N. M., Encarna, G. S., & Pierce, A. (2009). Methodological insights: Impression management: Developing and illustrating a scheme of analysis for narrative disclosures—a methodological note. *Accounting, Auditing & Accountability Journal, 22*(5), 789–832.

Brougham, A. (2012). Discussion of business-model (intent)-based accounting by Jim Leisenring, Thomas Linsmeier, Katherine Schipper, Edward Trott (2012). *Accounting and Business Research, 42*(3), 345–347.

Bryan, S. H. (1997). Incremental information content of required disclosures contained in management discussion and analysis. *The Accounting Review, 31*(2), 285–301.

Cerbioni, F., & Parbonetti, A. (2007). Exploring the effects of corporate governance on intellectual capital disclosure: An analysis of European biotechnology companies. *European Accounting Review, 16*(4), 791–826.

Cheng, E., & Courtenay, S. M. (2006). Board composition, regulatory regime and voluntary disclosure. *The International Journal of Accounting, 41*(3), 262–289.

Cho, C. H., Roberts, R. W., & Patten, D. M. (2010). The language of US corporate environmental disclosure. *Accounting, Organizations and Society, 35*(4), 431–443.

CIMA, IFAC and PwC. (2013). Business model: Background paper for IR. Retrieved 15th May 2013 from http://www.theiirc.org/wp-content/uploads/2013/03/Business_Model.pdf.

Clatworthy, M., & Jones, M. J. (2003). Financial reporting of good news and bad news: Evidence from accounting narratives. *Accounting and Business Research, 33*(3), 171–185.

Courtis, J. K. (1995). Readability of annual reports: Western versus Asian evidence. *Accounting, Auditing and Accountability Journal, 8*(2), 4–17.

Dobler, M. (2008). Incentives for risk reporting—a discretionary disclosure and cheap talk approach. *The International Journal of Accounting, 43*(2), 184–206.

Dobler, M., Lajili, K., & Zéghal, D. (2011). Attributes of corporate risk disclosure: An international investigation in the manufacturing sector. *Journal of International Accounting Research, 10*(2), 1–22.

EFRAG. (2013). Getting a better framework: The role of the business model in financial reporting. www.efrag.org, pp. 1–16.

Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *Journal of Law and Economics, 25*, 301–325.

FRC. (2010). *The UK corporate governance code*. London: Financial Reporting Council.

Frias-Aceituno, J. V., Rodriguez-Ariza, L., & Garcia-Sanchez, I. M. (2013). The role of the board in the dissemination of integrated corporate social reporting. *Corporate Social Responsibility and Environmental Management, 20*(4), 219–233.

Frias-Aceituno, J. V., Rodríguez-Ariza, L., & Garcia-Sánchez, I. M. (2014). Explanatory factors of integrated sustainability and financial reporting. *Business Strategy and the Environment, 23*(1), 56–72.

Greiner, R., & Ang, S. H. (2012). Biotechnology collaborations: Does business model matter? *Journal of Management and Governance, 16*(3), 377–392.

GRI and IIRC. (2013). Memorandum of understanding—integrated reporting. Retrieved 10th May 2013 from http://www.theiirc.org/wp-content/uploads/2013/02/MoU-IIRC-GRI-20130201-1.pdf.

Gul, F. A., & Leung, S. (2004). Board leadership, outside directors' expertise and voluntary corporate disclosures. *Journal of Accounting and Public Policy, 23*(5), 351–379.

Hooghiemstra, R. (2000). Corporate communication and impression management–new perspectives why companies engage in corporate social reporting. *Journal of Business Ethics, 27*(1–2), 55–68.

IASB. (2010). IFRS practice statements, management commentary. A framework for presentation. Retrieved 28th May 2013 from http://www.ifrs.org/Current-Projects/IASB-Projects/Management-Commentary/IFRS-Practice-Statement/Documents/Managementcommentarypracticestatement8December.pdf.

IASB. (2014). Investment entities. Exposure draft. Retrieved 20th September 2014 from http://www.ifrs.org/Current-Projects/IASB-Projects/IFRS-10-IAS-28-Investment-Entities/ED-June-2014/Documents/ED-Investment-Entities-Amendments-IFRS-10-and-IAS-28-June-2014.pdf.

