The influence of corporate governance characteristics on human capital disclosure: the moderating role of managerial ownership

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Abstract

Purpose – The main objective of this paper is to analyse the content and extent of human capital disclosure by Spanish companies. It studies various factors related to the board of directors' composition and functioning. These factors can be seen as mechanisms of corporate governance and the moderating role of managerial ownership, which help predict the behaviour of managers in relation to the human capital disclosure.

Design/methodology/approach – This study develops and applies a more comprehensive framework for coding information on human capital, integrating the intellectual capital and social responsibility perspectives in order to explain the content and extent of human capital disclosure. The research was based on a content analysis of 210 corporate reports from 2007 to 2016. A system-GMM estimator was used to test the hypotheses in four dynamic linear regression models of balanced panel data in order to address concerns of endogeneity.

Findings – The results show that companies are adapting to new regulations and voluntarily disclosing information on human capital – a trend which signals their commitment to responsible attitudes towards employees and stakeholders. The results also show that board composition and functioning are mechanisms of supervision, control and legitimacy that promote human capital disclosure, with managerial ownership acting as moderator for aligning interests between managers and stakeholders.

Originality/value – This study contributes to the literature on human capital disclosure by introducing a broader conception of human capital to coding information. It accomplishes this through considering aspects of the intellectual capital and social responsibility approaches, which provide a better understanding of companies' human capital disclosure. In addition, it seeks to enrich the debate about the effects of corporate governance mechanisms– such as boards of directors and managerial ownership – on human capital disclosure.

Keywords Corporate governance, Human capital disclosure, Social responsibility, Intellectual capital, Corporate reports

Paper type Research paper

1. Introduction

Companies are operating in a competitive global environment characterized by knowledge-based economies (Bontis and Fitz-enz, 2002; Mariano and Walter, 2015; Olander *et al.*, 2015),

the growing importance of intangible resources (Guthrie and Petty, 2000; Cuozzo *et al.*, 2017; Corvino *et al.*, 2019), greater interest in social responsibility (SR) and corporate governance (CG) (Rodrigues *et al.*, 2017; Barrena-Martinez *et al.*, 2019; Gallardo-Vázquez *et al.*, 2019), and by the increasing demand for more corporate information from markets, organizations, users, suppliers and other relevant stakeholders (Tejedo and Araujo, 2016).

Authors such as Guthrie and Petty (2000), Edvinsson (2013), Abhayawansa (2014), Cuozzo *et al.* (2017) and Corvino *et al.* (2019), among others, have considered that intellectual capital (IC) – i.e. an organization's reputation and image, employee motivation, as well as its ability to innovate and launch new products and services in the market, and to establish a stable relationship with clients and suppliers (Castilla-Polo and Ruiz-Rodriguez, 2017, p. 506) – is a crucial intangible resource to the success of contemporary organizations. Among the three categories of IC [human capital (HC), relational capital and structural capital (Stewart, 1997; Bontis, 1999; Abhayawansa and Abeysekera, 2008; Guthrie *et al.*, 2006; Gamerschlag, 2013; Dumay, 2016)], HC is recognized as the most important element in terms of creating long-term competitive advantage (Beattie and Smith, 2010; Cabrilo *et al.*, 2014; Amankwah-Amoah, 2018; Torres *et al.*, 2018). HC refers to factors such as the knowledge, skills, attitudes, creativity, aptitude and commitment possessed by employees of an organization (Bontis and Fitz-enz, 2002; Abhayawansa and Abeysekera, 2008; Gamerschlag, 2013; Pisano *et al.*, 2017).

Knowledge management practices can help companies retain employee talent and improve their competitive advantages (Bontis and Fitz-enz, 2002; Mariano and Walter, 2015; Torres *et al.*, 2018). Tejedo and Araujo (2016) and Frangieh and Yaacoub (2019) point out that workplace relationships improve when companies engage in socially responsible human resource management practices such as avoiding discrimination and promoting equality, and encouraging the participation and education of their employees, among others. These practices help to attract, retain, and motivate workers, and to improve their engagement with the company. They are an important aspect of SR in order to be consistent with the ethical, labour and social requirements demanded by employees and by society in general. According to Pedrini (2007), corporate responsibility practices aimed at improving intangible resources, specifically knowledge resources – generate better financial performance and long-term sustainability (Adams and Larrinaga-González, 2007; Cooper and Owen, 2007; Edvinsson, 2013; Gallardo-Vázquez *et al.*, 2019).

The European Commission (2011) suggests that the disclosure of social information, including information on HC, can facilitate engagement and build trust between companies and stakeholders. Consequently, HC disclosure could be a key method for providing stakeholders with the information they need to assess a company's actions concerning its employees. In this context, the desire of companies to meet the needs of employees, other stakeholders and the general concern to ensure socially responsible behaviour (Tejedo and Araujo, 2016) provided the impetus for this research to identify the position of companies concerning the necessity of disclosing information about HC.

Researchers have typically used the content analysis methodology to study the nature and the extent of companies' HC disclosure. Regarding the content of the information on HC, prior studies have generally investigated HC disclosure from either an IC perspective or a SR perspective in isolation. As discussed above, an IC perspective takes into consideration aspects related to employees' cumulative knowledge and capabilities, which influence a company's value and competitive advantage (Abhayawansa and Abeysekera, 2008; Bontis and Fitz-enz, 2002; Jindal and Kumar, 2012; Edvinsson, 2013; Cabrilo *et al.*, 2014; Corvino *et al.*, 2019). Likewise, other researchers have also studied HC in relation to SR, considering the "triple-bottom line" concept of sustainable development (Gray *et al.*, 1996; Hackston and Milne, 1996; Adams and Larrinaga-González, 2007; Gallardo-Vázquez *et al.*, 2019). This approach focuses on social and ethical issues surrounding the relationships between workers and companies (Muttakin and Khan, 2014; Wang, 2017; Yu *et al.*, 2017; Cui *et al.*, 2018).

Previous studies using content analysis have endeavoured to understand the content and level of HC disclosed by companies, but the findings of these studies provide mixed results. Some studies suggest that differences between the various components and categories of the HC, as well as overall levels of HC disclosure reflect the relative importance given by companies to these issues (see, Abhayawansa and Abeysekera, 2008; Jindal and Kumar, 2012; Muttakin and Khan, 2014; Yu et al., 2017). Additionally, the lack of a consistent method to define, measure and report HC makes it difficult to set a common coding framework and to study HC disclosure (Castilla-Polo and Ruiz-Rodriguez, 2017; Pisano et al., 2017). Given this context, Abhayawansa and Abeysekera (2008) argue that a gap arises from the different conceptualizations of HC, and that future studies not only need to conceptualize HC as the stock of knowledge but also to take into account the specificity of that knowledge to the firm, the idiosyncratic human resource management practices as well as the social fabric embedded in the organization (Abhayawansa and Abeysekera, 2008). To address these limitations, this study begins to bridge the gap in the HC disclosure literature with the intention of proposing, developing and applying a more comprehensive and complete framework for coding information on HC. Based on the literature review, it enhances the conceptualization of HC by integrating both the IC and SR perspectives, which had previously been studied in isolation.

HC disclosure has the potential to play a fundamental role in stakeholders' decision-making processes. However, issues regarding the access of information can occur. For example, information asymmetries can arise between various parties, inside or outside the company, i.e. between managers and owners, or between managers and stakeholders. The existence of information asymmetries can lead to opportunistic behaviour on behalf of the management (Li et al., 2008; Wang, 2017). A high level of HC disclosure provides a more intensive monitoring mechanism for a company to reduce opportunistic behaviour and information asymmetry between a company's management and its stakeholders (Hill and Jones, 1992; Michelon and Parbonetti, 2012). As suggested by Caputo et al. (2016), it is possible to assert that voluntary disclosure about HC could, if correctly managed, be a useful instrument for reducing relevant information gaps. Given these findings, it seems worthwhile to study whether the way companies are governed can influence the information policy on HC disclosure.

In this regard, and according to the literature (Cerbioni and Parbonetti, 2007; Li et al., 2008), an effective monitoring mechanism has been CG, which plays an important role in reducing information asymmetries and solving agency conflicts (Abeysekera, 2010; Frias-Aceituno et al., 2013; Rodrigues et al., 2017). According to the agency-stakeholders and resource-based theories, the Board of Directors (BD) is one mechanism of CG for supervising and monitoring managerial actions (Dienes and Velte, 2016; Fuente et al., 2017), not only to reduce agency cost but also to uphold companies' public image and reputation before the stakeholders (Tejedo and Araujo, 2016). Michelon and Parbonetti (2012) argue that voluntary disclosure policies emanate from the BD, which is the "apex of the decision-making process" (Kassinis and Vafeas, 2002, p. 400) and is responsible for social strategy (Bear et al., 2010; Amran et al., 2014; Fuente et al., 2017). Legitimacy theory suggests that the BD can be seen as a mechanism of legitimacy, because its role is to ensure that the company is managed efficiently, with top managers overseeing operations and ensuring that stakeholders' interests are taken into account at the highest levels of the decision-making process (Michelon and Parbonetti, 2012; Frias-Aceituno et al., 2013).

Some papers have analysed the link between specific characteristics of the BD and IC disclosure or SR disclosure (e.g. Cerbioni and Parbonetti, 2007; Li et al., 2008; Abeysekera, 2010; Rodrigues et al., 2017; Cucari et al., 2018). As reported by Michelon and Parbonetti (2012) when it comes to the relationship between different board characteristics and sustainability disclosures, voluntary disclosure can be conditioned by certain attributes of the BD, such as

independence, gender diversity or board activity (Bear *et al.*, 2010). However, there is still much to learn about the impact of board composition on HC disclosure. Thus, there is a gap in the literature that this paper proposes to fill, by exploring the content and extent of HC information and its relationship with characteristics of the BD. Furthermore, the extant literature in the field of CG area has usually focused on the BD without considering the moderating role that can be played by other CG mechanisms, such as ownership structure, and managerial ownership in particular. Managerial ownership acts as a control mechanism by aligning the interests of managers and shareholders/stakeholders. Managers are expected to make decisions that increase the company's value and its shareholders' wealth, consequently increasing their own wealth. As far as is known, this research seems to be the first to provide original evidence that managerial ownership plays a major role as a moderating variable that influences board's motives toward HC disclosure practices.

Taking into consideration the prior reasoning and drawing from theoretical arguments that encompass the stakeholder-agency, legitimacy and resource-based theories (Barney, 1991; Hill and Jones, 1992; Deegan, 2002), this study addresses the following research questions: What is the content and extent of HC disclosure as studied through a codification framework that encompasses the IC and SR perspectives? How does a BD's composition and functioning impact HC disclosure? Does managerial ownership moderate the influence of a BD's composition and functioning on HC disclosure? In order to address these questions, an empirical research was conducted using a mix of qualitative and quantitative approaches. These approaches included content analysis (as a method for the elaboration of disclosure indexes) of the corporate reports of Spanish companies, and different dynamic linear panel regression models, which addressed the hypotheses using a balanced panel data sample of 210 company-year observations from 2007 to 2016.

Spain is a particularly fascinating country for conducting this research, due to several reasons. Firstly, the country has been known for proactively promoting the preparation and dissemination of corporate reports containing non-financial, socially relevant information (Sierra *et al.*, 2013; Reverte, 2015). Secondly, Spanish business is characterized by high ownership concentration in the hands of a small group of shareholders, and by a low level of development of capital markets (Fuente *et al.*, 2017). Thirdly, Spanish companies have a CG system where there is no organizational separation between management and supervision, attributing power to the BD (one-tier board system). In this case, the BD is made up of diverse types of board members, some of whom have a particular interest in the company. This is an example of managerial ownership, a factor which can play critical role in ensuring that senior management acts in the best interests of the owners and the rest of the stakeholders. Finally, because Spain is a country where legal protection of shareholders is not as extensive as that of Anglo-Saxon markets (Gutierrez and Surroca, 2014), this study was able to extend on previous empirical evidence.

This study contributes to the literature on HC disclosure because it introduces a broader conception of HC to coding information in order to improve stakeholder accountability, which provides a better understanding of companies' HC disclosure policy. Secondly, it seeks to enrich the debate about the effects of BD characteristics on HC disclosure. Thirdly, it makes an original contribution to the literature by using managerial ownership as a moderating variable to investigate the effect of the ownership structure on the relationship between BD and HC disclosure. Finally, it builds off the evidence in the existing literature indicating that the CG mechanisms are endogenously determined and that the findings of most published studies are affected by endogeneity (e.g. Hermalin and Weisbach, 2003; Michelon and Parbonetti; 2012; Wintoki *et al.*, 2012; Arayssi *et al.*, 2016). This study addresses the problem of endogeneity by applying the Generalized Method of Moment (system-GMM) estimator in dynamic linear panel regression.

The study has practical, social and political implications which offer new insights into understanding companies' communication strategies about HC. It suggests that non-mandatory recommendations would not have the same effect as mandatory recommendations in terms of companies' information disclosure. Moreover, the research sheds light on the relationship between strategic HC disclosure and BD members, as well as the moderating role of managerial ownership.

The paper proceeds as follows: The next section discusses the literature review and hypotheses development. Section 3 presents the research design and methodology. The most relevant results and discussion are presented in Section 4. Section 5 presents the conclusions of the study.

