European Management Journal xxx (xxxx) xxx

Contents lists available at ScienceDirect

European Management Journal

journal homepage: www.elsevier.com/locate/emj

Impression management in corporate annual reports during the global financial crisis

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ARTICLE INFO

Keywords:
Accounting narratives
Attributions
Crisis
Impression management
President's letter
Readability

ABSTRACT

This paper analyses impression management (IM) during the global financial crisis (GFC). It examines the differences in multiple textual characteristics and attributions between a highly positive performance period (2002–2007) and the GFC period (2008–2012), within the setting of Spain, where these two economic cycles were extreme. In contrast to previous research, companies' extreme poor performance in our sample is driven by an exogenous event. The findings do not show clear evidence of IM based on textual characteristics specifically linked to the GFC. Companies tried not to use overt IM and, to some extent, tried to clarify the impact of the crisis on performance. They were under great scrutiny and probably preferred to tell a more careful story. However, a general pattern of IM was still present during the GFC in the form of consistent positive attributions, favourable benchmarks and enhancement practices. In essence, the crisis did not fully stop IM practices, but rather influenced the way IM was produced. Overall, our results show that IM was lower during the GFC than in the case of poor performance in normal macroeconomic conditions found by previous literature. The results also show that the narratives of firms in the finance and real estate sectors were the most reactive to the GFC, probably linked to their key role in the crisis.

1. Introduction

Previous literature has tried to relate performance and impression management (IM) in corporate reporting. Researchers usually attempt to identify different patterns in textual characteristics between high- and low-performing companies by selecting top and bottom companies (Cen & Cai, 2013, 2014; Clatworthy & Jones, 2006; Courtis, 1998). They select different companies in a single year or in two consecutive years. Poor performance is therefore driven by firm-specific circumstances. By contrast, this paper responds to requests to analyse the influence of an exogenous event, such as the global financial crisis (GFC), on IM (Oliveira, Azevedo, & Borges, 2016; Sandell & Svensson, 2016).

This paper analyses multiple textual characteristics in the chairperson's statement (CS)[1] in the same companies in two extreme periods in Spain. The first period was very successful and profitable. The second, determined by the GFC, was extremely negative. According to IM, managers handle textual characteristics in a self-serving way. However, Patelli and Pedrini (2014) suggest the existence of fewer incentives to engage in IM during crises. We extend their research by comparing two extremely different performance periods (2002–2007 vs. 2008–2012) and by studying multiple textual characteristics.

The GFC is a very well-known event. The GFC was "a different crisis, because it occurred under a globalized world" (Cardoso & Jacobetty, 2012, p. 186). Previous crises usually affected either individual countries or individual industries, and therefore tended to generate local but not global problems. Instead, the GFC generated a global problem. In addition, the "consequences of the crisis have not been limited to the financial and economic spheres. Just as in the Great Depression, the crisis has much broader and deeper social and cultural consequences" (Himanen, 2012, p. 159). However, the degree of severity differed between countries. An extreme economic scenario occurred in Spain. Just before 2007, Spain was one of the fastest-growing economies in Europe (Johnson, 2006). However, this situation was reversed from 2008, when there was a deep economic and social crisis ("Spain and the euro", 2012). The crisis was deeper and longer in Spain than in most countries (Ortega & Peñalosa, 2012). This was apparent in the IBEX 35, the main Spanish stock exchange index. This showed a more extreme difference in behaviour between the two periods than most of the main world stock

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[1] The traditional term for this document is chairman's statement. However, we use chairperson, as a gender-neutral term.

https://doi.org/10.1016/j.emj.2021.08.007
Received 7 July 2020; Received in revised form 19 July 2021; Accepted 26 August 2021
Available online 29 August 2021

exchange indexes (Mackenzie, Mallet, & Rodrigues, 2012, p. 6).

Financial reporting offers a suitable communication channel for managers to tell their story (Sandell & Svensson, 2016). Courtis (1998) developed the obfuscation hypothesis based on the idea that low-performing companies will disclose information less clearly than high-performing companies. IM literature assumes that "managers opportunistically exploit information asymmetries between them and organizational audiences by means of biased reporting. By contrast, the incremental information explanation assumes that managers provide discretionary accounting narratives to facilitate better decision making" (Brennan & Merkl-Davies, 2013, p. 121).

Most previous studies about accounting narratives have usually focused on the CS in the USA, UK and Australia (Brennan, Guillamon-Saorin, & Pierce, 2009). They mainly focus on readability (Li, 2008), length (Rutherford, 2003), tone (Hildebrandt & Snyder, 1981) or attributions (Aerts, 2001). Other aspects, such as personal, quantitative and future references, have received less attention. Overall, the evidence is that they are used for IM (Cen & Cai, 2013, 2014; Clatworthy & Jones, 2006).

This paper has certain key contributions which distinguish it from previous narrative accounting research. First, this study is performed in an extreme scenario, which evolves from a high-performance period (pre-crisis) to a low-performance period, caused by the GFC. "Crises create windows for problem-focused disciplinary exchange that are nearly impossible in normal times" (Power, 2011, p. 28). This exogenous event is expected to influence IM incentives. In contrast to our approach, the previous literature usually identifies different profitable and unprofitable companies in the same period (Cen & Cai, 2013; Clatworthy & Jones, 2006). Second, Craig and Brennan (2012) suggest that a combination of quantitative and qualitative techniques would provide valuable, comprehensive and reinforcing insights when analysing corporate narratives. This study, therefore, conducts a computerised analysis (for readability and length, as well as for quantitative, positive, negative, future and personal references) and a manual attribution analysis (an extensive and in-depth qualitative analysis, including benchmarking and enhancement practices). Prior literature does not usually combine both methods. Third, the paper offers previously unstudied insights into industrial sectors, especially the finance and real estate sectors, which were particularly linked to the GFC. Fourth, previous research has focused on English documents in Anglo-Saxon countries (Khanna & Irvine, 2018; Li, 2008). However, documents written in Spanish in a civil-law country may be different (Guillamon-Saorin & Sousa, 2010). Little is known about the expected level of IM in macro-based, civil-law European countries, compared to Anglo-Saxon countries.

The paper proceeds as follows. Section 2 provides the IM theoretical framework and hypotheses. Section 3 gives details about Spain. Section 4 describes the sources and methodology. The results are presented in Section 5. Finally, Section 6 provides the discussion and conclusions.

2. IM during the GFC

This section reviews the IM literature and establishes why a decrease in self-serving bias disclosure during the GFC would reasonably be expected. It then develops separate sub-hypotheses for each textual characteristic analysed.

2.1. IM motivations during the GFC

IM is based on the assumption that management is motivated by a desire to present a self-serving view of corporate performance (Hooghiemstra, Kuang, & Qin, 2017; Merkl-Davies & Brennan, 2007). It may present an inaccurate view of organisational outcomes (self-presentational dissimulation) and/or an accurate, but favourable, view (enhancement) (Merkl-Davies, Brennan, & McLeay, 2011). This leads to biased corporate reporting (Merkl-Davies & Brennan, 2011). Managers may engage in IM as an attempt to avoid potential adverse shareholder reactions in order to minimise undesirable consequences. Negative performance has been considered the main driver for IM engagement (Aerts, 2005; Merkl-Davies et al., 2011). It may result in a managerial attempt to dissimulate bad results and stress alternative views to try to distance themselves from negative performance.

Most previous research has found evidence of IM (Brennan et al., 2009; Clatworthy & Jones, 2006), focusing on a firm's single year corporate information in normal macroeconomic conditions. However, IM incentives may be sensitive to external context (Patelli & Pedrini, 2014), including the macroeconomic situation.

Leary and Kowalski (1990) see IM as the process by which people try to control the impressions others form of them. The degree to which people are motivated to try and control others' perceptions is affected by a variety of situational and dispositional variables (Leary & Kowalski, 1990; Singh & Vinnicombe, 2001). In this vein, Merkl-Davies et al. (2011, p. 319) suggest that "the determinants of impression management behaviour may be located externally in the social context", and not only internally within managers. Therefore, the state of the economy – crisis versus normal times – could alter the incentives and objectives of corporate managers (Pinnuck, 2012).

The GFC represents a time when reporting behaviour was under extremely high public scrutiny (Jones, Melis, Gaia, & Aresu, 2020). When under intense scrutiny, those scrutinised think about the impressions others are forming (Leary & Kowalski, 1990). Greater public scrutiny, because of the GFC, would make the presentation of inconsistent performance more likely to be discovered and sanctioned (Abrahamson & Park, 1994; Merkl-Davies et al., 2011). In most circumstances people are reluctant to try to convey an image if other people are likely to interpret that image as inconsistent with the current situation (Schlenker, 1980). "People try to ensure that their public image is consistent with (or at least is not inconsistent with) the role demands of a particular situation" (Leary & Kowalski, 1990, p. 41). Managers may also think that market participants are likely to tolerate poor performance during an external crisis (Habib, Bhuiyan, & Islam, 2013). In a generalised negative context characterised by a deep macroeconomic crisis, if managers perceive they are conveying a negative image in line with the broader economic context, impression motivation may be lower (Leary & Kowalski, 1990).

In addition, the outbreak of the GFC decreased credibility and public trust in corporate information (Habib et al., 2013), particularly in the financial sector (Ahmed, Bangassa, & Akbar, 2020). In times of crisis, and particularly during the GFC, companies have to restore trust. One way to increase trust would be by improving corporate communication and providing fair reporting. Companies had to rebuild trust through a consistent narrative and "to assist individuals in interpreting the world economic crisis" (Banet-Weiser, 2012, p. 111). Khanna and Irvine (2018, p. 110) also argue that "transparent communication becomes even more important during times of crisis". In particular, Ahmed et al. (2020) find that UK banks enhanced their transparency during the GFC. The GFC may therefore increase corporate transparency and reduce IM.