IASB and IIRC. (2013). Memorandum of understanding—integrated corporate reporting, framework. Retrieved 10th May 2013 from http://www.ifrs.org/Use-around-the-world/Documents/MoU-IIRC-and-IFRS-Foundation-February-2013.pdf.

ICAEW. (2010). *New reporting models for business. Information for better markets initiative* (pp. 1–77). London: ICAEW.

IIRC. (2011). The integrated reporting discussion paper. Retrieved 19th March 2013 from http://theiirc.org/wp-content/uploads/2011/09/IR-Discussion-Paper-2011_spreads.pdf.

IIRC. (2012a). The draft outline framework. Retrieved 19th March 2013 from http://www.theiirc.org/wp-content/uploads/2012/07/Draft-Framework-Outline.pdf.

IIRC. (2012b). The international <IR> prototype framework. Retrieved 24th May 2013 from http://www.theiirc.org/wp-content/uploads/2012/11/23.11.12-Prototype-Final.pdf.

IIRC. (2013a). The international <IR> consultation draft framework. Retrieved 10th October 2013 from http://www.theiirc.org/wp-content/uploads/Consultation-Draft/Consultation-Draft-of-the-InternationalIRFramework.pdf.

IIRC. (2013b). The international <IR> framework. Retrieved 15th January 2014 from http://www.theiirc.org/wp-content/uploads/2013/12/13-12-08-THE-INTERNATIONAL-IR-FRAMEWORK-2-1.pdf.

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *The American Economic Review, 76*(2), 323–329.

Jensen, J. C., & Berg, N. (2012). Determinants of traditional sustainability reporting versus integrated reporting. An institutionalist approach. *Business Strategy and the Environment, 21*(5), 299–316.

Jensen, H., & Meckling, W. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 16*, 305–360.

Klein, A. (2002). Audit committee, board of director characteristics, and earnings management. *Journal of Accounting and Economics, 33*(3), 375–400.

Krippendorff, K. (2013). *Content analysis: An introduction to its methodology* (2nd ed.). London: Sage Publications.

Lai, A., Melloni, G., & Stacchezzini, R. (2014). Corporate sustainable development: Is « Integrated Reporting » a legitimation strategy? *Business Strategy and the Environment,*. doi:10.1002/bse.1863.

Leary, M. R., & Kowalski, R. M. (1990). Impression management: A literature review and two-component model. *Psychological Bulletin, 107*(1), 34–47.

Leisenring, J., Linsmeier, T., Schipper, K., & Trott, E. (2012). Business-model (intent)-based accounting. *Accounting and Business Research, 42*(3), 329–344.

Lim, S., Matolcsy, Z., & Chow, D. (2007). The association between board composition and different types of voluntary disclosure. *European Accounting Review, 16*(3), 555–583.

Magretta, J. (2002). Why business models matter. *Harvard Business Review, 80*(5), 86–92.

Mather, P., & Ramsay, A. (2007). Do board characteristics influence impression management through graph selectivity around CEO changes? *Australian Accounting Review, 17*(42), 84–95.

Mercer, M. (2004). How do investors assess the credibility of management disclosures? *Accounting Horizons, 18*(3), 185–196.

Merkl-Davies, D. M., & Brennan, N. M. (2007). Discretionary disclosure strategies in corporate narratives: Incremental information or impression management? *Journal of Accounting Literature, 26*, 116–196.

Merkl-Davies, D. M., Brennan, N. M., & McLeay, S. J. (2011). Impression management and retrospective sense-making in corporate narratives: A social psychology perspective. *Accounting, Auditing & Accountability Journal, 24*(3), 315–344.

Michelon, G., & Parbonetti, A. (2012). The effect of corporate governance on sustainability disclosure. *Journal of Management and Governance, 16*(3), 477–509.

Neter, J., Kutner, M. H., Nachtsteim, C. J., & Wasserman, W. (1996). *Applied linear statistical models* (4th ed.). Boston, MA: Irwin.

Neu, D. (1991). Trust, impression management and the auditing profession. *Critical Perspectives on Accounting, 2*(4), 295–313.