2. Literature review and hypotheses development

2.1 Human capital disclosure

HC constitutes one of the main assets a company possesses, driving value creation and leading to competitive advantages in the modern knowledge economy (Stewart, 1997; Bontis, 1999; Cuganesan, 2005; Gamerschlag, 2013; Pisano et al., 2017; Amankwah-Amoah, 2018). It is a "thinking asset" found in the employees of the companies (Edvinsson and Malone, 1997; Roos et al., 2001) and it comprises the combined knowledge, skills, abilities, creative capabilities, leadership and experience acquired by employees during their lifetimes (Beattie and Smith, 2010; Jindal and Kumar, 2012; Cabrilo et al., 2014; Claver-Cortés et al., 2015). According to Bontis and Fitz-enz (2002), the essence of HC is the sheer intelligence of the organizational member. Without HC, businesses would be unable to function (Edvinsson, 2013). There is also a growing concern with socially responsible behaviour (Cinquini et al., 2012; Tejedo and Araujo, 2016). This concern is in line with respect for labour rights and other ethical values, which seek to improve workers' quality of life and social conditions in important areas such as employment, health and safety, non-discrimination, disciplinary practices and freedom of association, among others (Adams and Larrinaga-González, 2007; Cooper and Owen, 2007; Pedrini, 2007; Pisano et al., 2017; Yu et al., 2017).

Tejedo and Araujo (2016) claim that HC information improves stakeholders' knowledge about companies, which in turn enhances their decision-making process. However, the value of human resources may not be adequately reported to stakeholders, partly due to the limitations of the traditional accounting system (Abeysekera, 2007; Gamerschlag, 2013) and the fact that companies disclose limited information about these resources (Cordazzo, 2007; Beattie and Smith, 2010; Cuozzo et al., 2017; Pisano et al., 2017). In this way, the traditional accounting system does not reflect the companies' true value, therefore undermining usefulness of the accounting-based information (Bozzolan et al., 2003; Castilla-Polo and Ruiz-Rodriguez, 2017; Corvino et al., 2019).

According to Frias-Aceituno et al. (2013) and Cui et al. (2018), it is expected that information asymmetry could be mitigated by the increase of voluntary disclosure, even though this disclosure would incur some proprietary costs. These costs include the risk of losing competitive position or revealing information, and the risk of stakeholders misinterpreting this information. Voluntary disclosure improves companies' potential to create value and market efficiency (Cooper and Owen, 2007; Gamerschlag, 2013; Cabrilo et al., 2014; Caputo et al., 2016), which establishes trust with stakeholders and enhances corporate image, reputation and prestige (Wang, 2017), thus legitimizing companies' actions (Gray et al, 1996; Hackston and Milne, 1996).

In this context, companies tend to disclose HC information in order to communicate with stakeholders (Abeysekera, 2007; Tejedo and Araujo, 2016) and reduce information asymmetry, leading to lower agency costs in turn (Li et al., 2008). Moreover, drawing from the resources-based theory, HC is the main strategic resource for creating and maintaining companies' competitive advantage (Abhayawansa and Abeysekera, 2008; Corvino et al.,

2019). According to Tejedo-Romero (2016), Dumay (2016) and Pisano *et al.* (2017), HC disclosure refers to the way in which companies release IC information that was "previously secret or unknown". Thus, HC disclosure may allow companies to develop and enhance their corporate image and provide stakeholders with useful information for investment and non-investment decisions.

HC disclosure has been studied under two perspectives: IC and SR. Different frameworks have been developed to conceptualize the importance of IC (Sveiby, 1997) and make its measurement possible (Meritum, 2002). The majority of empirical research on IC disclosure content analysis was based on the initial framework of Sveiby (1997) (see Castilla-Polo and Ruiz-Rodriguez, 2017; Cuozzo *et al.*, 2017; Pisano *et al.*, 2017). It classifies intangibles into three categories: people's skills, internal structure and external structure. Guthrie and Petty (2000), in their study about IC disclosure in Australia, changed Sveiby's model by developing the following categories: HC, internal capital and external capital. This model includes a broad range of employee characteristics such as education, training, experience, work-related knowledge, skills, competencies, values and attitudes, among others (Li *et al.*, 2008). This pioneering study by Guthrie and Petty (2000) was later replicated by other scholars (Abeysekera, 2007; Nurunnabi and Hossain, 2011). Additionally, there are several frameworks and guidelines for measuring and reporting IC (Meritum, 2002) which recommend the use of a new type of stand-alone report called an IC report (for a review of the principal guidelines and frameworks developed, see Abhayawansa, 2014; Castilla-Polo and Ruiz-Rodriguez, 2017; Cuozzo *et al.*, 2017).

The latter perspective – SR– considers the concept of the "triple-bottom line" of sustainable development: economic, environmental and social (Adams and Larrinaga-González, 2007). The SR perspective on HC disclosure focuses on socio-labour factors, including information on social and ethical issues concerning relations between workers and companies, health and safety in the workplace, diversity and equal opportunities, among others (Yu *et al.*, 2017; Gallardo-Vázquez *et al.*, 2019). Furthermore, frameworks have been proposed to develop globally applicable guidelines for reporting on the economic, environmental and social impact of companies in stand-alone SR reports (GRI, 2013; Reverte, 2015). Most of the existing empirical research on SR disclosure content analysis is based on the categories indicated by the GRI's reporting guidelines (Fuente *et al.*, 2017; Cui *et al.*, 2018).

This study introduces a broader conception of HC to code information (see Table 2), considering aspects of both IC and SR in order to provide a better understanding of HC disclosure. Therefore, HC is defined as a knowledge resource. Aspects of HC such as employees' knowledge, experience, values, skills, abilities, attitude, commitment, satisfaction and creativity, all contribute to generating wealth in companies. Thus, companies must behave in an ethical and responsible way towards their employees, implementing SR policies such as equal opportunities and diversity, health and safety at work, training and education, labour relations and union activity. Such policies contribute to the creation of sustainable competitive advantages.

The research draws on the stakeholder-agency theory (Hill and Jones, 1992), legitimacy theory (Deegan, 2002) and resource-based theory (Barney, 1991) to frame the reasons why companies disclose HC information. According to the stakeholder-agency theory, companies should attempt to meet multiple goals of a wide range of stakeholders, rather than just those of shareholders (Hill and Jones, 1992). According to Michelon and Parbonetti (2012), this approach illustrates how management can satisfy the competing interests of stakeholders, claiming that voluntary disclosure should be expanded by providing information to all those who have a legitimate interest in the company. Based on legitimacy theory, Caputo *et al.* (2016, p. 82) point out that legitimacy is relevant in explaining the "value" of voluntary corporate disclosure because it calls attention to the fact that the survival of every type of

organization depends on its ability to efficiently communicate its value to the market. Hence, companies make HC disclosures in order to gain or maintain legitimacy with powerful stakeholders. Finally, according to Abhayawansa and Abeysekera (2008), resource-based theory explains the strategic importance of HC as a resource for creating long-term sustainable competitiveness (Barney, 1991). Therefore, in order to retain this resource and preserve competitive position, companies may be more or less interested in revealing HC information, depending on the advantages or disadvantages their HC provides.

2.2 The influence of corporate governance on human capital disclosure

The BD is responsible for determining disclosure policies and protecting the interests of all stakeholders involved with the company (Prado-Lorenzo and Garcia-Sanchez, 2010; Hidalgo et al., 2011; Dienes and Velte, 2016). Three theoretical perspectives are used to analyse the role of CG on HC disclosure. From the stakeholder-agency theory perspective, the BD is one of the mechanisms of CG for the supervision, monitoring and advising of managerial actions (Fuente et al., 2017). It plays an important role in achieving holistic transparency (Cerbioni and Parbonetti, 2007; Frias-Aceituno et al., 2013) by managing information disclosure in corporate reports (Li et al., 2008). Companies disclose HC information in order to improve stakeholders' knowledge and trust concerning the companies' behaviour and performance (Garcia et al., 2011), and to reduce investors' uncertainty about the impact of HC on the company's value. High HC disclosure is predicted to provide a more "intensive monitoring package" for a company to reduce opportunistic behaviour and information asymmetry (Cerbioni and Parbonetti, 2007; Michelon and Parbonetti, 2012; Wang, 2017). Under the legitimacy theory, the BD is considered an accountability mechanism for a company to gain legitimacy and improve its reputation. According to Michelon and Parbonetti (2012, p. 483), good CG can convey information to the general public that the company is well managed, that top managers properly oversee the firm and that stakeholders' interests are taken into account. The resource-based theory highlights the role of the BD in contributing to the company's reputation, expanding the company's business contacts and giving strategic advice (Abeysekera, 2010). Following Rodrigues et al. (2017, p. 4), the BD helps a company obtain valuable resources to facilitate its competitive advantage through offering strategic advice, which enhances the company's reputation. This theory emphasizes several factors: the value creation ability of a BD; the fact that intangible resources and capabilities are the company's most important sources of success; and the fact that intangible resources are created, enhanced or depleted through stakeholder relationships. Together, these factors facilitate companies' competitive advantage.

Hence, drawing on the theories above, this paper analyses the influence of the composition (independence and gender diversity) and functioning (activity) of the BD, as a mechanism that can influence HC disclosure. In addition, managerial ownership –i.e. the proportion of ordinary shares held by senior managers, including directors and managers –is another internal CG mechanism that can help align interests of managers and shareholders, and managers and other stakeholders (Eng and Mak, 2003; Rodrigues et al., 2017). This mechanism can contribute to the reduction of information asymmetries and agency problems (Cordazzo, 2007; Hidalgo et al., 2011; Pisano et al., 2017). The agent (manager), who has better access to company's information than the principal (shareholders/stakeholders), and whose actions are unobservable by the principal, can engage in activities to enhance his/her personal goals. Hence, if the manager has shares of the company, he/she has more incentives to provide information on HC in order to enhance the value of the company and its shareholders' wealth, and to reinforce the company's legitimacy in the eyes of stakeholders, as all this will increase his/her own wealth (Bukh et al., 2005; Rodrigues et al., 2017). Therefore, managerial ownership could moderate the relationship between the BD and HC disclosure, striving to meet the interests and gain the approval of the rest of the shareholders –including the manager– and the rest of the stakeholders. This led to the initial interest in studying the moderating role of managerial ownership.

2.2.1 Board Independence. This is associated with the number of independent directors in a BD (Rodrigues *et al.*, 2017; Wang, 2017). Independent directors are non-executive members who possess diverse views, skills and professional experience. According to the resource-based theory, independent directors are worse at formulating and managing corporate affairs than executive directors, due to them having less internal knowledge of the company (Abhayawansa and Abeysekera, 2008; Abeysekera, 2010). Therefore, a higher presence of independent directors will have a substitutive effect, leading to the disclosure of less information about HC (Rodrigues *et al.*, 2017). In the same vein, and according to the legitimacy theory, Barako *et al.* (2006) point out that companies with a high level of independent directors have a lesser need to rely on corporate reporting to prove the legitimacy of their operations to their stakeholders. In line with the stakeholders-agency theory, a BD that includes independent directors can assume the role of monitoring in order to mitigate the self-interest of executive directors and managers that compromises stakeholders' interests (Jensen and Meckling, 1976; Hill and Jones, 1992; Abeysekera, 2010). Their presence in the BD could be considered a complementary mechanism allowing more information to be disclosed. According to Cerbioni and Parbonetti (2007), the presence of a majority of independent directors is crucial to ensure more effective control of top management and to influence voluntary disclosure. Previous research showed mixed results concerning the influence of board independence on HC disclosure. Some scholars observed a positive relationship between board independence and voluntary disclosure (Arayssi *et al.*, 2016), some scholars found no relationship at all (Hidalgo *et al.*, 2011), while others perceived a negative relationship (Eng and Mak, 2003; Rodrigues *et al.*, 2017). Li *et al.* (2008, p. 139) suggest that independent directors, as a group, do not have much influence on voluntary disclosure decisions, since more independent directors are not always the best solution for the simple reason that an excessive number of independents (who do not exercise executive tasks) can affect the efficiency of the BD (Rodrigues *et al.*, 2017). In addition, high managerial ownership gives the manager a high level of control over the company, making it difficult for minority shareholders and other stakeholders to control the actions of the manager. Independent directors, on the other hand, represent the interests of minority shareholders and those stakeholders affected by or interested in the company (Prado-Lorenzo and Garcia-Sanchez, 2010; Dienes and Velte, 2016). In this situation, managers – in order to avoid the control and monitoring of independent directors – are more likely to voluntarily disclose information so as to show that they have acted in the best interests of the owners, stakeholders and society in general. With previous arguments in mind, the following hypotheses are presented:

H1. There is a relationship between Board Independence and HC disclosure:

H1a. Board Independence has a positive effect on HC disclosure.

H1b. Board Independence has a negative effect on HC disclosure.

H2. Managerial Ownership moderates the relationship between Board Independence and HC disclosure.