Limited literature has studied the GFC's influence on IM (Jones et al., 2020; Keusch, Bollen, & Hassink, 2012; Khanna & Irvine, 2018; Patelli & Pedrini, 2014). Keusch et al. (2012) analyse attributions in European companies before (2006) and during the GFC (2008). They argue that, potentially, managers would have had fewer incentives for IM, as shareholders were aware of the GFC's negative impact. However, they find that the GFC led to a self-serving bias, where managers presented themselves in the best possible light. Patelli and Pedrini (2014) focus on tone in US Fortune 500 companies in the wake of the GFC (2008 and 2009). They find that tough macroeconomic conditions lowered incentives to impress shareholders, as they already anticipated low performance (Mellers, Schwartz, Ho, & Ritov, 1997). We extend Keusch et al.'s (2012) and Patelli and Pedrini's (2014) approaches, mainly by comparing two extremely different performance periods (2002–2007 vs. 2008–2012) and by studying multiple textual characteristics.

Khanna and Irvine (2018) illustrate the presence of IM techniques in

annual report (AR) references about the GFC in ten Australian NGOs. Although they argue that transparent communication would be even more important during a crisis, they find practices consistent with IM. However, unlike Spain, Australia avoided a recession. Jones et al. (2020) find that European banks reduced favourable graphical distortions and performance comparisons during the GFC. However, this did not stop IM practices, because companies preferred misrepresentation by omission rather than by commission. Under high public scrutiny, inaccurate graphical usage could be spotted and lead to negative external reactions. Therefore, their results support the idea that a change in the external environment can lead managers to produce different disclosures (Aerts, 2005; Sandell & Svensson, 2016). We extend Khanna and Irvine's (2018) approach by systematically analysing the textual characteristics in for-profit companies in a country where the GFC caused a very deep recession, and Jones et al.'s (2020) approach by analysing narrative textual characteristics in a sample of companies in different sectors.

Overall, managers' motivations during the GFC are considered to influence reporting quality (Arthur, Tang, & Lin, 2015; Chintrakarn, Jiraporn, & Kim, 2018). Consequently, a recession such as the GFC is expected to influence IM behaviour. In addition, in a crisis, with increasing social pressure to obtain greater transparency, opportunistic deviation from the norm to impress shareholders could be extremely costly (Lang & Maffett, 2011). There is therefore less motivation for IM and greater demand for transparency during a crisis. This may result in a decrease in managerial opportunistic behaviour during the GFC. Thus, we expect that the GFC leads to less IM than poor performance, driven by firms' internal reasons in normal macroeconomic conditions. Significant IM evidence in these latter conditions is found in previous literature (Clatworthy & Jones, 2006; Cen & Cai, 2013, 2014). During the GFC, we expect that managers will have fewer incentives to dissimulate bad performance and therefore less need to produce biased reporting.

2.2. Development of sub-hypotheses for each textual characteristic analysed

Numerous aspects of language can be used strategically (Merkl-Davies & Koller, 2012). To test the assumption that IM decreases during the GFC, we analyse different textual characteristics previously proven to be IM techniques in situations of poor performance (Cen & Cai, 2013, 2014; Clatworthy & Jones, 2006). When building each hypothesis, two contradicting views are presented for each textual characteristic. First is the IM expected direction when poor performance is caused by internal firm reasons (in normal macroeconomic conditions). Second is an alternative behaviour when poor performance is driven by the GFC, given the argument developed in the previous subsection about less IM motivation during the GFC. The expected direction of the textual characteristics in both views are summarised in Table 1.

Managers may decrease the readability of their narratives when performance is poor. This trend is usually interpreted as IM, as an attempt to obfuscate poor performance (Dempsey, Harrison, Luchtenberg, & Seiler, 2012; Li, 2008; Subramanian, Insley, & Blackwell, 1993). However, in line with the argument developed in the previous subsection about less IM motivation during the GFC, managers may not decrease readability during the GFC. If readability decreases during the GFC, it would make it more difficult for shareholders to understand that negative news was not the company's fault. Managers may not be interested in obscuring the fact that poor performance is caused by the crisis. In order to test readability during the GFC, the following hypothesis is raised:

H1. Readability does not decrease during the GFC

Bad news could be disclosed less quantitatively than good news, in an attempt to dilute the effects of bad news when poor performance is caused by companies (Skinner, 1994). This trend was found by previous literature (Cen & Cai, 2014; Clatworthy & Jones, 2006) and interpreted as IM. Therefore, IM literature suggests that poorly performing companies will decrease quantitative references. However, during the GFC, companies may be particularly interested in clarifying the impact of the exogenous event on the firm's performance, and thus they would not decrease quantitative references. In order to test the trend of quantitative references during the GFC, the next hypothesis is raised:

H2. Quantitative references do not decrease during the GFC

Tone could be unfairly managed by companies. The "Pollyanna Hypothesis" suggests that there is a human tendency to use more positive words than negative words in communication (Boucher & Osgood, 1969). This trend is also found in annual reports, as previous literature has found that, irrespective of profitable or unprofitable years, corporate disclosure is predominantly positive (Gibbins, Richardson, & Waterhouse, 1990; Hildebrandt & Snyder, 1981; Merkl-Davies et al., 2011). In line with IM, poorly performing companies would not decrease positive references and would not increase negative references (equal or more positive references and equal or fewer negative references are both considered IM in the case of poor performance). However, in line with the argument developed in the previous subsection about less IM motivation during the GFC, managers might act more fairly during the GFC by decreasing positive and increasing negative references. Managers would not have much incentive not to fairly reflect the impact of the macroeconomic situation, as the effects of the crisis are widely known. In order to test the behaviour of positive and negative references during the GFC, the next hypotheses are raised:

H3. Positive references decrease during the GFC

H4. Negative references increase during the GFC

Length may be used strategically. In line with the obfuscation hypothesis (Courtis, 1998), lengthier documents may be used to make a report less transparent and to hide poor corporate performance information from investors (Li, 2008).[2] In general, IM framework suggests that poorly performing companies will increase report length to obscure their poor performance. However, in line with increasing social pressure to obtain higher transparency during the GFC, as developed in the previous subsection, managers may not deliberately lengthen their narratives to obscure the impact of the GFC. By contrast, they might be

Table 1
Expected direction of the textual characteristics.

	IM expected direction with poor performance caused by the firm	Poor performance driven by the GFC (exogenous event)	Hypothesis
Readability	↓	No ↓	H1
Quantitative	↓	No ↓	H2
Positive	No ↓	↓	H3
Negative	No ↑	↑	H4
Length	↑	No ↑	H5
Future	↑	No ↑	H6
Personal	↓	No ↓	H7
Attribution bias	↑	↓	H8

When poor performance is caused by the firm, IM literature argues that readability, quantitative and personal references decrease, length and future references increase, positive references do not decrease (including equal or higher), negative references do not increase (including equal of lower) and attributions are biased and with overwhelming positive attributions. During the GFC, we expect that readability, quantitative and personal references do not decrease, length and future references do not increase, positive references decrease, negative references increase and attributions are less biased and with negative attributions predominating over positive attributions.

[2] Bloomfield (2008) suggests that lengthier and more complex documents may reflect not only an attempt to attribute bad news to non-management sources but also the need to provide more explanation about poor performance.

interested in making as clear and concise as possible the fact that poor performance is caused by the crisis. In order to test the pattern of length during the GFC, the next hypothesis is raised:

H5. Length does not increase during the GFC

A higher degree of future emphasis could be used to distract attention from corporate performance (Athanasakou & Hussainey, 2014; Cen & Cai, 2013; Kohut & Segars, 1992; Poole, 2016). This behaviour represents self-serving bias and is interpreted as IM. Therefore, IM literature suggests that poorly performing companies will increase future references. However, in line with the argument of less IM motivation during the GFC, managers may not increase future references during the GFC. During the GFC, managers would have no incentive to distract attention from current performance, as the present effects of the crisis were widely known. For that reason, managers might probably be interested in explaining the effects of the GFC rather than overemphasising the future. In order to test the behaviour of future references during the GFC, the next hypothesis is raised:

H6. Future references do not increase during the GFC

Managers of positively performing companies tend to use personal pronouns more to attribute the success to themselves, while managers of negatively performing companies try to distance themselves from poor results. This trend, interpreted as IM, is widely found by previous literature (Clatworthy & Jones, 2006; Hyland, 1998; Poole, 2016; Thomas, 1997). Therefore, IM literature suggests that poorly performing companies decrease use of personal pronouns. However, in line with the argument developed in the previous subsection about lower IM motivation during the GFC, managers may not decrease personal pronouns during the GFC. During the GFC, there would be no reason for managers to deliberately decrease personal references in an attempt to protect themselves, because poor performance was widely associated with the macroeconomic situation. In addition, they may be willing to show how their decisions minimised the impact of the GFC on their company. In order to test the trend of personal pronouns during the GFC, the next hypothesis is raised:

H7. Personal pronouns do not decrease during the GFC

Finally, attributions are assumed to be biased if positive and negative outcomes are respectively attributed to internal and external circumstances (Merkl-Davies & Brennan, 2007, 2011). Many authors consider this as IM and self-serving behaviour (Aerts, 2001, 2005; Aerts & Tarca, 2010; Clatworthy & Jones, 2003). Previous literature also finds that companies tend to emphasise positive attributions and play down negative attributions (Aerts, 2001; Clatworthy & Jones, 2003). In this sense, Aerts (2005, p. 515) mentions that "positive pieces of accounting information are actively picked up in an attributional mode to construct an aura of optimism around an inherently negative financial base signal". However, in line with the argument of less IM motivation during the GFC, managers might report attributions more fairly during the GFC. In fact, Aerts and Tarca (2010) suggest that, under higher scrutiny, attributions might be treated more consistently and self-serving bias may decrease. Therefore, during the GFC, whereas managers might try to attribute negative performance to the crisis, negative attributions may predominate over positive attributions in an attempt at fair reporting. In order to test the pattern of attributions during the GFC, the next hypothesis is raised:

H8. Negative attributions predominate over positive attributions during the GFC

3. Spanish context

In 2019, Spain was the 13th-highest ranking country in terms of global Gross Domestic Product (GDP), and 5th in Europe (IMF, 2021). Spain is a good example of a developed country in which IM has not been studied much. In particular, it witnessed two extreme economic cycles in the first years of the 21st century. These two cycles were outlined by economic newspapers and magazines. Until 2007, Spain was one of the fastest-growing European economies:

- "Spain's economy has been one of the fastest-growing in the euro zone, producing the majority of new jobs for the common-currency area" (Johnson, 2006)
- "In the last decade, its economy has expanded by an average of 3.7% a year" ("The euro area's economy, 2007")

This situation reversed from 2008, when Spain suffered a very severe economic crisis:

- "'We're not going to have a recession. We're going to have a depression like in the 1930s,' says Lorenzo Bernaldo de Quirós, economist and chairman of Freemarket International Consulting" (Mallet, 2009)
- "Spain now at the centre of the euro crisis … Unemployment is 24% and climbing … GDP is expected to shrink by 1.8%" ("Spain and the euro", 2012)
- "Spain's Ibex 35 index dropped […] 18 per cent this year, the worst performing stock market in the eurozone" (Mackenzie et al., 2012)

In Spain, the GFC was accompanied by a very severe economic and social crisis, and the effects were suffered by society broadly. In particular, the finance and real estate sectors played a key role in the origin of the crisis (Carballo-Cruz, 2011). The real estate and credit bubble is considered one of the main causes of the crisis (García Montalvo, 2009).

Before the crisis, society failed to hold its political class accountable (Royo, 2014). During the crisis, governments and politicians were on the frontline, facing the wrath of citizens who felt betrayed by them and who questioned their legitimacy (Thompson, 2012). There was a generalised discontent caused by the degeneration of the economic and political situation (Castañeda, 2012). "The practices framed under a culture of networked self-interest came largely under fire and criticism" (Cardoso & Jacobetty, 2012, pp. 185–186). As a consequence of the loss of trust in traditional institutions (Rantanen, 2012), the GFC also decreased the credibility of corporate disclosure (Habib et al., 2013). Therefore, a higher degree of general accountability and specific control over the financial market was demanded (Pereda, De Prada, & Actis, 2010), and public scrutiny of reporting behaviour intensified (Jones et al., 2020).

Appendix 1 shows Spain's annual GDP rate compared to the EU and OECD. Spain's GDP shows extreme behaviour, with higher rates for the prosperous years and lower rates for the crisis years. A similar situation is shown in Appendix 2, with the main world stock exchange indexes. The Spanish IBEX 35 exhibits extreme behaviour, being one of the best indexes before the GFC and one of the worst indexes during the GFC. This scenario allows us to study IM in one of the most seriously affected countries during the GFC, an exogenous and negative event. We investigate whether Spanish companies show different textual characteristic behaviour between the two cycles. Two definite periods are clearly identified: highly positive from 2002 to 2007 and highly negative from 2008 to 2012. IBEX 35 shows the greatest distance between the average annual rate changes in these two periods of the main world stock exchange indexes (average rates of the first and second periods: +12.46% and −8.96% respectively; Appendix 2).

Previous research shows that disclosure varies between countries depending on factors such as culture, legal systems and capital markets (Doupnik & Riccio, 2006; Guillamon-Saorin & Sousa, 2010). Prior literature on disclosure is mainly based on Anglo-Saxon countries (such as the UK, USA and Australia). These are considered common-law countries, with micro-based accounting practices. Spain is considered a civil-law country, with macro-based accounting practices (La Porta,

Lopez-de-Silanes, Shleifer, & Vishny, 1997; Nobes, 1983). However, previous literature has not clarified the expected level of IM in Continental European common-law countries as compared to Anglo-Saxon countries (Beattie & Jones, 2000; Guillamon-Saorin, García Osma, & Jones, 2012).

4. Methodology

Inferences from data can be made through content analysis which identifies message characteristics (Holsti, 1969). Two approaches have been traditionally identified in accounting research: syntactical and thematic content analysis. The former focuses on textual complexity and the latter on trends or content categories (Jones & Shoemaker, 1994). While syntactic analysis focuses on the linguistic aspects of texts, thematic analysis investigates text content (Merkl-Davies, 2007). The present paper includes both types of content analysis. We conducted a computerised analysis (for readability and length, as well as for quantitative, positive, negative, future and personal references) and a deeper manual attribution analysis in order to find additional and more refined evidence.

4.1. Sources

We look at AR as the traditional communication vehicle between a company and its shareholders (Stanton, Stanton, & Pires, 2004). The CS is considered the most widely read AR section and contains crucial information about a corporation (Courtis, 2004; Mir, Chatterjee, & Rahaman, 2009). In the particular case of Spain, and over the study period, it was the main document addressed to shareholders discussing the company's performance and activities during the year. The CS has been one of the most used documents in previous IM research (Brennan & Merkl-Davies, 2013; Merkl-Davies & Brennan, 2007). It is part of the narratives in corporate reports that are not directly subject to audit, making it easier for managers to manipulate information (Brennan & Merkl-Davies, 2013). This section gave companies the freedom to convey their story during the difficult times of the GFC.

IBEX 35 is the main Spanish stock exchange index. It is a capitalisation-weighted index composed of the most liquid 35 securities traded on the Spanish stock market. These companies are the most highly scrutinised and followed by analysts. We identified the companies composing the IBEX 35 on December 31, 2013 and searched their CSs from 2002 to 2012. As detailed in the previous section, these starting and ending points were selected to identify two extreme periods, divided by the start of the GFC. 2012 can be considered as the end of the GFC in Spain. In 2002, in the pre-GFC period, there were a high number of CSs available, while in earlier years the availability of documents was lower. This paper is based on narratives written in Spanish.[3]

Where available, we downloaded the pdf version of the CSs from every company's webpage. When an additional search on other internet sources failed, we emailed the companies' investor relations or communication department. We gathered the full temporal series of 24 of the 35 IBEX companies' CSs (this represented 84% of the index's market capitalisation). Reasons for excluding the remaining 11 firms included the constitution of the firm after 2002 or the lack of published CS or AR for the whole period.[4] Consequently, 264 CSs (24 companies, 11 reports each) were analysed. We converted the pdf files into a text format, through copying and pasting the text into a text editor. These 264 text files were used to analyse the different variables. Accounting data was extracted from the financial statements. Appendix 3 shows the IBEX 35 companies, their sectors, those companies selected for analysis and reasons for exclusion of the other companies. The stock market authority classifies the companies of the IBEX 35 index into six sectors (PP: Petrol and Power [5/5]; BI: Basic Materials, Industry and Construction [6/9]; CG: Consumer Goods [4/4]; CoS: Consumer Services [1/4]; FS: Financial Services and Real Estate [6/9]; and TE: Technology and Telecommunications [2/4]). The first figure in each square bracket represents the companies of each sector included in our sample and the second, the total number of companies included in the IBEX 35 index.

4.2. Computerised analysis

Subsection 4.2.1 describes the dependent variables, 4.2.2 the explanatory and control variables, and 4.3.3 the research model.

4.2.1. Dependent variables

To study readability, diverse formulas have been used in the accounting literature, such as Flesch, Fog, LIX, RIX, ARI and SMOG.[5] They are mainly based on the analysis of two variables: words and sentences. Guay, Samuels, and Taylor (2016) show that all these measures are highly correlated. We chose the Flesch (1948) index adapted into Spanish by Fernández Huerta (1959) for two reasons. First, the Flesch index has been one of the most commonly used in accounting (Moreno & Casasola, 2016; Stone & Lodhia, 2019). Second, most formulas are designed only for English texts, and direct application to other languages is not appropriate (Rabin, 1988). The Flesch index is one of the few that has been adapted into Spanish and is used by previous research (Blanco Pérez & Gutiérrez Couto, 2002; Coco, Colina, Atcherson, & Marrone, 2017), including accounting narratives (Moreno & Casasola, 2016).

We used the software INFLESZ to calculate the Flesch index adapted into Spanish. This software has been applied in previous research (Barrio-Cantalejo et al., 2008; Bea-Muñoz, Medina-Sánchez, & Flórez-García, 2016), including accounting texts (Moreno & Casasola, 2016). Before analysing readability, we refined the data following previous research (Bayerlein & Davidson, 2012; Loughran & McDonald, 2016). We removed: 1) numbers and percentages; 2) full stops from abbreviations and acronyms; 3) ellipses; 4) hyphens; and 5) bullet points. Furthermore, we added full stops at the end of headings (if absent). Finally, we ran the software to get the readability score. In the case of length, as in previous research (Baker & Kare, 1992; Li, 2008; Rutherford, 2003), we used the number of words as a proxy. This information was also extracted from INFLESZ. Readability and length were transformed into natural logarithms.