Neu, D., Warsame, H., & Pedwell, K. (1998). Managing public impressions: Environmental disclosures in annual reports. *Accounting, Organizations and Society, 23*(3), 265–282.

Osma, B. G., & Guillamón-Saorín, E. (2011). Corporate governance and impression management in annual results press releases. *Accounting, Organizations and Society, 36*(4), 187–208.

Page, M. (2014). Business models as a basis for regulation of financial reporting. *Journal of Management and Governance, 18*(3), 683–695.

Penman, S. H. (2007). Financial reporting quality: Is fair value a plus or a minus? *Accounting and Business Research, 37*(1), 33–44.

Ramanna, K., & Watts, R. L. (2007). Evidence on the effects of unverifiable fair-value accounting. Harvard Business School Working Paper No. 08-014.

Riess, M., Rosenfeld, P., Melburg, V., & Tedeschi, J. T. (1981). Self-serving attributions: Biased private perceptions and distorted public descriptions. *Journal of Personality and Social Psychology, 41*(2), 224–231.

Ronen, J. (2014). On the invariance of accounting principles to business models: A discussion of the Singleton-Green and Page articles. *Journal of Management and Governance, 18*(3), 707–716.

Ryan, S. G. (2008). Accounting in and for the subprime crisis. *The Accounting Review, 83*(6), 1605–1638.

Schleicher, T., & Walker, M. (1999). Share price anticipation of earnings and management's discussion of operations and financing. *Accounting and Business Research, 29*(4), 321–335.

Schleicher, T., & Walker, M. (2010). Bias in the tone of forward-looking narratives. *Accounting and Business Research, 40*(4), 371–390.

Schlenker, B. R. (1980). *Impression management: The self-concept, social identity, and interpersonal relations.* Belmont: Brooks-Cole.

Schneider, D. J. (1981). *Tactical self-presentations: Toward a broader conception.* New York: Academic Press.

Sierra-García, L., Zorio-Grima, A., & García-Benau, M. A. (2013). Stakeholder engagement, corporate social responsibility and integrated reporting: An exploratory study. *Corporate Social Responsibility and Environmental Management.* doi:10.1002/csr.1345.

Singleton-Green, B. (2014). Should financial reporting reflect firms' business models? What accounting can learn from the economic theory of the firm. *Journal of Management and Governance, 18*(3), 697–706.

Teece, D. J. (2010). Business models, business strategy and innovation. *Long Range Planning, 43*(2), 172–194.

Timmers, P. (1998). Business models for electronic markets. *Electronic Market, 8*(2), 2–8.

Xie, B., Davidson, W. N., I. I. I., & DaDalt, P. J. (2003). Earnings management and corporate governance: The role of the board and the audit committee. *Journal of Corporate Finance, 9*(3), 295–316.

Zott, C., Amit, R., & Massa, L. (2011). The business model: Recent developments and future research. *Journal of Management, 37*(4), 1019–1042.

Gaia Melloni is a post-doc researcher in Accounting at Bocconi University. She received her Ph.D. in Business Administration and Management from the Graduate School of Economics and Management (University of Verona). Her research interests are focused on financial accounting, corporate governance and business sustainability. She has recently published in international journals such as Journal of Intellectual Capital and in Business Strategy and the Environment.

Riccardo Stacchezzini is associate professor of Accounting and Business Administration at the Department of Business Administration, University of Verona, Italy. He gained a Ph.D. in Business Administration from Ca' Foscari University (Venice). His main research interests are in corporate reporting and disclosure, corporate governance and accounting as a social and institutional practice. He recently published in international journals such as Accounting history, Business strategy and the environment and Critical perspectives on accounting.

Alessandro Lai is professor of Accounting and Business Administration at the Department of Business Administration, University of Verona, Italy. He gained a Ph.D. in Business Administration at Ca' Foscari University (Venice). His main current research interests focus on Accounting History, Financial reporting, Corporate governance and Accounting in its organizational context. Previous researches dealt with cooperative agreements and with paradigms in Accounting research. He recently published in international journals such as Accounting history, Critical perspectives on accounting and Business strategy and the environment.