2.2.2 Gender Diversity. This is associated with the number of female directors in a BD. Drawing from resource-based theory and according to Amran *et al.* (2014), higher gender diversity brings a combination of resources and expertise, greater knowledge, skills and a diverse set of leadership experiences (Cucari *et al.*, 2018). Based on legitimacy theory, gender diversity can be treated as an effective way to increase the moral legitimacy of society. The stakeholders-agency theory suggests that a more diverse board is more likely to represent diverse stakeholders, which should influence HC disclosure (Rodrigues *et al.*, 2017). Companies with a gender-diverse board tend to adopt more socially responsible approaches than those with fewer or no women (Post *et al.*, 2011; Ferrero-Ferrero *et al.*, 2015), which

reduces information asymmetry and mitigates agency problems for all stakeholders. According to Prado-Lorenzo and Garcia-Sanchez (2010), female directors exhibit greater diligence in monitoring, leading to better manager oversight, greater transparency and a richer information environment. In the same way, the resource-based theory considers that all forms of diversity in members' profiles (including gender) gives the board a wider range of competencies. These characteristics could positively influence BD decisions concerning disclosure policy to all stakeholders. Bear et al. (2010), Ferrero-Ferrero et al. (2015) and Rao and Tilt (2016) examined the gender composition of the board and the influence of female directors on BD decisions concerning disclosure, and they found that the increase of female representation on boards is associated with an increase in the level of information disclosure. However, previous studies obtained mixed results concerning the influence of gender diversity on information disclosure. On one hand, Giannarakis (2014) and Cucari et al. (2018) found a negative relationship between the presence of women on the board and disclosure, suggesting that a female director does not necessarily influence BD decisions concerning disclosure. On the other hand, Rodrigues et al. (2017) concluded that gender diversity is not one of the attributes influencing the extent of disclosure. In addition, information asymmetry that often arises in agency problems can be avoided by managerial ownership. Managerial ownership can balance the interests of managers with shareholders and stakeholders, thus diminishing the need for more information disclosure. Hence, managerial ownership can moderate the relationship between gender diversity and HC disclosure. This leads to the following hypotheses:

H3. Gender diversity has a positive effect on HC disclosure.

H4. Managerial ownership moderates the relationship between gender diversity and HC disclosure.

2.2.3 Board activity. This refers to the number of board meetings held by the board of directors per year. The stakeholder-agency theory considers board activity a mechanism for measuring the dynamics of the decision-making process and communication between the directors, managers, shareholders and other stakeholders. According to Adams and Ferreira (2012), board meetings are essential for directors to take part in the decision-making process, as well as to acquire information and perform their monitoring and advisory roles. In addition, based on legitimacy theory, board meetings allow directors to share more information and perspectives, ensuring the legitimacy of all stakeholders. Resource-based theory suggests that the frequency of board meetings is an important means for improving board effectiveness (Conger et al., 1998). A company with frequent board meetings is more likely to perform its responsibilities in accordance with shareholders' interests (Rodrigues et al., 2017). BD meetings can be considered a measure of the effectiveness for monitoring and controlling the decision-making process (Dienes and Velte, 2016), only if all the members attend board meetings. According to Allegrini and Greco (2013) and Frias-Aceituno et al. (2013), a company with an active BD encourages the members to show greater interest in disclosing information, in order to keep stakeholders informed of their efforts. However, given that the Chief Executive Officer (CEO) sets the agenda of BD meetings, and that routine tasks take up a large portion of the BD's time, more meetings do not necessarily imply better monitoring (Fuente et al., 2017). According to Vafeas (1999), a high number of BD meetings could lead to inoperability. In this sense, it is likely that many BD meetings will make management control less effective and consequently there will be less information disclosure. In this way, it is possible that a substitution effect occurs. This suggests that the association between BD activity and HC disclosure is non-linear (curvilinear). Therefore, an inverted *U*-shaped relationship is expected to exist between both variables. Also, managerial ownership is directly affected by the decisions made by the BD due to their shareholding in the company. Hence, a convergence of interests will motivate better

decision making regarding the HC's disclosure policy. The hypotheses were formulated as follows:

H5. Board activity has a positive effect on HC disclosure.

H6. There is a non-linear relationship (inverted *U*-shaped) between board activity and HC disclosure.

H7. Managerial ownership moderates the relationship between board activity and HC disclosure.

2.3 Spanish regulatory context

CG and non-financial information reports in Spain have followed international trends, as well as the recommendations and requirements from the EU and international organizations. In the mid-1990s, there was a consensus regarding the need to rethink the role and nature of the structure of BD according to CG codes. Later, the Unified Code of Corporate Governance (CNMV, 2006) distinguished two types of directors: internal or executive directors and external directors. This Code was updated in 2015 and was characterized by the adoption of the "comply or explain" principle (CNMV, 2015).

Regarding non-financial information, the first Spanish document that referenced the importance of social information and IC disclosure was the White Paper for the Reform of Accounting in Spain. This document recommended that the memory [1] should contain information on social and intangible resources. The annual financial statements and the management commentary are mandatory, despite other reports being voluntary, such as the CR and IC reports. The management commentary must contain, among other items, information about the company's human resources, provided it is relevant to understanding the business's evolution. The Spanish Government and the Parliament were committed to promoting the development of socially responsible practices and helped support a major debate in 2007 with a national forum of experts from the public sector and business world. In the Parliament, a Sub-Commission on SR was created to discuss SR trends in companies, in order to develop appropriate legislative measures.

Recently, the Spanish Government anticipated possible outcomes of the 2014/95/EU Directive by approving the Law 2/2011 – the "Sustainable Economy Law" (Spanish Parliament, 2011). This legislation aimed to promote responsible practices that could become significant drivers of the country's competitiveness and its transformation into a more sustainable society (Reverte, 2015; Luque-Vílchez and Larringa, 2016). The transposition of Directive 2014/95/EU by the Royal Decree-Law 18/2017 established new mandatory non-financial reporting requirements, which would be enforced from 1st January 2017.

Given this context, it seems appropriate to conduct a study in Spain on the influence of the CG mechanisms on HC disclosure.

3. Research design and methodology

3.1 Research methods

In order to address the research questions and to test the hypotheses, a qualitative and quantitative approach was adopted, focusing on a deductive method. This research empirically examined the relationship between CG mechanisms and HC disclosure. It began by hypothesizing a relationship between these variables, based on the theoretical frameworks (stakeholders-agency, legitimacy and resource-based theories) which assume an impact of the CG mechanism on HC disclosure. The research was conducted in two steps. Firstly, a content analysis method was used to create a disclosure index (HC index) and six disclosure sub-indexes (see Section 2.2 and Table 3). Content analysis can be regarded as an appropriate methodology for the study of HC disclosure, since it was applied in previous

research in the fields of IC and SR (Barako *et al.*, 2006; Abeysekera, 2007; Michelon and Parbonetti, 2012; Frias-Aceituno *et al.*, 2013; Caputo *et al.*, 2016; Castilla-Polo and Ruiz-Rodriguez, 2017; Wang, 2017). Secondly, regression models for panel data were developed using an HC index as a dependent variable, using board independence, gender diversity and board activity as independent variables, and using managerial ownership as a moderating variable. In addition, the study used the CEO duality, sector, company age, size, profitability and directive as control variables. The population and sample, variables and data collection and research models are explained below.

To carry out the content analysis, the MAXQDA 12 software was used, although the coding was performed manually. Statistical analysis was carried out using STATA 14.2 software, due to its robustness.

3.2 Population and sample

The starting population comprises companies listed in the Ibex35 index, which are the most representative of Spain (Sierra *et al.*, 2013). These companies represent a capitalization and trading account of over 80% of the total Spanish stock exchanges, with a generated added value of about 30% of listed and unlisted Spanish companies in 2016. They represent the main sectors of the Spanish economy, where disclosure and transparency are a critical issue due to the growing number of stakeholders.

To select the sample, a non-probabilistic sampling was conducted. It selected those companies which were repeatedly included in the Ibex35 from 31st December 2007 [2] to 31st December of 2016 (fiscal year). The final sample included 21 companies, representing 60% of the starting population for the period of 2007–2016. The choice of this period was motivated by the fact that, in 2007, the Spanish Government and Parliament promoted initiatives for Spanish companies to voluntarily implement SR strategies and to reveal voluntary (non-mandatory) information. The year 2016 [3] was the last year corporate reports were available. A balanced panel dataset was used with 210 observations (21 companies for 10 years).

Table 1 shows the distribution of the sample by sector. Following Sierra *et al.* (2013), financial and real estate services sectors were included in the sample, representing 25.7% of the Ibex35 companies. Hence, all sectors of the population were represented.

3.3 Variables and data collection

3.3.1 Dependent variable. HC index was the dependent variable. This was constructed using content analysis (Krippendorff, 2004; Guthrie *et al.*, 2006; Guthrie and Abeysekera, 2006; Beattie and Thomson, 2007; Castilla-Polo and Ruiz-Rodriguez, 2017).

Content analysis is the method used for the systematic analysis of the information contained in corporate reports (Hackston and Milne, 1996; Krippendorff, 2004). Guthrie and Abeysekera (2006) point out that content analysis, as a data collection technique, involves coding qualitative and quantitative information in various categories based on the selected criteria, in order to obtain disclosure trends and patterns (Guthrie and Petty, 2000; Bozzolan

Sector	Initial population in 2016		Final sample (2007–2016)	
	Companies	%	Companies	%
Consumer goods	3	8.57	1	4.76
Basic materials/industry and construction	7	20.00	5	23.81
Petrol and energy	6	17.14	5	23.81
Consumer services	6	17.14	2	9.52
Financial and real estate services	9	25.71	6	28.57
Technology and telecommunications	4	11.43	2	9.52
Total	*35*	*100*	*21*	*100*

Table 1.
Percentage of participation by sector

et al., 2003; Bukh *et al.*, 2005; Yi and Davey, 2010). Following the suggestion of Bozzolan *et al.* Influence of CG
(2003), Guthrie and Abeysekera (2006) and Beattie and Thomson (2007), different steps were characteristics
on HC
disclosure

taken to conduct the content analysis: (1) the selection of the coding framework used to capture and classify information, (2) the definition of the units of analysis, (3) the coding and (4) the assessment of the level of reliability achieved.

(1) To capture and classify information, the coding framework of this study integrates Sveiby's (1997) approach and follows the guidelines of the Global Reporting Initiative's approach (GRI, 2013), as well as other elements of previous research that were based on both approaches (Guthrie and Petty, 2000; Abeysekera, 2007; Cordazzo, 2007; Yi and Davey, 2010; Nurunnabi and Hossain, 2011; Jindal and Kumar, 2012; Dienes and Velte, 2016; Cui *et al.*, 2018). For a review of the main guidelines and frameworks developed, see Mariano and Walter (2015). The subcategories and elements of HC allow the code of the information to be analysed (see Table 2). The framework for coding the information was organized into 5 subcategories and 24 intangible elements/items.

(2) To define the units of analysis, the terminology of Krippendorff (2004) was used, indicating that *sampling units* referred to the SR or integrated reports. Initially, the objective was to study SR reports [4], because this is a way for companies to voluntarily meet the demands of their stakeholders. SR reports are a major means of companies' communication with different sets of stakeholders (Cinquini *et al.*, 2012) because they share similarities with IC reports while offering a more complete analysis of voluntary disclosure (Pedrini, 2007). These reports have been found to be better suited than annual reports to analyse levels of voluntary disclosure of HC information in Spanish companies (Tejedo-Romero, 2016). Companies are interested in disclosing these reports as a means of reducing agency costs and information asymmetries, thereby improving the legitimacy of their actions (Gray *et al.*, 1996; Sierra *et al.*, 2013). However, the companies in the sample opted for the following alternative reports: (1) stand-alone SR report, (2) SR reports included as a section within the annual report and (3) IR [5]. Because the stand-alone SR report contains the most extensive and detailed information, it was used for conducting the research analysis in the following cases: when companies produced both the stand-alone SR report and the SR reports included as a section within the annual report, or when they produced both the stand-alone SR report and the IR. Nonetheless, the information disclosed in the annual reports and IRs overlaps the stand-alone SR reports. Finally, *context units* referred to the sentences and *registration units* referred to the presence or absence of information.

(3) As discussed above, the coding data process was performed manually and each sentence was coded by the following counting rule: a score of 1 was awarded if the company provided information about a specific HC element; and 0, otherwise. This research applied a disclosure index and a set of sub-indexes in order to quantify and assess the level of HC disclosure, as well as of the HC subcategories. An unweighted overall index was applied to a company in relation to the total amount of information disclosed by aggregating the score on each of the elements; in addition, disclosure indexes were also calculated for each subcategory. Weighted indexes were not used because of their inherent degree of subjectivity due to the fact that there is no universally accepted table of weights. Finally, the total disclosure index score was obtained for each company as a ratio between the total disclosure score and the maximum possible disclosure score (see Table 3). Since all items were equally weighted, this adjustment was made in order to not penalize those companies which, for various reasons, could not disclose some of the items under consideration.