To compute quantitative, positive, negative, future and personal references, we used the software Linguistic Inquiry and Word Count (LIWC) (Pennebaker, Booth, & Francis, 2001) and its predefined word categories in Spanish for every dimension analysed.[6] We used the original text files before the INFLESZ amendments. For quantitative references, the numerical sequences and numbers as words (equivalent in Spanish for *second*, *thousand*, etc.; 63 words and word stems) are included. For tone, positive emotions (*love*, *nice*, *sweet*, etc.; 642 words or word stems) and negative emotions (*hurt*, *ugly*, *nasty*, etc.; 745 words or word stems) are included. For future references, mainly verbs in the future tense (*will, shall*, etc.; 875 words and word stems) are included. For personal references, the first person singular (*I*, *me*, *mine*, etc.; 15

[3] Not all Spanish companies regularly published an English version of the AR, especially in the early years of the sample.

[4] It could be thought that the choice to provide a CS could be endogenously affected by the crisis. However, only two companies temporarily interrupted publication of the AR or the CS. In both cases this did not match the start of the crisis, and the disclosure was reintroduced during the crisis.

[5] There are some concerns about whether these formulas really measure readability (Jones & Shoemaker, 1994).

[6] LIWC pre-defined categories have been applied in corporate reporting, in English (Asay, Libby, & Rennekamp, 2018; Back, Rosing, Kraft, Dickler, & Bausch, 2020; Merkl-Davies et al., 2011; Moreno, Jones, & Quinn, 2019) and in Spanish (Muñiz, Ramirez, Murgan, & Castillo, 2009). The equivalence between both languages has been validated (Ramírez-Esparza, Pennebaker, García, & Suriá, 2007).

words) and plural (*we*, *us*, *our*, etc.; 10 words and word stems) are included. In all cases the variables computed by LIWC are presented as percentages of the total number of words.

4.2.2. Explanatory and control variables

CRISIS is the main variable of interest. It is a dummy variable that takes the value of one during the GFC (2008–2012) and zero otherwise. In addition, we control for potential interactions with other variables. In particular, as negative profitability has been considered the main driver for IM engagement (Clatworthy & Jones, 2006; Merkl-Davies et al., 2011), we control for two profitability proxies. EARN is return on assets, calculated as net profit divided by total assets. △EARN is the annual percentage change in profit before taxation related to the previous year. In addition, we also control for size. SIZE is the natural logarithm of total assets (in millions of euros). These variables have been extensively used in previous earnings management and IM research (Aerts, 2005; Guillamon-Saorin et al., 2012). Table 2 summarises the variables and their definitions.

4.2.3. Research model

To test the first seven hypotheses (H1-H7), we use panel data estimations for the regression analyses. In each regression, each textual characteristic under analysis constitutes the dependent variable. Each textual characteristic was regressed on the explanatory variable (CRISIS) and control variables. Hausman tests were performed to choose between fixed effects or random effects as the most appropriate estimation method in examining each textual characteristic. Wald tests were also performed to identify whether, in addition to firm effects, time effects should have been considered. This process resulted in random effects estimations for every textual characteristic (except for quantitative references) and no consideration of time effects.

4.3. Manual attribution analysis

We used a manual attribution analysis to test H8. Although extremely labour intensive and subjective, this approach is more sensitive to context than computerised analysis, as both words and their context are identified (Aerts, 2001, 2005; Clatworthy & Jones, 2003). Attribution theory is related to understanding factors involved in perceived causation (Heider, 1958). The attributions were manually coded. They were considered when good or bad news was (implicitly or explicitly) attributed to an internal or external cause. In the explicit attributions, a causal connection was mentioned. Implicit attributions were coded "when cause and effect could be reasonably linked to each other" (Aerts, 2005, p. 500). Attributions "were considered positive or negative if they connoted good or bad news for the company" (Clatworthy & Jones, 2003, p. 175). Attributions were also coded as internal/external, internal when the cause was attributed to the company and external when the cause was attributed to external factors. To check the reliability of the manual coding and to palliate problems of subjectivity, initially a pilot sample of 63 attributions (7% of the total attributions) was coded by both authors. The agreement in the pilot coding was represented by a Krippendorff's alpha of 81% in the case of positive/negative coding and 75% in the case of internal/external coding. Inconsistencies were discussed and agreed upon by the two coders and the resolutions served as a basis for coding of the whole sample.

Table 2
Definition of the variables.

Variable	Definition
Dependent variables	
Readability	Logarithm of the Flesch index adapted into Spanish (INFLESZ)
Quantitative	Percentage of numerical sequences and numbers over total words (LIWC)
Positive	Percentage of positive emotions over total words (LIWC)
Negative	Percentage of negative emotions over total words (LIWC)
Length	Logarithm of the number of words (INFLESZ)
Future	Percentage of future references over total words (LIWC)
Personal	Percentage of first person singular and plural over total words (LIWC)
Explanatory variable	
CRISIS	Dummy variable that takes the value of one during the GFC (2008–2012)
Control variables	
EARN	Return on assets (ROA), calculated as net profit divided by total assets
△EARN	Annual percentage change in profit before taxation related to the previous year
SIZE	Logarithm of total assets (in millions of euros)

5. Results

Subsection 5.1 relates to the computerised analysis, while the manual attribution analysis is presented in Subsection 5.2.

5.1. Computerised analysis

Subsection 5.1.1 shows the descriptive statistics and correlations. Subsection 5.1.2 includes the main multivariate analysis. Subsection 5.1.3 presents a sensitivity analysis. In Subsection 5.1.4, the results concern industrial sectors.

5.1.1. Descriptive statistics and correlations

Table 3 provides the descriptive statistics. The CSs of the Spanish companies in the IBEX 35 in the period 2002–2012 are considered difficult to read (mean: 48) and contain on average 1227 words. They contain (on average) quantitative (3.9%), positive (3.6%), negative (0.4%), future (0.3%) and personal (1.8%) references. A total of 45% of the observations are related to the GFC period (2008–2012). The mean of the return on assets (EARN) is 4%, and the average of the annual change in profit before taxation (△EARN) is 10%. The mean of the total assets (SIZE) is almost €78 billion. Table 4 shows the Pearson correlation matrix. CRISIS is positively (and significantly) correlated with Negative (0.342), Future (0.142), Readability (0.099) and Quantitative (0.098). Therefore, these bivariate correlations suggest that during the GFC, negative, future, readability and quantitative references increased. These correlations are in line with that hypothesised, except for future references.

The lack of high correlation between the independent variables suggests that multicollinearity is not a concern. In addition, the highest variance inflation factor of the independent variables is 2.4, which does not exceed the most conservative threshold of 3.3 (Kock & Lynn, 2012).

In order to complement the descriptive statistics, Figs. 1 and 2 show the evolution from 2002 to 2012 for the textual characteristics, as well as that of the IBEX 35. This latter index shows two different cycles, continuously increasing from 2002 to 2007 and decreasing from 2008 to 2012 (except 2009). Readability shows much steadier behaviour, by increasing slightly (higher Flesch index means higher readability; Fig. 1). Quantitative references slightly but continuously increase from 2002 to 2010 and decrease from 2010 to 2012 (Fig. 2). Fig. 2 also shows a consistent use of more positive words than negative words in any period. The "Pollyanna Hypothesis" in ARs (Hildebrandt & Snyder, 1981; Merkl-Davies et al., 2011) is still present even under tough macroeconomic conditions. While positive words are quite stable, negative words clearly increase during the GFC. Length decreases slightly (Fig. 1). Future references seem to increase during the GFC (Fig. 2). However, scores are very low in both periods. This supports previous evidence about the lack of future focus in the CS (Kohut & Segars, 1992). Personal pronouns are quite steady in the two periods, with a slight decline during the GFC (Fig. 2). In any case, we rely on the multivariate analysis to formally test the hypotheses.

5.1.2. Main multivariate analysis

Table 5 provides the results of the regression models for each textual characteristic. CRISIS is positively associated with Negative and Future.

Table 3
Descriptive statistics.

	Mean	Std.dev.	Median	Min.	Max.
Readability[a]	48.02	6.83	48.02	22.41	64.77
Quantitative	3.91	1.67	3.84	0.77	9.54
Positive	3.61	0.92	3.51	1.59	6.64
Negative	0.38	0.27	0.33	0.00	1.67
Length[a]	1226.78	476.13	1167.50	174.00	3790.00
Future	0.26	0.18	0.23	0.00	0.91
Personal	1.80	0.99	1.69	0.17	5.84
CRISIS	0.45	0.50	0.00	0.00	1.00
EARN	0.04	0.04	0.03	−0.17	0.24
△EARN	0.10	2.00	0.11	−19.90	16.52
SIZE[a]	77,808.74	203,786.71	14,011.90	8.81	1,269,628.00

N = 264.
See Table 2 for the definition of the variables.
[a] Before transformation.

Some of the earning variables are positively associated with Quantitative (EARN) and negatively associated with Positive (△EARN) and Negative (EARN). SIZE is positively associated with Readability, Quantitative and Length.[7] We next examine the results for each textual characteristic one by one.

5.1.2.1. Readability. For readability, CRISIS is not found to be significant (Table 5). Firms do not decrease readability during the GFC. Our results are thus compatible with H1. None of the profitability control variables are also found to be significant. The results also show that larger companies increase readability.

5.1.2.2. Quantitative references. Regarding quantitative references (e.g. *The profit before provisions totalled €1230.7 million; Banco Sabadell, 2011 CS*), CRISIS is not found to be significant (Table 5). Firms do not decrease quantitative references during the GFC. Our results are thus compatible with H2. In addition, the results show that when EARN (ROA) increases, quantitative references decrease. The results also show that larger companies increase quantitative references.

5.1.2.3. Positive and negative references. On tone (e.g. *Bankinter turned in a performance for* 2011 that *I would venture to describe as brilliant*; *Bankinter, 2011 CS*), both types of (positive and negative) words reveal different behaviour. Positive words are quite stable, with no significant differences between the two periods. CRISIS is not found to be significant (Table 5). As companies do not decrease positive references during the GFC, it may be considered as IM. Our findings do not therefore support *H3*. In addition, △EARN is found to be (weakly) significant and negatively associated with positive references. This means that when companies decrease net profit in relation to the previous year, they increase positive references.

Meanwhile, negative words are significantly higher during the GFC (Table 5). Therefore, the use of negative references may be in line with the incremental information view, and H4 is supported. This may be interpreted as an attempt to provide a fairer picture during the GFC. Companies are also more negative when profit decreases (EARN is found to be significant and inversely related to negative references).

The evidence about tone is thus mixed. On the one hand, good news is consistently preferred in any period (first period mean 3.65%; GFC mean 3.56%). On the other hand, there is a significant increase in negative words during the GFC (first period 0.30%; GFC 0.48%). Overall, there is a predominance of positive references, which could be interpreted in line with the "Pollyanna Hypothesis", under the assumption that managers are genuinely optimistic. This consistent use of positive words in any period can be interpreted as underlying IM. However, by significantly increasing negative references, companies could be trying to offer a fairer picture of the situation during the GFC.

5.1.2.4. Length. In the case of length, CRISIS is not significant (Table 5). It is therefore neither used to make a report less transparent nor to offer additional explanations for company performance. The results are thus compatible with H5. None of the control variables related to profitability are found to be significant. In addition, the findings show that larger companies produce longer CSs.

5.1.2.5. Future references. The analysis of future references (e.g. *I am sure that Ferrovial can seize any opportunity that may arise and that we will emerge from these difficult times*; *Ferrovial, 2009 CS*) reveals a significant increase in future references during the GFC (Table 5). H6 is thus not supported. This may be interpreted as the managerial attempt to distract attention from the present situation, in line with IM. No other control variables are found to be significant.

5.1.2.6. Personal pronouns. In relation to first-person pronouns (e.g. *We are confident that this decision is best for the future of our company; Gas Natural, 2006 CS*), CRISIS is not found to be significant (Table 5). The results are thus compatible with H7. No other control variables are found to be significant. Consequently, our findings do not show that companies during the GFC use significantly fewer personal references than in the positive period. Our results are in contrast to most previous research suggesting the existence of IM in normal economic circumstances (Clatworthy & Jones, 2006; Hyland, 1998; Poole, 2016).

5.1.2.7. Summary of the results. While H3 and H6 are not supported (they may be interpreted in line with IM), our results are compatible with H1, H2, H4, H5 and H7. The GFC was only significant in negative and future references. Negative references significantly increased during the GFC (in line with H4). The significant increase in future references may be interpreted as IM (in contrast to H6). The lack of significant changes in readability (H1), quantitative references (H2), length (H5) and personal references (H7) is in line with that hypothesised and is interpreted as a lack of IM. However, the lack of significant changes in positive references (H3) during the GFC relates to a consistent use of positive words in any period (over negative references) and may be considered as IM. Overall, the results of the textual variables analysed point at lower IM evidence during the GFC than in the case of poor performance in normal macroeconomic conditions found by previous literature.

[7] In preliminary regressions (not reported), we only include the control variables (and not CRISIS) for each textual characteristic. All the variables found to be significant in those regressions for each textual characteristic are still found to be significant when including CRISIS (Table 5), with the exception of finding SIZE (negatively) significant in the case of positive references when only control variables are included.

Table 4
Correlation matrix.

	Readability	Quantitative	Positive	Negative	Length	Future	Personal	CRISIS	EARN	△EARN	SIZE	S_{PP}	S_{BI}	S_{CG}	S_{CoS}	S_{FS}
CRISIS	* 0.099	* 0.098	−0.049	*** 0.342	0.002	** 0.142	−0.023									
EARN	***−0.159	**−0.120	−0.053	***−0.192	**−0.107	0.058	** 0.135	−0.035								
△EARN	0.075	** 0.109	*−0.092	−0.066	0.048	0.003	−0.058	*−0.098	*** 0.144							
SIZE	*** 0.218	** 0.103	***−0.168	0.049	*** 0.342	* 0.092	*−0.085	*** 0.169	***−0.371	−0.040						
S_{PP}	**−0.105	−0.002	*** 0.190	0.059	**−0.106	0.038	−0.055	0.000	** 0.103	0.009	***−0.249					
S_{BI}	* 0.081	*** 0.438	−0.025	** 0.127	***−0.177	***−0.270	***−0.147	0.000	***−0.191	−0.057	0.047	***−0.296				
S_{CG}	**−0.111	***−0.201	−0.077	***−0.166	***−0.147	0.079	** 0.139	0.000	*** 0.510	0.042	***−0.384	***−0.229	***−0.258			
S_{CoS}	0.005	−0.069	***−0.229	**−0.123	*** 0.180	*−0.095	−0.009	0.000	−0.017	0.005	0.027	**−0.107	**−0.120	*−0.093		
S_{FS}	*** 0.165	**−0.109	* 0.101	0.055	*** 0.275	*** 0.160	**−0.143	0.000	***−0.397	0.010	*** 0.494	***−0.296	***−0.333	***−0.258	−0.120	
S_{TE}	*−0.085	***−0.192	**−0.129	−0.060	0.069	0.079	*** 0.354	0.000	* 0.095	0.000	0.016	***−0.155	***−0.174	**−0.135	−0.063	−0.174

N = 264.
See Table 2 for the definition of the variables.
*, **, *** represent significant p-values at 0.1, 0.05 and 0.01.
Correlations for the different industry sectors are included because in subsection 5.1.4, a sectoral analysis is conducted. PP: Petrol and Power; BI: Basic Materials, Industry and Construction; CG: Consumer Goods; CoS: Consumer Services; FS: Financial Services and Real Estate; TE: Technology and Telecommunications.

5.1.3. Sensitivity analysis

As mentioned before, Hausman tests were performed to choose between fixed effects or random effects in examining each textual characteristic. We checked, in any case, that the significance of CRISIS is robust and independent of the type (fixed effects or random effects) of estimation (these tables are not reported due to space limitations). In addition, we checked the robustness of our findings by including in the regressions only extreme performance observations. This is driven by the fact that previous research found IM by analysing differences between top- and bottom-performing companies (Cen & Cai, 2013, 2014; Clatworthy & Jones, 2006; Courtis, 1998).

After ranking the 264 (company-year) observations of the sample according to the annual percentage change in profit before taxation in relation to the previous year, we selected the top 25 and bottom 25 observations. In the case of the top observations, 19 belonged to the first period and 6 to the GFC. In the case of the bottom observations, 4 belonged to the first period and 21 to the GFC. Table 6 shows the regression analysis for each textual characteristic following the same methodology used in the main analysis. In each regression, each textual characteristic is regressed on the explanatory variable (CRISIS) and control variables, but only the top 25 and bottom 25 observations were included in the models.

We next compare the results of this extreme analysis with the results of the main analysis. In the case of the main variable of interest, CRISIS, there is only a significant change in one out of the seven textual characteristics analysed. In future references, CRISIS is not significant when we only include the extreme observations, while it was significant in the main analysis. Therefore, except for future references (*H6*),[8] the interpretation of the findings as IM/non-IM is robust when only including extreme observations. Therefore and overall, as in the main analysis, the results of the textual variables analysed show limited IM evidence in the GFC.

5.1.4. Results by industrial sectors

The impact of the GFC affected all sectors. However, the fact that the real estate and finance sectors were considered most responsible for the crisis (Carballo-Cruz, 2011) leads us to expect that firms in these sectors may be the most responsive to the GFC. There was a particular demand for the banking sector to reposition existing discourses to be more reliable and to reduce risk (Power, 2011). Table 7 shows the regression analysis for each textual characteristic following the same methodology used in the main analysis. However, in this case, we multiplied the dummy variable CRISIS with each sector dummy, while also including the control variables. This provides inferences about the behaviour of each sector during the GFC.[9]

The results confirm that firms in the *FS* sector are the most reactive to the GFC, with the highest number of textual characteristics significantly changing during the GFC (quantitative, positive, negative, length and personal). Most of these significant changes are in line with that hypothesised (increased quantitative and negative references, and decreased positive references). Firms in the *BI* sector are the second most reactive to the GFC (with significant changes in readability, quantitative, negative and future). Firms in the *PP* sector significantly change three textual characteristics of their narratives during the GFC (negative, length and future). Firms in the *CG* sector only change readability.

We next discuss each textual variable one by one. Mixed trends in readability are found in two sectors. Firms in the *BI* sector increase and in the *CG* sector decrease readability during the GFC. On quantitative references, firms in two sectors (*BI* and *FS*) significantly increase them

[8] In a further analysis (tables not reported due to space limitations), we include the top 50 and bottom 50, and CRISIS is found to be significant in future references, as in the main analysis.

[9] Firms in the *CoS* and *TE* sectors are not included in the regressions because the number of firms in these sectors in the sample is not significant.

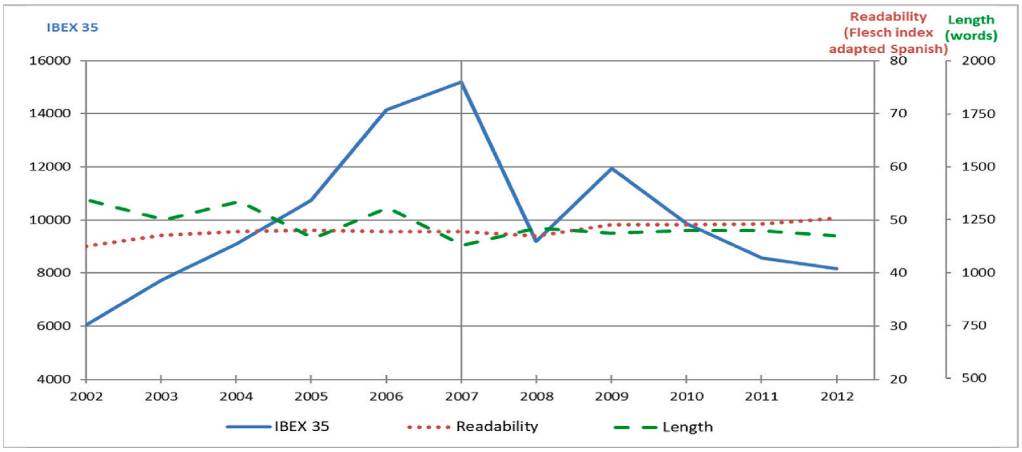

Fig. 1. Readability, length and IBEX 35 from 2002 to 2012.