HC subcategories	HC elements	Descriptions
Employees (11 items):	1. Employee profile	Characteristics considered relevant for the company's activity: total number of employees, distribution by areas or department in the company, distribution of the workforce, full-time and part-time employees, etc.
	2. Equality and diversity issues	Diversity and equality policies of the company in the following categories: race, religion, gender, disability and other minorities
	3. Health and safety	Information regarding the prevention and the reduction of health and safety risks at work
	4. Labour relations and union activity	Information about the relationship between employers and employees, workers' rights, duties and responsibilities, union activities, representation of workers and flexibility in working hours
	5. Involvement of workers in the community	Worker participation in community work and volunteering
	6. Employee recognition	The company's expression of gratitude to its staff in recognition of the work they have done, such as awards, prizes and other rewards
	7. Important employees	Information related to one or more employees regarding their loyalty, attitude and overall contribution to the success and growth of the company
	8. Employee commitment	Information pertaining to the ways employees identify themselves as members of the company, for example, commitment index, meetings attendance, people involved in a certain activity
	9. Employee motivation	Impulses, desires, aspirations and other factors that improve workplace performance
	10. Employee behaviour	Information regarding employees' optimism, enthusiasm, kindness, attitudes towards change, identification with company objectives and ability to fulfil those objectives
	11. Economic data	Productivity, efficiency, added value, etc.
Education (2 items):	12. Formal education	Employees' explicit knowledge derived from formal educational institutions, regardless of the employees' role in the company
	13. Professional qualification	Workplace activities performed by an individual to demonstrate that he/she knows and has mastered the techniques, as well as the knowledge necessary to carry out tasks successfully
Training and development (6 items):	14. Education and training policy	Information on whether the company carries out training and education policies, and the results of such policies
	15. Education and training expenses and hours	Information about investment and employees' time and attendance
	16. Competence development policy	Information regarding employee development policies and programmes
	17. Career opportunities	Information regarding employees' opportunities to advance their professional careers within the company
	18. Job rotation opportunities	Information related to internal promotion policies
	19. Recruitment policies	Information on employee hiring and replacement plans

Table 2.
Subcategories and elements

HC subcategories	HC elements	Descriptions
Work-related knowledge (3 items):	20. Know-how	The type of knowledge related to the way of doing things, such as skills, abilities and talents that can enhance workplace performance
	21. Employee quality and experience	The knowledge acquired through practice and experience
	22. Performance and results of top management	Information about the performance and results of top management
Entrepreneurial spirit (2 items):	23. Innovative ideas of employees	Information related to creativity, innovation and knowledge exchange
	24. System of suggestions and employee consultation	The system for acknowledging and implementing initiatives or suggestions made by employees

Table 2.

$$\text{Employees}_j \ \text{Subindex} = \tfrac{1}{11} \sum_{i=1}^{11} X_{ij}$$
$$\text{Education}_j \ \text{Subindex} = \tfrac{1}{2} \sum_{i=1}^{2} X_{ij}$$
$$\text{Training and Development}_j \ \text{Subindex} = \tfrac{1}{6} \sum_{i=1}^{6} X_{ij}$$
$$\text{Work related Knowledge}_j \ \text{Subindex} = \tfrac{1}{3} \sum_{i=1}^{3} X_{ij}$$
$$\text{Entrepreneurial Spirit}_j \ \text{Subindex} = \tfrac{1}{2} \sum_{i=1}^{2} X_{ij}$$
$$\text{Human Capital}_j \ \text{Index} = \tfrac{1}{24} \sum_{i=1}^{24} X_{ij}$$

Note(s): Where the HC Index is the unweighted index of disclosure of company j, i is the item or element, X_{ij} is the score obtained by company j of element i. Consequently, X_{ij} assumes the value of 1 if company j has disclosed element i, otherwise it will assume the value of 0 if it has not disclosed it. The total of items that make up the framework of the information on HC is 24. The HC index takes values between 0 and 1

Table 3.
Sub-indexes and index
of HC disclosure

(4) Following the methods of Krippendorff (2004), three types of reliability were conducted in this study: accuracy, reproducibility and stability. *Accuracy* is guaranteed by the coding process conducted by two authors (both with graduate degrees and previous experience in content analysis methodology) and by the following coding procedure: (1) Initially, a set of coding rules was discussed and established; (2) The authors independently conducted an in-depth analysis of reports issued by two pilot companies in order to develop the coding scheme. This analysis was conducted on five reports [6]; (3) The main discrepancies in the coding process (which only occurred in less than 5% of cases) were discussed between the authors and the following was agreed upon: (1) the coding was conducted by meaning, rather than by looking for exact keywords, as some concepts are broad or exact keywords may not be appropriate; (2) qualitative and quantitative information was coded; (3) the coding was not carried out if the concept was implicit; (4) the coding of the tables was arranged in relation to the rows or columns that were treated as a sentence; (5) graphs, charts and diagrams were coded (same treatment as for the tables); (6) images were not encoded; and (7) the repetition of the items or elements was recorded only once. *Reproducibility* was assessed by the Krippendorff's alpha, obtaining a value of 0.80 which is generally agreed upon as an acceptable level (Hackston and Milne, 1996; Bozzolan *et al.*, 2003; Rodrigues *et al.*, 2017). *Stability* was verified in a sample of four

corporate reports issued by two pilot companies and analysed again after one month. The results of these analyses showed no major differences between the first and second rounds of coding.

3.3.2 Independent Variables. Data were collected from the CG reports. Independent variables are detailed below:

Board Independence: This refers to the ratio between the number of independent directors on the board and the total of all board members (Cerbioni and Parbonetti, 2007; Li *et al.*, 2008; Arayssi *et al.*, 2016).

Gender Diversity: This refers to the ratio between the total of female board members and the total of all board members (Arayssi *et al.*, 2016; Prado-Lorenzo and Garcia-Sanchez, 2010).

Board Activity: This is measured by the number of board meetings held during the financial year (Prado-Lorenzo and Garcia-Sanchez, 2010). Furthermore, in order to control potential diminishing marginal effects on HC disclosure, after the maximum level of board activity was passed, the square of the "board activity" variable was also considered to help determine the possibly inverted *U*-shaped relationship.

3.3.3 Moderating Variable. Data were collected from the CG reports. The moderating variable is detailed below:

Managerial Ownership: This represents the percentage of shares held by directors and executive members (Eng and Mak, 2003; Bukh *et al.*, 2005). To assess the potentially moderating influence of Managerial Ownership on Board Independence, Gender Diversity and Board Activity, the following interaction terms were included: *Managerial Ownership*Board Independence, Managerial Ownership*Gender Diversity, Managerial Ownership*Board Activity* and *Managerial Ownership*Board Activity²*.

3.3.4 Control Variables. Data were collected from the CG, annual reports and SABI database.

CEO Duality: This refers to a dummy variable that takes the value of 1 if the CEO and the chairman of the company are the same person, and 0 otherwise (Cerbioni and Parbonetti, 2007; Li *et al.*, 2008; Arayssi *et al.*, 2016). This concentration of power reduces the BD monitoring function and can lead to inefficient and opportunistic behaviour, increasing the risk of information asymmetries (Jensen and Meckling, 1976). Empirical studies found different results concerning the influence of duality on disclosure. Cerbioni and Parbonetti (2007) and Allegrini and Greco (2013) found that duality has a negative association with disclosure. Li *et al.* (2008) and Michelon and Parbonetti (2012) found no significant relationship with voluntary disclosure.

Sector: This is represented by a dummy variable with the value of 1 if a company is in a sensitive sector and 0 otherwise. Sensitive sectors are those that have greater sensitivity towards social issues and are therefore more likely to have socially responsible information policies (Reverte, 2015). For this reason, more HC disclosure is expected. So, consistent with Sierra *et al.* (2013), sensitive sectors were considered to be "Financial Services and Real Estate", "Oil and Energy", and "Technology and Telecommunications." All other sectors classified by the CNMV were considered non-sensitive ("Basic Materials", "Industry and Construction" and "Consumer Goods").

Company Age: Several studies have considered that the age of the company could be a determining factor when it comes to providing voluntary information (Bukh *et al.*, 2005; Cerbioni and Parbonetti, 2007; Michelon and Parbonetti, 2012). A more mature company tends to be more concerned about its reputation and will therefore disclose more information voluntarily (Cui *et al.*, 2018). This variable represents the seniority of the company in the market and is measured by the total operational years of the company.

Size: Company size can be a determining factor in providing voluntary information (Bukh *et al.*, 2005; Cerbioni and Parbonetti, 2007; Hidalgo *et al.*, 2011; Corvino *et al.*, 2019). As a proxy for size, the value of market capitalization can be used (Hoitash *et al.*, 2009; Reverte, 2009).

Profitability: According to Haniffa and Cooke (2005) and Li *et al.* (2008), profitability can be a determining factor in providing voluntary information. The ROA –return on assets – can be used to measure profitability (Li *et al.*, 2008).

Directive: This is a dummy variable which takes a value of 1 for years 2015 and 2016, and 0 for other years. This variable controls the influence of the 2014 EU directive on HC disclosure, before it became mandatory for Spanish companies in 2017. It aims to determine whether companies exhibited a greater degree of HC disclosure as a result of the directive, prior to the mandatory disclosure policy which took effect in 2017.

3.4 Research model

To test the hypotheses, this study used a balanced panel data regression method to examine the moderating role of managerial ownership, as well as the relationship between HC disclosure and the BD's structure, composition and functioning. Panel data permitted the control of unobserved individual and/or time-specific heterogeneity, correlated with explanatory variables (Baltagi, 2014). By combining time-series and cross-sectional data, unobservable individual-specific effects were likewise controlled. According to Michelon and Parbonetti (2012) and Arayssi *et al.* (2016) some of the limitations found in previous research were a consequence of not considering the existence of endogeneity in the relationships between voluntary disclosure and the mechanisms of CG. To solve the endogeneity issue according to the findings of Arayssi *et al.* (2016), several dynamic panel data models were estimated using the system generalized method of moments (system-GMM) estimator [7]. According to Wintoki *et al.* (2012), an important feature of this method is that it relies on a set of "internal" instruments [8] contained in the panel itself: past values of CG mechanisms and HC disclosure can be used as instruments for current realizations of CG. This estimator combines, in a system, the equation in first differences with the same equation expressed in levels. System GMM relies on instruments in the form of lagged levels of the dependent and the independent variables (for the equations in first differences) and lagged differences (for the equations in levels).

In order to examine the relationship between HC disclosure and a BD's structure, composition and functioning, two models were proposed as follows:

$$\begin{aligned} \text{HC}_{it} = {} & \beta_1 \text{HC}_{it-1} + \beta_2 \text{Independent}_{it-2} + \beta_3 \text{Gender}_{it-1} + \beta_4 \text{Activity}_{it-1} + \beta_5 \text{Duality}_{it-1} \\ & + \beta_6 \text{Industry}_{it} + \beta_7 \text{Age}_{it} + \beta_8 \text{Size}_{it} + \beta_9 \text{Profitability}_{it-2} + \beta_{10} \text{Directive}_{it} + \nu_{it} \quad (1) \end{aligned}$$

$$\begin{aligned} \text{HC}_{it} = {} & \beta_1 \text{HC}_{it-1} + \beta_2 \text{Independent}_{it-2} + \beta_3 \text{Gender}_{it-1} + \beta_4 \text{Activity}_{it-1} + \beta_5 \text{Activity}^2_{it-1} \\ & + \beta_6 \text{Duality}_{it-1} + \beta_7 \text{Industry}_{it} + \beta_8 \text{Age}_{it} + \beta_9 \text{Size}_{it} + \beta_{10} \text{Profitability}_{it-2} \\ & + \beta_{11} \text{Directive}_{it} + \nu_{it} \end{aligned} \tag{2}$$

To investigate the moderate role of managerial ownership, model (3) examined the moderating effect on the relationship between a BD's structure, composition and HC disclosure.

$$\begin{aligned} \text{HC}_{it} = {} & \beta_1 \text{HC}_{it-1} + \beta_2 \text{Independent}_{it-2} + \beta_3 \text{Gender}_{it-1} + \beta_4 \text{Activity}_{it-1} + \beta_5 \text{Ownership}_{it} \\ & + \beta_6 \text{Ownership}_{it} * \text{Independent}_{it-2} + \beta_7 \text{Ownership}_{it} * \text{Gender}_{it-1} \\ & + \beta_8 \text{Ownership}_{it} * \text{Activity}_{it-1} + \beta_9 \text{Duality}_{it-1} + \beta_{10} \text{Industry}_{it} + \beta_{11} \text{Age}_{it} + \beta_{12} \text{Size}_{it} \\ & + \beta_{13} \text{Profitability}_{it-2} + \beta_{14} \text{Directive}_{it} + \nu_{it} \end{aligned}$$

$$\tag{3}$$

Finally, the confirmatory model of the hypotheses was as follows:

$$\text{HC}_{it} = \beta_1 \text{HC}_{it-1} + \beta_2 \text{Independent}_{it-2} + \beta_3 \text{Gender}_{it-1} + \beta_4 \text{Activity}_{it-1} + \beta_5 \text{Activity}_{it-1}^2$$

$$+ \beta_6 \text{Ownership}_{it} + \beta_7 \text{Ownership}_{it} * \text{Independent}_{it-2} + \beta_8 \text{Ownership}_{it} * \text{Gender}_{it-1}$$

$$+ \beta_9 \text{Duality}_{it-1} + \beta_{10} \text{Industry}_{it} + \beta_{11} \text{Age}_{it} + \beta_{12} \text{Size}_{it} + \beta_{13} \text{Profitability}_{it-2}$$

$$+ \beta_{14} \text{Directive}_{it} + \nu_{it}$$

(4)

where: $\beta_1, \ldots, \beta_{11}$ are the estimable parameter vectors; $i = 1, \ldots, 21$; $t = 2007, \ldots, 2016$; $\nu_{it} = \mu_i + \delta_t + \varepsilon_{t}$; μ_i represents the unobservable company-specific effect; δ_t represents the unobservable specific time effect (common to all companies); ε_{it} is the remainder stochastic disturbance term in the dynamic model.

In order to limit small-sample problems, the number of lags was limited to one or two periods for the difference equations and used a collapsed instrument matrix to avoid problems arising from the presence of excessive instruments. Robust standard errors were estimated using the *two-step* approach with the Windmeijer (2005) small sample correction in order to avoid biased results. As an additional instrumental variable, board size [9], which was not part of the model, was included to complement the instruments generated by the GMM procedure. The consistency of the system-GMM required the instruments to be valid, i.e. for there to be no correlation of the instruments with the error term and no first-order serial correlation of the error term. The validity of the instruments was tested through a Hansen J test to over-identify restrictions, and through an Arellano-Bond test of serial correlation of the differenced error term.