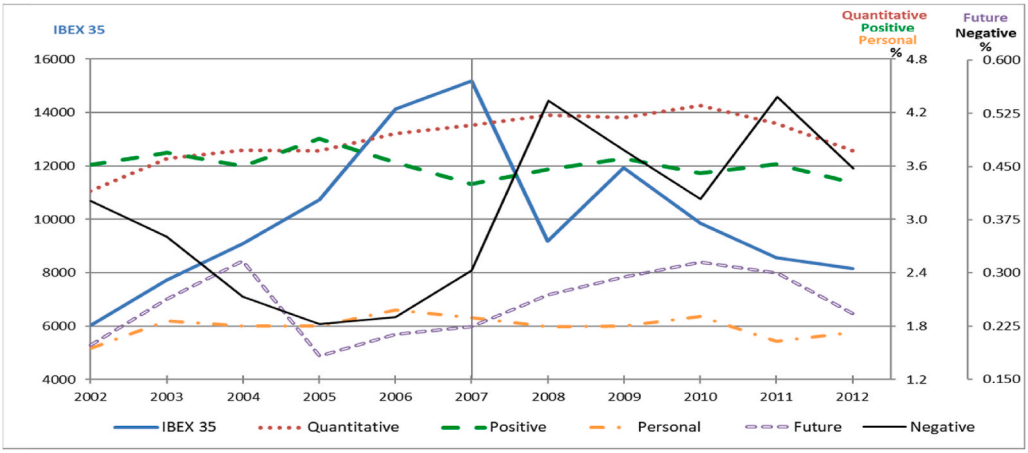

Fig. 2. Quantitative, positive, negative, future and personal references and IBEX 35 from 2002 to 2012.

Table 5
Regression models for each textual characteristic.

	Readability	Quantitative	Positive	Negative	Length	Future	Personal
CRISIS	0.011	−0.068	−0.043	0.194***	−0.037	0.047**	−0.019
	(0.015)	(0.214)	(0.094)	(0.030)	(0.040)	(0.022)	(0.099)
EARN	0.030	7.977***	−1.489	−1.443***	0.435	0.213	−0.050
	(0.248)	(2.832)	(1.521)	(0.468)	(0.637)	(0.322)	(1.598)
△EARN	0.006	0.053	−0.040*	0.001	0.002	0.000	−0.037
	(0.004)	(0.039)	(0.022)	(0.007)	(0.009)	(0.005)	(0.023)
SIZE	0.024***	0.575***	−0.094	−0.016	0.052**	0.006	−0.057
	(0.009)	(0.208)	(0.059)	(0.012)	(0.024)	(0.007)	(0.061)
Constant	3.637***	−1.786	4.582***	0.501***	6.521***	0.168**	2.344***
	(0.086)	(1.902)	(0.566)	(0.123)	(0.235)	(0.075)	(0.591)
Firm effects	Yes (r.e.)	Yes (f.e.)	Yes (r.e.)	Yes (r.e.)	Yes (r.e.)	Yes (r.e.)	Yes (r.e.)
Overall R-squared	0.053		0.049	0.155	0.119	0.031	0.012
Wald chi2	13.68***		8.60*	53.06***	4.86	6.69	3.85
Adj R-squared		0.481					
F		5.74***					

Each column represents a regression model (panel data estimations) where each textual characteristic (the dependent variable) is regressed on the explanatory variable (CRISIS) and control variables. According to Hausman tests, every textual characteristic is estimated with random effects, except for quantitative references, which is estimated with fixed effects. See Table 2 for the definition of the variables.
Standard errors in parentheses.
N = 264.
*, **, *** represent significant p-values at 0.1, 0.05 and 0.01.

during the GFC. This is in line with efforts to try to quantify the impact of the crisis, as expected, and could be interpreted as a sign of incremental information. On tone, in all sectors, the number of positive words is much higher than negative words (the "Pollyanna Hypothesis"). However, there is a significant decrease in positive words during the GFC, in line with that hypothesised, only in firms in the *FS* sector. In firms in

Table 6
Sensitivity analysis (25 top and 25 bottom observations).

	Readability	Quantitative	Positive	Negative	Length	Future	Personal
CRISIS	0.049	1.275	−0.137	0.352***	−0.176	0.026	0.133
	(0.045)	(0.747)	(0.205)	(0.120)	(0.140)	(0.040)	(0.226)
EARN	0.272	28.194***	−1.995	0.280	3.002	0.156	−3.680
	(0.667)	(9.093)	(2.969)	(1.457)	(2.095)	(0.600)	(3.279)
△EARN	0.006	0.043	−0.051***	0.002	0.005	0.002	−0.032
	(0.004)	(0.055)	(0.019)	(0.009)	(0.014)	(0.004)	(0.021)
SIZE	0.007	−0.385	−0.108	−0.254**	0.119***	0.016	−0.149*
	(0.013)	(0.583)	(0.077)	(0.093)	(0.035)	(0.010)	(0.085)
Constant	3.769***	6.860	4.720***	2.667***	5.810***	0.002	3.168***
	(0.122)	(5.390)	(0.739)	(0.864)	(0.340)	(0.096)	(0.815)
Firm effects	Yes (r.e.)	Yes (f.e.)	Yes (r.e.)	Yes (f.e.)	Yes (r.e.)	Yes (r.e.)	Yes (r.e.)
Overall R-squared	0.047		0.125		0.226	0.104	0.059
Wald chi2	4.66		13.94***		12.49**	5.23	8.46*
Adj R-squared		0.330		0.279			
F		3.72**		2.50*			

Each column represents a regression model (panel data estimations) where each textual characteristic (the dependent variable) is regressed on the explanatory variable (CRISIS) and control variables. According to Hausman tests, every textual characteristic is estimated with random effects, except for quantitative and negative references, which are estimated with fixed effects. Only extreme performance observations are included. See Table 2 for the definition of the variables.
Standard errors in parentheses.
N = 50.
*, **, *** represent significant p-values at 0.1, 0.05 and 0.01.

Table 7
Regression models for each textual characteristic including sectors.

	Readability	Quantitative	Positive	Negative	Length	Future	Personal
CRISIS × SectorPP	0.001	0.154	0.210	0.191***	−0.276***	0.117***	0.040
	(0.029)	(0.351)	(0.181)	(0.056)	(0.074)	(0.039)	(0.187)
CRISIS × SectorBI	0.074***	1.002***	−0.066	0.278***	0.026	−0.064*	0.127
	(0.028)	(0.330)	(0.172)	(0.054)	(0.070)	(0.037)	(0.177)
CRISIS × SectorCG	−0.068**	−0.588	0.111	0.076	−0.002	0.045	0.181
	(0.033)	(0.384)	(0.207)	(0.066)	(0.084)	(0.046)	(0.213)
CRISIS × SectorFS	0.032	0.573*	−0.303*	0.283***	0.157**	0.042	−0.624***
	(0.028)	(0.330)	(0.175)	(0.055)	(0.071)	(0.039)	(0.180)
EARN	0.307	10.508***	−1.801	−0.902*	0.359	0.189	−0.303
	(0.258)	(2.892)	(1.594)	(0.490)	(0.650)	(0.328)	(1.644)
△EARN	0.006*	0.065*	−0.042*	0.002	0.004	−0.001	−0.040*
	(0.004)	(0.038)	(0.022)	(0.007)	(0.009)	(0.005)	(0.022)
SIZE	0.022**	0.291	−0.084	−0.019	0.036	0.010	−0.016
	(0.009)	(0.193)	(0.057)	(0.012)	(0.024)	(0.006)	(0.063)
Constant	3.635***	0.609	4.491***	0.511***	6.670***	0.146**	2.007***
	(0.090)	(1.772)	(0.552)	(0.120)	(0.236)	(0.066)	(0.605)
Firm effects	Yes (r.e.)	Yes (f.e.)	Yes (r.e.)	Yes (r.e.)	Yes (r.e.)	Yes (r.e.)	Yes (r.e.)
Overall R-squared	0.076		0.045	0.207	0.141	0.083	0.044
Wald chi2	25.92***		13.64*	67.22***	24.23***	18.36**	18.54***
Adj R-squared		0.505					
F		5.50***					

Each column represents a regression model (panel data estimations) where each textual characteristic (the dependent variable) is regressed on CRISIS × $Sector_i$ and control variables. CRISIS × $Sector_i$ represents the dummy variable CRISIS multiplied with each sector dummy. According to Hausman tests, every textual characteristic is estimated with random effects, except for quantitative references, which is estimated with fixed effects. See Table 2 for the definition of the variables.
Standard errors in parentheses.
N = 264.
PP: Petrol and Power; BI: Basic Materials, Industry and Construction; CG: Consumer Goods; FS: Financial Services and Real Estate.
*, **, *** represent significant p-values at 0.1, 0.05 and 0.01.

three sectors (*PP*, *BI* and *FS*), negative references increase significantly at 1%, in line with that hypothesised. For tone, firms in the *FS* sector are the only firms which significantly decrease positive and increase negative references. Only firms in the *FS* sector significantly increase length during the GFC. By contrast, firms in the *PP* sector decrease length. In relation to future references, firms in the *PP* sector increase and in the *BI* sector decrease them during the GFC. For personal references, the only significant change during the GFC is in the case of firms in the *FS* sector, which decrease them.

Firms from two sectors, *FS* and *BI*, were hit particularly hard by the crisis. The average annual change in profit before taxation in these sectors went from the highest (43% and 27%, respectively) in the pre-crisis period to the lowest (−21% and −54%, respectively) during the GFC. Therefore, firms in these two sectors suffered from the deepest deterioration in their financial performance. Interestingly, the narratives of firms in these two sectors were the most reactive to the GFC. Firms in both sectors show similar significant trends by increasing quantitative and negative references, in line with that hypothesised. This may be interpreted as an attempt to convey their story by including more numerical details and by recognising the negative impact of the crisis.

5.2. Manual attribution analysis

A total of 865 attributions were manually coded (Table 8). This represents 3.28 attributions on average per CS (first period 3.24; GFC

Table 8
Manual attributions analysis.

		Whole period		First period		GFC	
Attributions		865		467		398	
Documents		264		144		120	
Attributions/ documents		3.28		3.24		3.32	
Positive attributions	***	774	(89%)	431	(92%)	343	(86%)
Negative attributions	***	91	(11%)	36	(8%)	55	(14%)
Internal attributions		722	(83%)	396	(85%)	326	(82%)
External attributions	*	115	(13%)	53	(11%)	62	(16%)
Both		28	(3%)	18	(4%)	10	(3%)
Cross-sectional benchmarked attributions		204	(24%)	110	(24%)	94	(24%)
Rivals or sector		122	(14%)	67	(14%)	55	(14%)
Indexes		70	(8%)	39	(8%)	31	(8%)
Both		12	(1%)	4	(1%)	8	(2%)
Unfavourable cross-sectional benchmarked attributions		4	(2%)	2	(2%)	2	(2%)
Positive attributions							
Internal attributions	**	715	(92%)	390	(90%)	325	(95%)
External attributions		31	(4%)	23	(5%)	8	(2%)
Both		28	(4%)	18	(4%)	10	(3%)
Internal attributions with despite context	***	183	(26%)	54	(14%)	129	(40%)
General attributions	***	200	(26%)	94	(22%)	106	(31%)
Share price based attributions	***	98	(13%)	67	(16%)	31	(9%)
Shareholder remuneration based attributions	**	84	(11%)	57	(13%)	27	(8%)
Negative attributions							
Internal attributions		7	(8%)	6	(17%)	1	(2%)
External attributions	***	84	(92%)	30	(83%)	54	(98%)
Both		0	(0%)	0	(0%)	0	(0%)
With supplementary justifications		57	(63%)	20	(56%)	37	(67%)
Additional reasons		33	(36%)	14	(39%)	19	(35%)
Minimised by management		17	(19%)	5	(14%)	12	(22%)
Focused on other priorities		11	(12%)	7	(19%)	4	(7%)
It does not reflect fundamentals		5	(5%)	2	(6%)	3	(5%)
Cross-sectional benchmarks		23	(25%)	6	(17%)	17	(31%)
Both (minim. by mangmt.+positive bench.)		1	(1%)	0	(0%)	1	(2%)

Only when a subdimension contains at least 50 attributions, differences between periods are statistically tested (when less, figures are shown in italics).
*,**,*** represent significant differences at 0.10, 0.05 and 0.01 between the two periods shown by chi2/Fisher's exact tests.

3.32). The results show that CSs always focus on positive news. In the high-performance period, when the annual average rate of the IBEX 35 rose by 12%, 92% of the attributions are positive and only 8% are negative. This is also true during the GFC, when 86% of the attributions are positive and only 14% are negative, despite the fact that in this period the annual average rate of the IBEX 35 fell by 9%. Although there is an increase (decrease) in negative (positive) attributions during the GFC, there is still an overwhelming presence of positive news. This means that during the GFC managers try to stress positive aspects. This selectivity pattern can be construed as IM (Brennan et al., 2009). It falls within one of Merkl-Davies and Brennan's (2007) IM strategies: choice of earnings number.

Most of the attributions are internal in both periods (first period 85%; GFC 82%). Only a minority are external in both periods (first period 11%; GFC 16%). Only a few attributions are both internal and external (first period 4%; GFC 3%). *Strategy* and *management* are the most common reasons for internal attributions, while *context* is the most common for external attributions.

During the GFC, there is more discussion about external context. However, this discussion tends to be related to internal implicit attributions of positive news despite the external context (for instance, *The group has presented good results in 2008 despite the scenario of global economic crisis; OHL, 2008 CS*). Most attributions are therefore still related to internal factors during the GFC. The contextual discussion is used to present companies in a good light. Companies show themselves as doing well despite the crisis. They thus present matters as favourably as possible – in order to show good news – and internally attribute it implicitly to themselves, despite the context. This practice can be considered as enhancement (Aerts, 2005; Aerts & Cheng, 2011; Merkl-Davies et al., 2011) and is consistent with IM.

There is thus no generalised external attribution during the GFC. During the GFC, positive news also predominates. However, in the few cases of bad news, 98% is attributed to external causes. In the first period, 83% of bad news is attributed to external causes. The increase in external attributions may be reasonable during the GFC. However, the permanent and overwhelming attribution of bad news to external causes in any period may be interpreted as a general pattern of IM, not specifically linked to the GFC.

In addition, companies cross-sectionally benchmark some of the attributions vs. stock exchange indexes, rivals or sector. In this case, no difference is found between the two periods (24% of the attributions are benchmarked in both periods). No additional substantive differences are found in the specific benchmark chosen for either period. Rivals or the sector are mentioned in 14% of the attributions and indexes in 8% of the attributions, in both periods. However, it is remarkable that only 2% of the comparisons show a poorer performance for the company than the benchmark (unfavourable benchmarked attributions). This can be considered a permanent sign of IM, not necessarily linked to the GFC. This IM strategy can be classified as performance comparisons (Merkl-Davies & Brennan, 2007). This is related to the previous argument that managers select information to show the most favourable view of their companies in every period.

On the positive attributions (first period 92%; GFC 86%), we notice three main significant differences. First, during the GFC, 40% of internal (commonly implicitly) attributions are presented with an explicit mention of the difficult context, usually preceded by the expression *despite* (e.g. *Despite the challenges raised in* 2009 by *the worst economic and financial environment for decades, the Bank increased its revenues, improved its efficiency ratio, strengthened its balance sheet […]; Banco Santander, 2009 CS*). This form of presenting attributions is only found in 14% of internal attributions in the high-performance period. This practice can be considered enhancement (Aerts, 2005; Aerts & Cheng, 2011).

Second, during the GFC, the positive attributions are more general (31%) – not related to any specific figure. [10] – than in the first period (22%). Third, in the high-performance period, the positive attributions are not only more based on the share price (16%) than during the GFC (9%), but also on figures related to shareholder remuneration (dividends, earnings per share, dividend payout, etc.) (first period 13%; GFC 8%). Table 9 provides more examples of attributions.

On the negative attributions, which represent a small part of the total attributions, 92% are attributed to external causes and only 8% to internal causes. This general trend can be considered as attribution bias and a permanent sign of IM, not necessarily linked to the GFC. Going further into the analysis of the bad news, in 56% of cases in the first period and in 67% during the GFC, the bad news is complemented with supplementary justifications such as additional reasons (first period 39%; GFC 35%), cross-sectional benchmarks (first period 17%; GFC

[10] Example of an attribution not related to any specific figure: *The Group's operating figures continue to show positive results in spite of the problems of the economy […] (Sacyr, 2012 CS)*. Example of a specific attribution: *Operating income rose 20% to 1543 million […] (Abertis, 2004 CS)*.

Table 9
Examples of attributions.

First period (2002–2007)	GFC (2008–2012)
We must first of all refer to the continuation of the effort made by our human team, which has seen its fruit in the growth in our net sales by 16% and the opening of more than 360 points of sale worldwide (Inditex, 2003 CS)	Despite this difficult context, ACCIONA achieved solid results in this year and faces the challenges of the future with a consolidated business model and growth potential (Acciona, 2009 CS)
Telefonica's net profit in 2004 reached the historic figure of 2877.3 million euros, up 30.6% on 2003 […] it was based not only on operative efficiency as in previous years, but also, and more importantly, on the return to growth in sales (Telefónica, 2004 CS)	In this complex environment, BBVA's results have been excellent. As a result, we are, again, one of the best-performing banks in the world (BBVA, 2010 CS)
The excellent performance of our business activities, together with an expansion strategy […] which allowed us to close the 2006 financial year with capitalisation in excess of 13,500 million euros with appreciation of 11% (Abertis, 2006 CS)	The company posted net income of over €2000 million. This achievement very positively reflects the efforts made by our company to overcome the major challenges faced during the year; primarily the economic crisis across Spain (Repsol, 2012 CS)

In the first period, the three examples represent positive, explicit, internal attributions. In the GFC, the first two examples represent positive, implicit, internal attributions and the third example, positive, explicit, internal attribution.

31%) or both (first period 0%; GFC 2%).

In relation to the additional reasons mentioned above, three main arguments are used by the companies. First is the argument that management has minimised the negative effects (first period 14%; GFC 22%). Second is the argument that the company is now focusing on other priorities (first period 19%; GFC 7%). Third is the argument that the figure does not really reflect the fundamentals of the company (first period 6%; GFC 5%).