4. Results and discussion
4.1 Descriptive analysis
Table 4 shows that companies are disclosing information on HC with an average of 0.68, suggesting a high HC score. From 2007 to 2014, HC disclosure increased by a small margin. Therefore, it appears the Spanish Government's initiative concerning companies' SR had a slight influence on the practices of HC disclosure. From 2014 onwards, data show a higher increase in HC disclosure. This suggests that, with the approval of the 2014/95/EU Directive, companies started increasing the level of HC disclosure. By voluntarily adding new information to corporate reports, they anticipated the changes required by the new Directive, which would become mandatory in 2017. This behaviour shows that the new recommendations and requirements for non-financial reporting as external mechanisms (e.g. from Parliament, Government, EU, non-governmental organizations) may help managers align with stakeholders' interests, in anticipation of the future mandatory regulations.

Companies are revealing more information about HC as a means of reducing conflicts of interest with stakeholders. Additionally, they are adopting a more responsible attitude towards stakeholders, disclosing on resources that create long-term sustainable competition. Table 4 suggests that companies give more importance to the training and development dimension, with an average of 0.82 over the studied period. Previous studies, like Jindal and Kumar (2012), found this dimension to be the most revealing. The second most important dimension is the employees, with an average of 0.75. This suggests that employee-related issues are companies' key factors which help satisfy stakeholders' demand for more responsible behaviour concerning HC. However, the less disclosed dimension, with an average of 0.31, is work-related knowledge. This score suggests that aspects related to the

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2007–2016
Human capital											
Mean	0.62	0.64	0.63	0.63	0.65	0.66	0.68	0.70	0.76	0.82	0.68
Standard deviation	0.16	0.10	0.15	0.15	0.09	0.11	0.10	0.10	0.10	0.09	0.13
Max	0.88	0.83	0.83	0.83	0.83	0.83	0.83	0.88	0.92	0.96	0.96
Min	0.25	0.46	0.21	0.21	0.46	0.46	0.50	0.50	0.54	0.63	0.21
Employees											
Mean	0.67	0.70	0.68	0.71	0.72	0.73	0.75	0.78	0.84	0.90	0.75
Standard deviation	0.19	0.13	0.16	0.10	0.11	0.12	0.10	0.11	0.09	0.09	0.14
Max	1	1	1	0.91	0.91	0.91	0.91	1	1	1	1
Min	0.18	0.45	0.27	0.55	0.45	0.45	0.45	0.45	0.55	0.64	0.18
Education											
Mean	0.67	0.62	0.64	0.67	0.67	0.69	0.67	0.67	0.69	0.74	0.67
Standard deviation	0.29	0.22	0.23	0.24	0.24	0.25	0.24	0.24	0.25	0.26	0.24
Max	1	1	1	1	1	1	1	1	1	1	1
Min	0	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0
Training and development											
Mean	0.77	0.80	0.77	0.79	0.79	0.81	0.83	0.84	0.90	0.94	0.82
Standard deviation	0.17	0.13	0.19	0.21	0.19	0.19	0.19	0.19	0.17	0.11	0.18
Max	1	1	1	1	1	1	1	1	1	1	1
Min	0.50	0.67	0.17	0.17	0.33	0.33	0.33	0.33	0.33	0.67	0.17
Work-related knowledge											
Mean	0.29	0.30	0.32	0.27	0.25	0.25	0.24	0.29	0.38	0.54	0.31
Standard deviation	0.19	0.21	0.22	0.20	0.21	0.21	0.24	0.24	0.29	0.22	0.24
Max	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	1	1
Min	0	0	0	0	0	0	0	0	0	0	0
Entrepreneurial spirit											
Mean	0.36	0.38	0.38	0.33	0.41	0.43	0.52	0.52	0.52	0.57	0.44
Standard deviation	0.42	0.42	0.42	0.43	0.46	0.46	0.46	0.46	0.46	0.46	0.44
Max	1	1	1	1	1	1	1	1	1	1	1
Min	0	0	0	0	0	0	0	0	0	0	0
N (Observations)	21	21	21	21	21	21	21	21	21	21	210

Table 4.
Descriptive statistics for the human capital and sub-indexes

stock of knowledge and employees' capacities are less disclosed. It seems that companies are more reluctant to disclose information about the capabilities, experience, talent and potential of their employees. A possible explanation could be that companies consider HC their most valuable resource as a value driver (Álvarez-Domínguez, 2012). Additionally, retaining information about HC could be a protection against competitors and 'head hunters' who could use this information to attract the most highly-skilled employees.

Table 5 presents the descriptive statistics of independent and control variables. To avoid the influence of outliers, the continuous variables of age, size and profitability are winsorized at the top and bottom 5% percentiles of their distribution. Panel A exhibits the continuous

Table 5.
Descriptive statistics for independent and control variables

Panel A: Continuous variables

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2007–2016
Independent											
Mean	0.44	0.44	0.46	0.45	0.45	0.46	0.48	0.46	0.46	0.47	0.46
St. dst	0.16	0.17	0.17	0.18	0.18	0.17	0.16	0.14	0.12	0.12	0.16
Max	0.79	0.79	0.80	0.79	0.79	0.79	0.71	0.79	0.64	0.71	0.80
Min	0.07	0.07	0.08	0.07	0.06	0.07	0.21	0.21	0.21	0.21	0.06
Gender											
Mean	0.06	0.08	0.09	0.11	0.13	0.14	0.15	0.17	0.20	0.21	0.13
St. dst	0.06	0.08	0.08	0.08	0.08	0.09	0.10	0.12	0.10	0.11	0.10
Max	0.22	0.27	0.30	0.27	0.31	0.36	0.36	0.50	0.42	0.40	0.50
Min	0	0	0	0	0	0	0	0	0.06	0.06	0
Activity											
Mean	11	10.40	10.70	10.80	11.30	11	11.10	10.90	11.80	11	11
St. dst	3.33	2.89	3.10	2.77	3.43	3.46	3.02	3.36	3.76	2.92	3.17
Max	17	14	17	16	18	17	15	18	21	17	21
Min	5	5	6	5	5	5	5	5	5	6	5
Ownership											
Mean	0.14	0.15	0.14	0.14	0.15	0.12	0.11	0.10	0.10	0.08	0.12
St. dst	0.21	0.22	0.20	0.19	0.23	0.18	0.17	0.17	0.16	0.15	0.19
Max	0.63	0.65	0.60	0.59	0.80	0.59	0.59	0.59	0.59	0.59	0.80
Min	0	0	0	0	0	0	0	0	0	0	0
Age											
Mean	62.60	63.60	64.50	65.50	66.40	67.30	68.10	69	69.90	70.70	66.80
St. dst	43.40	43.40	43.50	43.50	43.60	43.40	43.30	43.20	43	42.90	42.50
Max	151	152	153	154	155	155	155	155	155	155	155
Min	19	19	19	19	19	19	19	19	19	19	19

Panel A: Continuous variables

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2007–2016
Size											
Mean	21,609	14,669	17,587	16,170	14,836	15,922	19,490	20,293	19,334	19,221	17,913
St. dst	23,286	18,978	22,236	21,046	17,914	20,190	23,393	23,172	21,854	22,092	21,148
Max	73,880	73,880	73,880	73,880	61,089	65,761	73,880	73,880	73,880	73,880	73,880
Min	3,050	1,862	2,440	1,449	1,449	1,449	1,755	1,449	1,449	1,449	1,449
Profitability											
Mean	4.53	4.46	3.48	3.81	3.44	2.85	2.83	2.88	2.86	3.58	3.47
St. dst	3.55	3.76	3.35	3.31	2.98	2.85	2.93	2.66	3.28	2.96	3.17
Max	9.60	9.60	9.60	9.60	9.60	9.60	9.60	9.60	9.60	9.60	9.60
Min	0.07	0.07	0.07	0.28	0.07	0.07	0.07	0.07	0.07	0.07	0.07
N (Obser.)	21	21	21	21	21	21	21	21	21	21	210

Panel B: Dummy variables

	2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2007–2016	
	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
Duality																						
Percentage	86	14	86	14	86	14	86	14	86	14	81	19	81	19	76	24	52	48	52	48	77	23
Sector																						
Percentage	62	38	62	38	62	38	62	38	62	38	62	38	62	38	62	38	62	38	62	38	62	38
Directive																						
Percentage	0	100	0	100	0	100	0	100	0	100	0	100	0	100	0	100	100	0	100	0	20	80
N (Obser.)	21		21		21		21		21		21		21		21		21		21		210	

Table 5.

variables. It shows that BD independence had no substantial change. The percentage of independent directors shows similar values over the years, with an average of 46%. This is in line with the recommendation of the Unified Code of Good CG (CNMV, 2006, 2015), which required more independent members in the BD. Concerning gender diversity, there was a moderate increase over the years. In 2007, female directors made up only 6% of the BD, while by 2016 this percentage had risen to 21%. This increase may be associated with the adoption, of the Gender Equality Law in 2007. However, some companies did not incorporate women in the BD (minimum value equal to zero) until 2014. In Spain, the inclusion of women was recommended as a means for accomplishing the BD's objectives (CNMV, 2015, 2006). Regarding the BD's activity, data show it has maintained the same number of meetings over time, with an average of 11 meetings per year, at least once a month. The Code of CG does not establish a limit on the number of meetings, but recommends regular meetings to carry out functions effectively in the BD (CNMV, 2015, 2006). The mean percentage of shares held by managerial ownership in the companies is 12%. This is not an excessively high percentage. Although there are companies where the maximum percentage of shares in their possession is 80%, in others, the managers have no ownership of company shares. For instance, Eng and Mak (2003) obtain a mean of 14% for Singapore, and Bukh *et al.* (2005) report a mean of 22.75% for Denmark.

The average age of companies is 67 years, although there is a wide dispersion over the average (42.5 years), with a maximum value of 155 years and a minimum value of 19 years. The average size of the companies (measured by the capitalization value) is 17.913, and the average profitability is 3.47.

Panel B presents information on the dummy variables and shows that CEO's duality along the period represents 77% of the companies. There is only separation between the functions of chairman and CEO in 23% of companies. Changes in the Code of CG recommended the reduction of duality (CNMV, 2015), since it may jeopardize the functions of control and supervision of the BD (Li *et al.*, 2008). These changes are expected to affect companies' voluntary disclosure policy. Concerning the sector variable, 62% of companies belong to sensitive sectors. In respect to the directive variable, 20% of the years under study correspond to the years after the approval of the EU directive of 2014 (years 2015 and 2016).

4.2 Multivariate analysis

Table 6 shows the results of system-GMM estimation for models (1) to (4). In order to support the research models' correct specification and robustness, a variety of tests were performed on the four models: (1) the number of instruments (13, 14, 17 and 17, respectively) is lower than the number of groups (21 for all models); (2) the F-test shows that the overall regression is significant ($F_{(10, 21)} = 909.59$, p-value $= 0.000$; $F_{(11, 21)} = 1000.65$, p-value $= 0.000$; $F_{(14, 21)} = 1617.19$, p-value $= 0.000$; $F_{(14, 21)} = 922.49$, p-value $= 0.000$; respectively); (3) the Arellano–Bond AR(1) test identifies high autocorrelation of the first order ($AR_{(1)} = -2.88$, p-value $= 0.004$; $AR_{(1)} = -2.77$, p-value $= 0.006$; $AR_{(1)} = -2.73$, p-value $= 0.006$; $AR_{(1)} = -2.78$, p-value $= 0.005$; respectively) and the Arellano–Bond AR(2) test accepts the hypothesis of no autocorrelation of the second order ($AR_{(2)} = -0.58$, p-value $= 0.561$; $AR_{(2)} = -0.40$, p-value $= 0.689$; $AR_{(2)} = -0.42$, p-value $= 0.673$; $AR_{(2)} = -0.19$, p-value $= 0.848$; respectively); (4) the Hansen tests for over-identifying restrictions confirm that the instrument set can be considered valid (Hansen test $= 4.19$, p-value $= 0.242$; Hansen test $= 2.93$, p-value $= 0.402$; Hansen test $= 4.59$, p-value $= 0.204$; Hansen test $= 5.04$, p-value $= 0.169$; respectively). All models support these tests.

In all the models, results reflect that the lagged value of HC disclosure was significant at the level of 1% ($\beta = 0.489$, $p < 0.01$; $\beta = 0.464$; $p < 0.01$; $\beta = 0.445$; $p < 0.01$; $\beta = 0.395$; $p < 0.01$; respectively). That is, HC disclosed depends on the level that was revealed in previous years.

Variable	Model 1	Model 2	Model 3	Model 4
Independent variables				
Human Capital$_{t-1}$	0.489*** (0.1)	0.464*** (0.09)	0.445*** (0.09)	0.393*** (0.085)
Independent$_{t-2}$	−0.224** (0.097)	−0.295*** (0.098)	−0.212*** (0.074)	−0.269*** (0.081)
Gender$_{t-1}$	0.421** (0.181)	0.527*** (0.204)	0.351* (0.173)	0.391** (0.181)
Activity$_{t-1}$	0.072*** (0.019)	0.094* (0.047)	0.068*** (0.031)	0.076* (0.043)
Activity$_{t-2}$		−0.225** (0.088)		−0.194** (0.078)
Moderating variable				
Ownership			0.101** (0.045)	0.112* (0.06)
Ownership × Independent$_{t-2}$			1.355*** (0.384)	1.435*** (0.398)
Ownership × Gender$_{t-1}$			−2.627*** (0.978)	−2.911*** (0.917)
Ownership x Activity$_{t-1}$			0.205 (0.122)	
Control variables				
Duality$_{t-1}$	−0.09 (0.081)	−0.144* (0.078)	−0.113 (0.111)	−0.16 (0.096)
Sector	0.018 (0.038)	−0.025 (0.044)	0.015 (0.042)	−0.005 (0.045)
Age	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Size	0.027** (0.012)	0.060*** (0.014)	0.041** (0.015)	0.050*** (0.015)
Profitability$_{t-2}$	−0.011* (0.005)	−0.01 (0.006)	−0.006 (0.004)	−0.006 (0.005)
Directive	0.075*** (0.013)	0.072*** (0.012)	0.074*** (0.017)	0.074*** (0.016)
Observations	168	168	168	168
N° groups	21	21	21	21
N° instruments	13	14	17	17
F	$F_{(10, 21)}$ = 909.59***	$F_{(11, 21)}$ = 1000.65***	$F_{(14, 21)}$ = 1617.19***	$F_{(14, 21)}$ = 922.49***
Arellano–Bond test AR (1) (*p*-value)	−2.88 (0.004)	−2.77 (0.006)	−2.73 (0.006)	−2.78 (0.005)
Arellano–Bond test AR (2) (*p*-value)	−0.58 (0.561)	−0.40 (0.689)	−0.42 (0.673)	−0.19 (0.848)
Hansen test (*p*-value)	4.19 (0.242)	2.93 (0.402)	4.59 (0.204)	5.04 (0.169)

Note(s): Robust standard errors with Windemeijer's finite sample correction are in parentheses. *p < 0.1; **p < 0.05; ***p < 0.01
In order to improve the distribution of some variables, it takes the square of HC disclosure, the logarithm of the activity board, the age and the size. Interaction terms and the moderate variable have been mean-centred to reduce collinearity (Aiken and West, 1991)

Table 6.
Results of dynamic
panel-data estimation,
two-step system GMM

Model 1 shows the linear terms of the independent variables and the effect of control variables that remain in the subsequent models (see Table 6). This model was adopted to empirically test hypotheses H1, H3, and H5. A negative effect is found in the relationship between Board Independence and HC disclosure ($\beta = -0.224$, $p < 0.05$). Compared to previous studies, this result was consistent with the findings of Eng and Mak (2003), Barako *et al.* (2006) and Rodrigues *et al.* (2017). This supports the arguments of resource-based and legitimacy theories as suggested in this study (see Section 2.2). The negative relationship suggests a substitution effect, i.e. increased appointments of independent directors results in lower levels of voluntary disclosure. In line with resource-based and legitimacy theories, Spanish independent directors seem to be worse at formulating and managing corporate affairs than executive directors. This is perhaps due to them having less internal knowledge of the company, or because a higher number of independent members implies a lesser need for legitimation toward the stakeholders. Therefore, independents directors do not have much influence on voluntary disclosure decisions. Hence, in Spain's case, independent directors acting as mechanisms to mitigate agency conflicts between managers and stakeholders (Hill and Jones, 1992) is not always the best solution. This is due to the fact that an excessive number of independents can affect the efficiency of the BD because independents do not exercise executive functions. These findings lend support to Hypothesis H1 (in particular, H1b).

Gender diversity has a positive and significant relationship with disclosure ($\beta = 0.421$, $p < 0.05$). That is, a BD with more women provides more information on HC. A gender-diverse board adopts more socially responsible methods and increases HC disclosure, reducing information asymmetry and mitigating agency problems for all stakeholders. This finding confirms that women tend to encourage more responsible behaviours concerning voluntary disclosure of information (Prado-Lorenzo and Garcia-Sanchez, 2010) and, according to the stakeholder-agency theory, they act as a complementary mechanism which influences disclosure. According to resource-based and legitimacy theories, gender diversity gives the board a range of competencies that positively influence a BD's decisions concerning disclosure policies, increasing the moral legitimacy of society. This result is consistent with the finding of Bear *et al.* (2010), Ferrero-Ferrero *et al.* (2015) and Rao and Tilt (2016). Therefore, H3 is accepted.

BD activity has a positive and significant relationship with disclosure ($\beta = 0.072$, $p < 0.01$). That is, an active BD with frequent meetings has greater interest in HC disclosure, since it allows the directors to share more information and viewpoints in order to ensure legitimacy to all stakeholders. These results are in line with those obtained by Allegrini and Greco (2013) and Frias-Aceituno *et al.* (2013). This finding supports hypothesis five (H5). In summary, *Model 1* supports H1, H3 and H5.

Model 2 incorporates the quadratic term of the BD activity variable along with the effect of the rest of the variables already incorporated in Model 1 (see Table 6). This model was adopted to examine the non-linear relationship between Board Activity and HC disclosure (H6). Model 2 indicates that the coefficients of the activity and the activity^2 variables are positive and negative, respectively ($\beta = 0.094$, $p < 0.1$; $\beta = -0.225$; $p < 0.05$; respectively). This shows the existence of a quadratic inverse U-shaped relationship between the activity of the BD and HC disclosure. This result suggests that there is a maximum level of BD activity, above which there is a decline in the voluntary disclosure of HC. This supports the argument that the optimal number of BD meetings lies somewhere in the middle. This finding is confirmed by the fact that the agency-stakeholders, legitimacy and resource-based theories claim that higher BD activity is likely to increase levels of disclosure and keep stakeholders informed of their efforts (Allegrini and Greco, 2013; Frias-Aceituno *et al.*, 2013); however, routine tasks constitute a large part of the BD's time, and more meetings do not necessarily imply increased BD effectiveness for monitoring and controlling. Hence, the sixth hypothesis

(H6) is accepted. In the same way as in Model 1, the hypothesis H1 ($\beta = -0.295$, $p < 0.01$) and hypothesis H3 ($\beta = 0.527$; $p < 0.05$) were also confirmed, although the significance of the variables is increased. In summary, *Model 2* supports H1, H3 and H6.

Model 3 was designed to analyse the moderating role of managerial ownership (see Table 6). This model provides the results concerning the moderating effect of managerial ownership on the relationship between the independent variables and HC disclosure (H2, H4 and H7). The results obtained show the same effect of Board Independence on HC disclosure as in the previous Model 1 and Model 2, regarding sign ($\beta = -0.212$, $p < 0.01$), which supports the negative influence of Board Independence on HC disclosure. However, the interaction of this variable with managerial ownership does not support these results. The Managerial Ownership*Board Independence variable has a positive and significant effect on HC disclosure ($\beta = 1.355$, $p < 0.01$). Thus, managerial ownership expects independent members to ensure HC disclosure. It can be observed that independent directors of BD's in companies with little or no managerial ownership have a negative impact on HC disclosure (coef. Independent board $= -0.212$), while those who serve on boards with high managerial ownership have a major positive and significant impact on HC disclosure (coef. Independent board + coef. managerial ownership*independent board $= -0.212 + 1.355 = 1.134$). This result supports the complementary effect of both CG mechanisms on HC disclosure. These findings support H2. Moreover, this model shows how managerial ownership negatively moderates the relationship between gender diversity and HC disclosure. ($\beta = -2.627$, $p < 0.05$). So, management ownership does not expect gender diversity to ensure HC disclosure. Additionally, gender diversity of BD's in companies with little or no managerial ownership has a positive impact on HC disclosure (coef. Diversity gender $= 0.351$), while gender-diverse BD's with high managerial ownership have a major negative and significant impact on HC disclosure (coef. Diversity gender + coef. managerial ownership*diversity gender $= 0.351 - 2.627 = -2.276$). This result supports the substitute effect of both CG mechanisms on HC disclosure. These findings support Hypothesis 4 (H4). In addition, Model 3 also provides the results of managerial ownership's moderating effect between BD activity and HC disclosure. However, there is a non-significant moderating effect of managerial ownership on BD activity and HC disclosure. Therefore, Hypothesis H7 is not confirmed. In summary, *Model 3* supports H2 and H4 and rejects H7.

Finally, in order to give robustness to the results, Model 4 confirms all of the findings mentioned above, improving the significance of the analysed variables. In Model 4, the results show that the Managerial Ownership*Board Independence variable has a positive and significant effect on HC disclosure ($\beta = 1.435$, $p < 0.01$). It can be observed that independent directors of BD's in companies with little or no managerial ownership have a negative impact on HC disclosure (coef. Independent board $= -0.269$), while those who work in environments with high managerial ownership have a major positive and significative impact on HC disclosure (coef. Independent board + coef. managerial ownership*independent board $= -0.269 + 1.435 = 1.166$). Also, the Managerial Ownership*Gender Diversity variable has a negative and significant effect on HC disclosure ($\beta = -2.911$, $p < 0.01$). Additionally, gender diversity of BD's in companies with little or no managerial ownership has a positive impact on HC disclosure (coef. Diversity gender $= 0.391$), while gender diversity in combination with high managerial ownership has a major negative and significative impact on HC disclosure (coef. Diversity gender + coef. managerial ownership*diversity gender $= 0.391 - 2.911 = -2.52$). This model also indicates that the coefficients of the activity and activity^2 variables are positive and negative, respectively ($\beta = 0.076$, $p < 0.1$; $\beta = -0.194$; $p < 0.05$; respectively). This shows the existence of a quadratic inverse U-shaped relationship between the activity of the BD and HC disclosure. Therefore, all the hypotheses formulated are confirmed except hypothesis six (H6) regarding the moderating role of managerial ownership on board activity.

Regarding the control variables, the results were similar across Models (1) to (4). However, it is necessary to point out the significant and positive relationship of the size and directive variables on HC disclosure in all models. This may mean that the largest companies – those with a higher value of market capitalization – send signals to the market and to stakeholders through HC disclosure, with the goal of enhancing their market capitalization value. This is consistent with the results of Bukh *et al.* (2005), Hidalgo *et al.* (2011); Rodrigues *et al.* (2017) and Corvino *et al.*, (2019). In addition, the approval of the 2014 EU directive has had a very significant impact (with a significance level of 1%). Starting in 2014, the companies in the sample began voluntarily disclosing more information about HC. Perhaps these companies were preparing to accommodate the upcoming legal obligation to reveal HC information, which occurred in 2017 by Spain's transposition of the 2014 EU Directive. However, CEO's duality, age and profitability were not significant. The rest of the control variables was not affected, apart from a few exceptions such as the duality and profitability variables, which were only significant in Models 2 and 1, respectively.

5. Conclusions

Extant literature studies HC disclosure using two separate approaches in isolation: IC disclosure and SR disclosure. This research extends on and contributes to the current literature on HC disclosure by proposing, developing and applying a more comprehensive and complete framework for coding information on HC. It accomplishes this by combining both perspectives in order to improve the understanding of corporate disclosure strategies about HC. This framework is used to explore and analyse the content of HC disclosure policy in SR or integrated reports in Spanish companies from 2007 to 2016. Based on the stakeholder-agency theory, legitimacy and resource-based theories, disclosing HC information that was "previously secret or unknown" allows companies to provide useful information to stakeholders for investment and non-investment decisions making, to develop and enhance their corporate image and to gain or maintain legitimacy with powerful stakeholders.

In addition, since disclosure policies emanate from the BD, HC disclosure is a function of the board. Therefore, the role of the BD on HC disclosure has been studied and analysed. According to the stakeholder-agency, legitimacy and resource-based theories, companies must choose between improving CG mechanisms – such as the BD or ownership structure – or increasing the level of information disclosed. They must also make decisions focused on serving both the interests of shareholders and other stakeholders, contributing to the company's reputation, expanding the company's business contacts and giving strategic advice. Furthermore, to better understand the role of internal CG mechanisms on HC disclosure, the moderating effect that managerial ownership could have on the relationship between the BD and HC disclosure was studied. In order to analyse this, a system-GMM estimator was used in order to address the concerns of endogeneity and heteroscedasticity.

In the case of Spain – a country characterized by its commitment to sustainability and the development of voluntary initiatives aimed at disclosing social and intangible information – the findings of this research indicate an increase in HC disclosure since 2014. This suggests that Spanish companies chose to adapt to the new EU regulation, which would become mandatory starting in 2017. One the one hand, this increase shows that companies are committed to maintaining responsible attitudes towards their HC. It confirms that companies are attempting to legitimize their behaviour towards stakeholders and reduce information asymmetries. On the other hand, information concerning work-related knowledge aspects was the least disclosed. Perhaps companies are more reluctant to disclose information concerning the stock of knowledge, because this information pertains to such a critical resource for competitive advantage, and could potentially be used by a company's

competitors. The results show the need to develop a more comprehensive framework for HC disclosure, which considers the stock of knowledge and capabilities of employees, as well as the responsible human resources management practices implemented within the company.

Moreover, internal CG mechanisms influence HC disclosure. The results show that the BD's composition and functioning are mechanisms of supervision, control and legitimacy that promote HC disclosure, with managerial ownership acting as a moderator. In the case of Spanish companies, CG systems are characterized by ownership concentration and a unitary board structure. Hence, the role of the BD and managerial ownership are crucial to protecting the interests of all stakeholders.