In addition, if we focus on the GFC and select the top and bottom five companies ranked by the average annual percentage change in profit before taxation, the attribution analysis shows differences (results not reported in tables to save space). The first difference is in the number of attributions per document (top 2.84; bottom 3.64). Second is in the benchmarks in relation to competitors or sector (1% of the attributions for top and 27% for bottom). Third is in the case of negative news: top performers use positive benchmarks in 29% of the cases and bottom performers only in 9%, and bottom companies also use more additional reasons (55%) than top companies (29%). Bottom companies in the crisis may have used these differences in a self-serving manner.

When we analyse the results using industrial sectors, firms in the *FS* sector show the highest increase in attributions per document during the GFC (results not reported in tables to save space). They become the firms with the highest number of attributions during the GFC (5.4 attributions per document). They also show the highest number of benchmarks in the crisis (35% of the total attributions), using mainly competitors or the sector as a comparison. They are also the firms with the highest increase of negative external attributions during the GFC. This behaviour is probably related to the central role of these firms in the crisis (Carballo-Cruz, 2001).

To sum up, the manual attribution analysis shows an overwhelming focus of the CSs on positive news and scarce use of negative news. Therefore, H8 is not supported. Although during the GFC there is much more discussion about the context, internal (implicit or explicit) attributions always predominate (Keusch et al., 2012). During the GFC, companies tend to attribute the most favourable figures internally, with an explicit mention of "despite the context". There is a general pattern of IM not necessarily linked to the GFC, with CSs always focusing on good news and favourable benchmarks. There is also an increase in negative external attributions during the GFC. However, the consistent attribution of bad news to external causes in any period may also be interpreted as a general pattern of IM, not linked to the GFC. Additionally, firms in the *FS* sector show the greatest difference in behaviour between the two periods.

6. Discussion and conclusions

Previous IM research has tended to consider extremely profitable and unprofitable different companies in the same year, when poor performance is driven by firm-specific circumstances. By contrast, we have analysed the same companies in two extreme periods. These are a high-performance period and a low-performance period caused by the GFC, an exogenous event. Overall, our results are in line with the general assumption that IM is lower during the GFC than in the case of poor performance in normal macroeconomic conditions evidenced by previous literature. However, the GFC did not fully stop general IM practices, as overwhelming positive news is present in any period, together with favourable benchmarks and enhancement practices. During the GFC, companies were under higher scrutiny and they probably preferred to tell a more careful story. They therefore tried to give the impression that they were providing a balanced view of the firm's performance rather than using overt IM. Firms in the *FS* sector show the most significant results, probably linked to their key role in the GFC.

During the GFC, companies did not decrease readability, or quantitative or personal references, did not increase length and increased negative references. All these findings are in line with the hypotheses and in contrast to IM. However, during the GFC, companies did not decrease positive references and increased future references. These two findings are in contrast to the hypotheses and may be interpreted as IM. Overall, these results show limited IM evidence in the GFC. This contrasts with higher IM evidence found by previous literature, which focused on poor performance in normal macroeconomic conditions. However, the manual attribution analysis found a permanent focus on good news and a consistent attribution of bad news to external causes in any period, which may be interpreted as general patterns of IM, not specifically linked to the GFC. These persistent practices can be considered as underlying IM.

The results by different industrial sectors should be cautiously interpreted because of the sample size. Firms in the *FS* sector were the most reactive to the GFC. There was a significant change in quantitative, positive, negative and personal references, as well as length. Attribution analysis also points to these firms as the ones with the greatest difference in behaviour between the periods. They are the only firms that showed a significant increase in the number of attributions per document during the GFC. They also showed the highest number of benchmarks and the highest increase of negative external attributions during the GFC. The results of firms in the *FS* sector are particularly interesting given its centrality to the GFC (Carballo-Cruz, 2011). These results may be interpreted as the managers of firms in the *FS* sector believing they needed to substantially change their practices.

The manual attribution analysis revealed that CSs were always built around positive and favourable benchmarked attributions. Even when managers had fewer incentives to incur IM, as was the case during the severe Spanish financial and economic crisis, they tried to show the most favourable view of their companies (Keusch et al., 2012). This can be considered enhancement (Aerts, 2005). The attribution analysis also revealed another general pattern of IM. Most of the attributions were internal in both periods. However, during the GFC, there was more discussion about the context. Companies attributed the most favourable figures internally, with an explicit mention of "despite the context". This contrast was found less in the high-performance period. Additionally, during the GFC, the positive attributions were more general and less based on share price and shareholder remuneration. The limited cases of

negative attributions were overwhelmingly linked to external factors. To sum up, the attributions provide evidence of IM, in line with Keusch et al. (2012).

Prior literature compares high-/low-performing companies in a single period in normal macroeconomic conditions, based on a profitability criterion, and tends to find significant levels of IM. For example, Cen and Cai (2014) and Clatworthy and Jones (2006) analyse multiple textual characteristics and find patterns compatible with IM in most of them. By contrast, our findings show a limited level of IM in the computerised textual characteristics during the GFC. This difference may result from the different drivers of poor performance. While in previous literature poor performance tends to be driven by internal firm reasons, in our study poor performance is driven by an exogenous event, a huge financial, economic and social crisis. Therefore, the lower incentive to produce biased reporting during the GFC may explain our findings.

However, the GFC did not fully stop IM, and we can qualify our findings as mixed. On the one hand, they are in line with the idea that economic recessions may decrease opportunistic corporate disclosure, by reducing managers' motivation to engage in IM (Pinnuck, 2012). Tough macroeconomic conditions, such as the GFC, can reduce incentives to impress shareholders, as they already anticipate poor performance (Patelli & Pedrini, 2014). Thus, IM may be lower (Merkl-Davies & Brennan, 2007) because unexpected losses are more disappointing than expected losses (Mellers et al., 1997). Our computerised variables can mainly be interpreted in this line. The GFC, therefore, seems to have influenced the way companies conveyed their story (Jones et al., 2020). The deterioration of institutions and the higher demand for accountability and control caused by the GFC (Pereda et al., 2010; Royo, 2014) probably impacted corporate disclosure. Interestingly, on the other hand, we find that some results are in line with a general pattern of IM not being necessarily linked to the GFC. In particular, our attribution analysis shows signs in line with a general underlying pattern of IM. This includes an overwhelming emphasis on positive disclosures even during the GFC, a tendency to attribute negative results to external events and the use of benchmarking in a favourable way. Therefore, the GFC reduced IM, but some underlying IM remains.

Our study also contributes to the IM literature by analysing a different, under-researched setting: Spain, a civil-law country, with macro-based accounting practices (La Porta et al., 1997; Nobes, 1983). This setting is characterised by a higher secrecy level, lower investor protection, a narrower capital market and lower disclosure than most previous research.

Our paper is subject to some limitations. A number of IM studies analyse different (top/bottom) companies. Different companies involve different organisational characteristics, which may affect the comparison. As we compare the same companies (over time), our results are less affected by this concern (Cooper & Slack, 2015). However, this study is not completely free of this bias. For instance, in the case of management turnover in the period analysed, the different egocentric or hubris profiles of managers may influence disclosures (Brennan & Conroy, 2013; Merkl-Davies & Brennan, 2011). This possibility is inherently linked to any longitudinal study. In addition, although the software used for the analysis, especially LIWC, was used previously and externally validated (Donohue, Liang, & Druckman, 2013), this type of study assumes that language, in essence qualitative, can be quantified (Patelli & Pedrini, 2014).

For future research, the natural extension of this paper would be to use a similar scenario in other countries and languages, especially in those countries showing large profitability differences in the years before and after the GFC. It would also be advisable to analyse IM in other cases, where the roots of poor performance could also be attributable to external circumstances which had already been anticipated by shareholders (catastrophes, new legislation, COVID-19, etc.). In this sense, for example, the GFC may be to some extent comparable to the global crisis generated by the COVID-19 pandemic. However, the demands for transparency and trust in companies' disclosure were probably higher during the GFC, as corporate managers were at least partly seen as responsible for the origin of the GFC. They therefore had to restore trust, while in the COVID-19 pandemic corporate managers are not seen as responsible. This may involve different implications which offer additional research avenues. In addition, more evidence is specifically required in order to assess the expected level of IM in Continental European (or macro-based) countries in relation to Anglo-Saxon (or micro-based) countries. Our findings are related to the most visible and scrutinised companies. Larger samples are needed to generalise the results, particularly related to different sectors. It would be especially useful to increase the evidence about the behaviour of firms in the financial sector before and after the GFC and compare it to firms in other sectors.

Our results imply that the users of financial information prepared by companies with high visibility and under high scrutiny should be aware that ARs systematically present good news and favourable benchmarks. Regulators should consider introducing some rules on benchmarking in order to stop potential accounting bias. Additionally, managers and policymakers should make a considerable effort to improve forward-looking information. The lack of forward-looking information is remarkable during the whole study. This finding does not seem to be in line with a general objective of financial reporting, which is to provide useful information to help decision-making (IASB, 2010).

Funding

This work was supported by the Junta de Andalucía, Spain [SEJ 6828] and by the Spanish Ministry of Science, Innovation and Universities, the Spanish Research Agency and the European Regional Development Fund [PGC2018-096440-B-I00].

Declarations of competing interest

None.

Acknowledgements

The authors are grateful for the constructive comments received from the two anonymous reviewers and the associate editor, Yannis Tsalavoutas. This paper has also benefited from comments on earlier drafts at the 38th annual congress of the European Accounting Association held in Glasgow (UK), the 19th Financial Reporting and Business Communication Annual Conference held in Bristol (UK), and a research seminar in RMIT University, Melbourne (Australia). In addition, the authors appreciate those companies that provided additional documents because their annual reports were not fully available on their webpages.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.emj.2021.08.007.

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