Thus, the findings indicate that independent directors do not have much influence on voluntary disclosure decisions. It can be concluded that BD independence and HC disclosure serve as substitute mechanisms. However, managerial ownership – together with independent directorship –plays a moderating role, ensuring a higher level of disclosure on HC information. The findings also indicate that female directors have a more favourable attitude towards increasing HC disclosure. However, managerial ownership negatively moderates the relationship between gender diversity and HC disclosure. This means that managerial ownership and gender diversity have a substitution effect on HC disclosure. Data suggests that after reaching the maximum amount of BD meetings, additional board meetings significantly reduce levels of disclosure. More meetings do not necessarily imply increased BD effectiveness for monitoring, controlling and keeping stakeholders informed, since future disclosures either remain consistent or build upon prior years' disclosures. Nonetheless, managerial ownership does not act as a moderator of the relationship between BD activity and HC disclosure. In addition, a significant relationship was found between HC disclosure and size, directive, duality and profitability. There is no significant relationship with age and sector.

5.1 Study contributions

This study contributes to the literature on HC disclosure in several areas. It introduces a broader conception of HC information, considering aspects of both IC and SR approaches. This may contribute to the enhancement of the stakeholders' decision-making process concerning investment, employment, consumption, management and regulatory issues. A broader conception of HC could be helpful, even for competitors, in order to increase awareness about the knowledge stock which generates competitive advantages. The results shed light on the relationship between voluntary HC disclosure and the BD members, specifically in an environment characterized by the active participation of BD members in the decision-making process concerning social strategies. In the same way, the findings contribute to the study of the moderating role of managerial ownership in the relationship between the BD and HC disclosure. The study reveals how companies responded to pressure from the political actors (Parliament, Government and EU institutions) to promote socially responsible practices by encouraging voluntary HC disclosure prior to Spain's mandatory implementation of the 2014/95/EU Directive. Finally, this paper contributes to the literature by analysing some dynamic models for panel data, based on the system-GMM estimator that is consistent and robust enough to correct problems of endogeneity.

5.2 Study implications

In terms of practical, social, political and theoretical implications, the results could be of interest for companies and stakeholders such as shareholders, employees, managers, policymakers and regulators, academics and society at large.

For professionals, there is potential for the adoption and adaptation of the proposed framework to explain HC disclosure in a way that suits their needs and those of the

stakeholders. The study provides guidelines for how to promote and implement CG mechanisms in order to enhance HC disclosure. Accordingly, managers could focus on specific CG mechanisms such as independence, gender diversity, activity of the BD and managerial ownership when developing companies' strategies and objectives related to HC disclosure. HC disclosure could also be used as a motivating factor, helping to attract and retain talented employees since it signals the importance of existing employees as intangible resources. Moreover, HC disclosure could act as a demonstration of a company's contribution to society through a socially responsible business culture and ethical standards on human rights conditions. Finally, an increase in readily available information on companies' responsible HC practices could potentially strengthen the relationship between employees, unions and the government. Such a shift would be beneficial for society as a whole.

For governments, it would be useful for decision-makers to propose changes in CG codes. Regulatory processes could be designed to incorporate protection mechanisms for interest groups other than shareholders, in order to increase companies' HC disclosure. Finally, the findings suggest that independent members do not play a major role in CG to increase HC disclosure. In addition, the results call into question the necessity of emphasizing managerial ownership on the board in CG codes at the national or international level. It also suggests that non-mandatory recommendations would not have the same effect as mandatory recommendations in terms of companies' disclosure policies. For academics, our findings offer a new perspective regarding the CG mechanisms that may influence HC disclosure, and open a new door for those who want to analyse these relationships in other environments.

5.3 Limitations and future researches
The study should be interpreted carefully since there are some limitations that need to be addressed in future research. For example, the sample size proved to be a limiting factor, and it would be advantageous to increase the size of the sample by including companies that belong to the Ibex35 in each of the years under analysis (unbalanced data). The sample could also include companies that are not a part of the IBEX35, as well as those that are in the stock market. A second limitation is the use of an unweighted index to analyse HC disclosure. Future research could use a weighted index based on the managers' opinion about the relevance of the items which are part of it or elaborate an index that considers the information's quality and detail. This study also does not analyse to what extent managers are manipulating and adopting an opportunistic strategy concerning HC disclosure, in order to project a positive image of the company. This is another limitation of this research.

Future studies could draw from the literature about impression management that focuses on the disclosure tone. These studies could reveal the companies' information manipulation and use other means of disclosure, such as the companies' web pages. Finally, further research could consider other variables which influence HC disclosure.

Notes
1. In Spain, the annual financial statements are: balance sheet, profit and loss account, statement of changes in net patrimony, current flow statement and the explanatory notes that are called "memory".

2. There are 26 companies listed on the Ibex35 over the years under study. In five companies, it was impossible to obtain the corporate responsibility or integrated annual reports for the 10 years of study. The information is available for a total of 21 companies from 2007 to 2016.

3. During the first months of 2018, most of the companies in the sample had not yet disclosed SR reports or the integrated reports of 2017.

4. The analysed reports have been prepared according to GRI guidelines.

5. During the analysed period, several companies introduced the integrated reporting, i.e. they aggregated the annual report with the SR report. While a combined report is not an integrated report prepared according to the International Integrated Reporting Framework, it was repeatedly denominated as such by companies.

6. The analysed reports included the three possible alternatives discussed above.

7. Initially, a fixed- or random-effects estimator could be used to estimate the six models, but the errors had to be conditionally homoscedastic and not serially correlated. Therefore, the models were first tested to detect the existence of heteroscedasticity and serial correlation problems using the Breusch–Pagan test and the Wooldridge test, respectively. The p-values obtained for each test were 0.0000, which meant that they must reject the null hypotheses of homoscedastic errors and no serially correlated errors. Another problem, namely endogeneity, could appear in the models (Hermalin and Weisbach, 2003; Michelon and Parbonetti, 2012; Arayssi *et al.*, 2016). The system-GMM estimator can solve endogeneity (for more details on this estimator, see Roodman (2009)).

8. As recommended by Roodman (2009), in order to reduce the instruments, variables which are endogenous or are considered to be predetermined should have their lags used as instruments. In order to limit the instruments, lags of 1 or 2 for the equations in differences have been used for these variables. The option to "collapse" was used to reduce the instruments. Exogenous variables have been instrumented in differences and levels.

9. Board size has a significant influence on the efficiency, effectiveness and supervision of management (Hidalgo *et al.*, 2011). It is defined as the number of directors on a board.

References

Abeysekera, I. (2007), "Motivations behind human capital disclosure in annual reports", *Accounting Forum*, Vol. 32 No. 1, pp. 16-29.

Abeysekera, I. (2010), "The influence of board size on intellectual capital disclosure by Kenyan listed firms", *Journal of Intellectual Capital*, Vol. 11 No. 4, pp. 504-518.

Abhayawansa, S. (2014), "A review of guidelines and frameworks on external reporting of intellectual capital", *Journal of Intellectual Capital*, Vol. 15 No. 1, pp. 100-141.

Abhayawansa, S. and Abeysekera, I. (2008), "An explanation of human capital disclosure from the resource-based perspective", *Journal of Human Resource Costing and Accounting*, Vol. 12 No. 1, pp. 51-64.

Adams, R.B. and Ferreira, D. (2012), "Regulatory pressure and bank directors' incentives to attend board meetings", *International Review of Finance*, Vol. 12 No. 2, pp. 227-248.

Adams, C.A. and Larrinaga-González, C. (2007), "Engaging with organisations in pursuit of improved sustainability accounting and performance", *Accounting, Auditing and Accountability Journal*, Vol. 20 No. 3, pp. 333-355.

Aiken, L.S. and West, S.G. (1991), *Multiple regression: Testing and interpreting interactions*, Sage Publications, London.

Allegrini, M. and Greco, G. (2013), "Corporate boards, audit committees and voluntary disclosure: evidence from Italian listed companies", *Journal of Management and Governance*, Vol. 17 No. 1, pp. 187-216.

Álvarez-Domínguez, A. (2012), "Company characteristics and human resource disclosure in Spain", *Social Responsibility Journal*, Vol. 8 No. 1, pp. 4-20.

Amankwah-Amoah, J. (2018), "Human capital flows in failing organizations: an integrated conceptual framework", *Journal of Intellectual Capital*, Vol. 19 No. 4, pp. 732-746.

Amran, A., Lee, S.P. and Devi, S.S. (2014), "The influence of governance structure and strategic corporate social responsibility toward sustainability reporting quality", *Business Strategy and the Environment*, Vol. 23 No. 4, pp. 217-235.

Arayssi, M., Dah, M. and Jizi, M. (2016), "Women on boards, sustainability reporting and firm performance", *Sustainability Accounting, Management and Policy Journal*, Vol. 7 No. 3, pp. 376-401.

Baltagi, B. (2014), *Econometric Analysis of Panel Data*, Wiley, London.

Barako, D.G., Hancock, P. and Izan, H.Y. (2006), "Factors influencing voluntary corporate disclosure by Kenyan companies", *Corporate Governance: An International Review*, Vol. 14 No. 2, pp. 107-125.

Barney, J. (1991), "Firm resources and sustained competitive advantage", *Journal of Management*, Vol. 17 No. 1, pp. 99-120.

Barrena-Martinez, J., López-Fernández, M. and Romero-Fernández, P.M. (2019), "The link between socially responsible human resource management and intellectual capital", *Corporate Social Responsibility and Environmental Management*, Vol. 26 No. 1, pp. 71-81.

Bear, S., Rahman, N. and Post, C. (2010), "The impact of board diversity and gender composition on corporate social responsibility and firm reputation", *Journal of Business Ethics*, Vol. 97 No. 2, pp. 207-221.

Beattie, V. and Smith, S.J. (2010), "Human capital, value creation and disclosure", *Journal of Human Resource Costing and Accounting*, Vol. 14 No. 4, pp. 262-285.

Beattie, V. and Thomson, S.J. (2007), "Lifting the lid on the use of content analysis to investigate intellectual capital disclosures", *Accounting Forum,* Vol. 31 No. 2, pp. 129-163.

Bontis, N. (1999), "Managing organizational knowledge by diagnosing intellectual capital: framing and advancing the state of the field", *International Journal of Technology Management*, Vol. 18 Nos 5-8, pp. 433-62.

Bontis, N. and Fitz-enz, J. (2002), "Intellectual capital ROI: a causal map of human capital antecedents and consequents", *Journal of Intellectual Capital*, Vol. 3 No. 3, pp. 223-47.

Bozzolan, S., Favotto, F. and Ricceri, F. (2003), "Italian annual intellectual capital disclosure", *Journal of Intellectual Capital,* Vol. 4 No. 4, pp. 543-558.

Bukh, P.N., Nielsen, C., Gormsen, P. and Mouritsen, J. (2005), "Disclosure of information on intellectual capital in Danish IPO prospectuses", *Accounting, Auditing and Accountability Journal*, Vol. 18 No. 6, pp. 713-732.

Cabrilo, S., Grubic-Nesic, L. and Mitrovic, S. (2014), "Study on human capital gaps for effective innovation strategies in the knowledge era", *Journal of Intellectual Capital*, Vol. 15 No. 3, pp. 411-429.

Caputo, F., Giudice, M.D., Evangelista, F. and Russo, G. (2016), "Corporate disclosure and intellectual capital: the light side of information asymmetry", *International Journal of Managerial and Financial Accounting*, Vol. 8 No. 1, pp. 75-96.

Castilla-Polo, F. and Ruiz-Rodriguez, C. (2017), "Content analysis within intangible assets disclosure: a structured literature review", *Journal of Intellectual Capital,* Vol. 8 No. 3, pp. 506-543.

Cerbioni, F. and Parbonetti, A. (2007), "Exploring the effects of corporate governance on intellectual capital disclosure: an analysis of European biotechnology companies", *European Accounting Review*, Vol. 16 No. 4, pp. 791-826.

Cinquini, L., Passetti, E., Tenucci, A. and Frey, M. (2012), Analyzing intellectual capital information in sustainability reports: some empirical evidence, *Journal of Intellectual Capital*, Vol. 13 No. 4, pp. 531-561.

Claver-Cortés, E., Zaragoza-Sáez, P.C., Molina-Manchón, H. and Úbeda-García, M. (2015), "Intellectual capital in family firms: human capital identification and measurement", *Journal of Intellectual Capital*, Vol. 16 No. 1, pp. 199-223.

CNMV Comisión Nacional del Mercado de Valores (2006), *Unified Good Governance Code of Listed Companies*, CNMV, Madrid.

CNMV Comisión Nacional del Mercado de Valores (2015), *Good Governance Code of Listed Companies*, CNMV, Madrid.

Conger, J.A., Finegold, D. and Lawler, E.E. (1998), "Appraising boardroom performance", *Harvard Business Review*, Vol. 76 No. 1, pp. 136-148.

Cooper, S.M. and Owen, D.L. (2007), "Corporate social reporting and stakeholder accountability: the missing link", *Accounting, Organizations and Society*, Vol. 32 Nos 7-8, pp. 649-667.

Cordazzo, M. (2007), "Intangibles and Italian IPO prospectuses: a disclosure analysis", *Journal of Intellectual Capital*, Vol. 8 No. 2, pp. 288-305.

Corvino, A., Caputo, F., Pironti, M., Doni, F. and Bianchi Martini, S. (2019), "The moderating effect of firm size on relational capital and firm performance. Evidence from Europe", *Journal of Intellectual Capital*, Vol. 20 No. 4, pp. 510-532.

Cucari, N., Esposito De Falco, S. and Orlando, B. (2018), "Diversity of board of directors and environmental social governance: evidence from Italian listed companies", *Corporate Social Responsibility and Environmental Management*, Vol. 25 No. 3, pp. 250-266.

Cuganesan, S. (2005), "Intellectual capital-in-action and value creation: a case study of knowledge transformations in an innovation project", *Journal of Intellectual Capital*, Vol. 6 No. 3, pp. 357-73.

Cui, J., Jo, H. and Na, H. (2018), "Does corporate social responsibility affect information asymmetry?", *Journal of Business Ethics*, Vol. 148 No. 3, pp. 549-572.

Cuozzo, B., Dumay, J., Palmaccio, M. and Lombardi, R. (2017), "Intellectual capital disclosure: a structured literature review", *Journal of Intellectual Capital*, Vol. 18 No. 1, pp. 9-28.

Deegan, C.M. (2002), "Introduction. The legitimising effect of social and environmental disclosures – a theoretical foundation", *Accounting, Auditing and Accountability Journal*, Vol. 15 No. 3, pp. 282-311.

Dienes, D. and Velte, P. (2016), "The impact of supervisory board composition on CSR reporting. Evidence from the German two-tier system", *Sustainability*, Vol. 8 No. 1, p. 63.

Dumay, J. (2016), "A critical reflection on the future of intellectual capital: from reporting to disclosure", *Journal of Intellectual Capital*, Vol. 7 No. 1, pp. 168-84.

Edvinsson, L. (2013), "IC 21: reflections from 21 years of IC practice and theory", *Journal of Intellectual Capital*, Vol. 14 No. 1, pp. 163-172.

Edvinsson, L. and Malone, M. (1997), *Intellectual Capital: Realising Your Company's True Value by Finding its Hidden Brainpower*, HarperCollins, New York, NY.

Eng, L.L. and Mak, Y.T. (2003), "Corporate governance and voluntary disclosure", *Journal of Accounting and Public Policy*, Vol. 22 No. 4, pp. 325-345.

European Commission (2011), *Renewed EU Strategy 2011–2014 for Corporate Social Responsibility*, Brussels. 25 October 2011, available at: http://www.europarl.europa.eu/meetdocs/2009_2014/documents/com/com_com(2011)0681_/com_com(2011)0681_en.pdf (accessed 13 February 2020).

Ferrero-Ferrero, I., Fernández-Izquierdo, M.Á. and Muñoz-Torres, M.J. (2015), "Integrating sustainability into corporate governance: an empirical study on board diversity", *Corporate Social Responsibility and Environmental Management*, Vol. 22 No. 4, pp. 193-207.

Frangieh, C.G. and Yaacoub, H.K. (2019), "Socially responsible human resource practices: disclosures of the world's best multinational workplaces", *Social Responsibility Journal*, Vol. 15 No. 3, pp. 277-295.

Frias-Aceituno, J.V., Rodriguez-Ariza, L. and Garcia-Sanchez, I.M. (2013), "The role of the board in the dissemination of integrated corporate social reporting", *Corporate Social Responsibility and Environmental Management*, Vol. 20 No. 4, pp. 219-233.

Fuente, J.A., Garcia-Sanchez, I.M. and Lozano, M.B. (2017), "The role of the board of directors in the adoption of GRI guidelines for the disclosure of CSR information", *Journal of Cleaner Production*, Vol. 141, pp. 737-750.

Gallardo-Vázquez, D., Barroso-Méndez, M.J., Pajuelo-Moreno, M.L. and Sánchez-Meca, J. (2019), "Corporate social responsibility disclosure and performance: a meta-analytic approach", *Sustainability*, Vol. 11 No. 4, p. 1115.

Gamerschlag, R. (2013), "Value relevance of human capital information", *Journal of Intellectual Capital*, Vol. 14 No. 2, pp. 325-345.

García, I.M., Rodríguez, L. and Gallego, I. (2011), "Corporate governance and strategic information on the internet: a study of Spanish listed companies", *Accounting, Auditing and Accountability Journal*, Vol. 24 No. 4, pp. 471-501.

Giannarakis, G. (2014), "The determinants influencing the extent of CSR disclosure", *International Journal of Law and Management*, Vol. 56 No. 5, pp. 393-416.

Gray, R., Owen, D. and Adams, C. (1996), *Accounting and Accountability: Changes and Challenges in Corporate Social and Environmental Reporting*, Prentice Hall, London.

GRI, Global Reporting Initiative (2013), *G4 Sustainability Reporting Guidelines*, GRI, Amsterdam.

Guthrie, J. and Abeysekera, I. (2006), "Content analysis of social, environmental reporting: what is new?", *Journal of Human Resource Costing and Accounting*, Vol. 10 No. 2, pp. 114-126.

Guthrie, J. and Petty, R. (2000), "Intellectual capital: Australian annual reporting practices", *Journal of Intellectual Capital*, Vol. 1 No. 3, pp. 241-251.

Guthrie, J., Petty, R. and Ricceri, F. (2006), "The voluntary reporting of intellectual capital Comparing evidence from Hong Kong and Australia", *Journal of Intellectual Capital,* Vol. 7 No. 2, pp. 254-271.

Gutierrez, I. and Surroca, J. (2014), "Revisiting corporate governance through the lens of the Spanish evidence", *Journal of Management and Governance*, Vol. 18 No. 4, pp. 989-1017.

Hackston, D. and Milne, M. (1996), "Some determinants of social and environmental disclosures in New Zealand companies", *Accounting, Auditing and Accountability Journal*, Vol. 9 No. 1, pp. 77-109.

Haniffa, R.M. and Cooke, T.E. (2005), "The impact of culture and governance on corporate social reporting", *Journal of Accounting and Public Policy*, Vol. 24 No. 5, pp. 391-430.

Hermalin, B.E. and Weisbach, M.S. (2003), "Boards of directors as an endogenously determined institution: a survey of the economic literature", *Federal Reserve Bank of New York Economic Policy Review*, Vol. 9 No. 1, pp. 7-26.

Hidalgo, R.L., García-Meca, E. and Martínez, I. (2011), "Corporate governance and intellectual capital disclosure", *Journal of Business Ethics*, Vol. 100 No. 3, pp. 483-495.

Hill, C.W.L. and Jones, T.M. (1992), "Stakeholder-agency theory", *Journal of Management Studies*, Vol. 29 No. 2, pp. 131-154.

Hoitash, U., Hoitash, R. and Bedard, J.C. (2009), "Corporate governance and internal control over financial reporting: a comparison of regulatory regimes", *The Accounting Review*, Vol. 84 No. 3, pp. 839-867.

Jensen, M.C. and Meckling, W.H. (1976), "Theory of the firm: managerial behavior, agency costs and ownership structure", *Journal of Financial Economics*, Vol. 3 No. 4, pp. 305-360.

Jindal, S. and Kumar, M. (2012), "The determinants of HC disclosures of Indian firms", *Journal of Intellectual Capital*, Vol. 13 No. 2, pp. 221-247.

Kassinis, G. and Vafeas, N. (2002), "Corporate boards and outside stakeholders as determinants of environmental litigation", *Strategic Management Journal*, Vol. 23 No. 5, pp. 399-415.

Krippendorff, K. (2004), *Content Analysis: An Introduction to its Methodology*, Sage Publications, CA.

Li, J., Pike, R. and Haniffa, R. (2008), "Intellectual capital disclosure and corporate governance structure in UK firms", *Accounting and Business Research*, Vol. 38 No. 2, pp. 137-159.

Luque-Vílchez, M. and Larrinaga, C. (2016), "Reporting models do not translate well: failing to regulate CSR reporting in Spain", *Social and Environmental Accountability Journal*, Vol. 36 No. 1, pp. 56-75.

Mariano, S. and Walter, C. (2015), "The construct of absorptive capacity in knowledge management and intellectual capital research: content and text analyses", *Journal of Knowledge Management*, Vol. 19 No. 2, pp. 372-400.

Meritum (2002), *Guidelines for Managing and Reporting on Intangibles*, Fundación Airtel-Vodafone, Madrid.

Michelon, G. and Parbonetti, A. (2012), "The effect of corporate governance on sustainability disclosure", *Journal of Management and Governance*, Vol. 16 No. 3, pp. 477-509.

Muttakin, M.B. and Khan, A. (2014), "Determinants of corporate social disclosure: empirical evidence from Bangladesh", *Advances in Accounting*, Vol. 30 No. 1, pp. 168-175.

Nurunnabi, M. and Hossain, M. (2011), "Intellectual capital reporting in a south Asian country: evidence from Bangladesh", *Journal of Human Resource Costing and Accounting*, Vol. 15 No. 3, pp. 196-233.

Olander, H., Hurmelinna-Laukkanen, P. and Heilmann, P. (2015), "Human resources–strength and weakness in protection of intellectual capital", *Journal of Intellectual Capital,* Vol. 16 No. 4, pp. 742-762.

Pedrini, M.P. (2007), "Human capital convergences in intellectual capital and sustainability reports", *Journal of Intellectual Capital*, Vol. 8 No. 2, pp. 346-366.

Pisano, S., Lepore, L. and Lamboglia, R. (2017), "Corporate disclosure of human capital via LinkedIn and ownership structure: an empirical analysis of European companies", *Journal of Intellectual Capital*, Vol. 18 No. 1, pp. 102-127.

Post, C., Rahman, N. and Rubow, E. (2011), "Green governance: boards of directors' composition and environmental corporate social responsibility", *Business and Society*, Vol. 50 No. 1, pp. 189-223.

Prado-Lorenzo, J.M. and Garcia-Sanchez, I.M. (2010), "The role of the board of directors in disseminating relevant information on greenhouse gases", *Journal of Business Ethics*, Vol. 97 No. 3, pp. 391-424.

Rao, K. and Tilt, C. (2016), "Board composition and corporate social responsibility: the role of diversity, gender, strategy and decision making", *Journal of Business Ethics*, Vol. 138 No. 2, pp. 327-347.

Reverte, C. (2009), "Determinants of corporate social responsibility disclosure ratings by Spanish listed firms", *Journal of Business Ethics*, Vol. 88 No. 2, pp. 351-366.

Reverte, C. (2015), "The new Spanish corporate social responsibility strategy 2014-2020: a crucial step forward with new challenges ahead", *Journal of Cleaner Production*, Vol. 91, pp. 327-336.

Rodrigues, L.L., Tejedo-Romero, F. and Craig, R. (2017), "Corporate governance and intellectual capital reporting in a period of financial crisis: evidence from Portugal", *International Journal of Disclosure and Governance*, Vol. 4 No. 1, pp. 1-29.

Roodman, D. (2009), "How to do xtabond2: an introduction to difference and system GMM in Stata", *The Stata Journal*, Vol. 9 No. 1, pp. 86-136.

Roos, J., Dragonetti, N.C., Roos, G. and Edvinsson, L. (2001), *Capital Intelectual: El Valor Intangible De La Empresa*, Paídos Ibérica, SA, Barcelona.

Sierra, L., Zorio, A. and García-Benau, M.A. (2013), "Sustainable development and Assurance of corporate social responsibility reports published by ibex-35 companies", *Corporate Social Responsibility and Environmental Management*, Vol. 20 No. 6, pp. 359-370.

Spanish Parliament (2011), *Law 2/2011 on Sustainable Economy*, Spain, 4 March 2011, available at: https://www.boe.es/buscar/pdf/2011/BOE-A-2011-4117-consolidado.pdf (accessed 14 February 2019).

Stewart, T.A. (1997), *Intellectual Capital: The New Wealth of Organizations*, Doubleday/Currency, New York, NY.

Sveiby, K.E. (1997), *The New Organizational Wealth: Managing and Measuring Knowledge-Based Assets*, Berrett-Koehler Publishers, San Francisco.

Tejedo, F. and Araujo, J.F. (2016), "Human Capital information: generating intangibles and social responsibility", *Cuadernos de Gestión,* Vol. 16 No. 1, pp. 125-144.

Tejedo-Romero, F. (2016), "Información de los recursos intangibles ocultos: ¿memorias de sostenibilidad o informe anual?", *European Research on Management and Business Economics*, Vol. 22 No. 2, pp. 101-109.

Torres, A.I., Ferraz, S.S. and Santos-Rodrigues, H. (2018), "The impact of knowledge management factors in organizational sustainable competitive advantage", *Journal of Intellectual Capital,* Vol. 19 No. 2, pp. 453-472.

Vafeas, N. (1999), "Board meeting frequency and firm performance", *Journal of Financial Economics*, Vol. 53 No. 1, pp. 113-142.

Wang, M.-C. (2017), "The relationship between firm characteristics and the disclosure of sustainability reporting", *Sustainability*, Vol. 9 No. 4, p. 624.

Windmeijer, F. (2005), "A finite sample correction for the variance of linear efficient two-step GMM estimators", *Journal of Econometrics*, Vol. 126 No. 1, pp. 25-51.

Wintoki, M.B., Linck, J.S. and Netter, J.M. (2012), "Endogeneity and the dynamics of internal corporate governance", *Journal of Financial Economics*, Vol. 105 No. 3, pp. 581-606.

Yi, A. and Davey, H. (2010), "Intellectual capital disclosure in Chinese (Mainland) companies", *Journal of Intellectual Capital*, Vol. 11 No. 2, pp. 326-347.

Yu, H.C., Kuo, L. and Kao, M.F. (2017), "The relationship between CSR disclosure and competitive advantage", *Sustainability Accounting, Management and Policy Journal*, Vol. 8 No. 5, pp. 547-570.

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