TESIS DOCTORAL

ANALYSIS OF THE EFFECTS OF COMPLIANCE WITH CORPORATE GOVERNANCE RECOMMENDATIONS

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A mis padres, Francisco José y Saly.

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CHAPTER 1

Introduction

CHAPTER 1: INTRODUCTION

1.1. Research motivation

In the economic arena, corporate governance mechanisms are considered key in capital markets because they may help to create firm value as well as improve decision-making processes. Due to the relevance of transparency in how companies are managed, corporate governance mechanisms come under significant societal scrutiny as they have become vital in safeguarding the functioning of firms and financial markets in general.

Corporate governance has gained increasing attention in the public, professional, and academic sphere over the last few decades. Corporate governance refers to the system of rules, practices and processes by which a company is controlled and directed (The Chartered Governance Institute, 2021). It ensures that companies have adequate decision-making process to guarantee the interests of all stakeholders (The Chartered Governance Institute, 2021). In particular, corporate governance comprises a series of internal and external control methods (Baysinger and Hoskisson, 1990) and incentives systems to align the interests of shareholders (principals) with the interests of managers (agents) (Williamson, 1984). In other words, corporate governance is the set of rules, principles and methods that regulate a company's structure and the performance of its governing bodies (Deloitte, 2021).

In sum, firms are required to be transparent in their actions, particularly in the wake of the financial crisis, which highlighted the importance of companies being well managed in order to overcome problems. Corporate governance aims to minimize difficulties and opposing thoughts between different investors and reduce conflicts of interest between managers and shareholders (Becht *et al.*, 2003).

Due to the widespread frauds that have occurred in the business world, and which have already wiped off and continue to wipe off millions in market value (Grove and Clouse, 2017), boards of directors, regulators and professional bodies alike must take a leading role in protecting investors. Understandably, corporate governance scandals have led to both a public reaction —laws and corporate governance codes (CGC, hereinafter) have specifically been established for companies, —and to academic attention being focused in a multidisciplinary mode.

On an academic level, attention has focused on studying: a) ownership structure, b) the functioning of the board of directors— board size, independence, CEO duality and meetings have been analysed—, c) directors' characteristics, such as age, diversity, tenure, and, d) CGC compliance.

The vast majority of studies examine the effects of corporate governance studies on certain business strategies. One branch of studies has shown that corporate governance practices favour firm performance (Vo and Nguyen, 2014; Bhatt and Bhatt, 2017; Danoshana and Ravivathani, 2019), with previous studies having highlighted the effects of corporate governance techniques on company disclosure (Husted and de Sousa-Filho, 2019; Shan, 2019). In addition, recent research has emphasized that corporate governance, seen as the correct way to govern companies, can help to promote sustainable initiatives (Hussain *et al*., 2018).

In particular, within corporate governance regulations, promoting board diversity has acquired a significant role in most countries. In this regard, current studies have paid increasing attention to exploring what advantages gender diversity has for boards of directors (Low *et al.*, 2015; Kılıç and Kuzey, 2016; Li and Chen, 2018; Brahma *et al*., 2021).

Nevertheless, the evidence remains open and more accurate and generalizable findings are required to understand the effect of compliance with corporate governance recommendations, given the direct implications this has on financial markets for governments, regulators, and firms.

1.2. Research objectives

The objective of this thesis is to improve our knowledge of the relationship between corporate governance mechanisms and certain corporate outcomes. Specifically, given their relevance in financial markets, this research aims to examine the impact of corporate governance on: a) financial distress, b) environmental, social and governance (ESG) disclosure, and c) environmental innovation.

Therefore, the main objective is broken down into three sub-objectives:

1. Does compliance with corporate governance codes help to mitigate financial distress?

2. Corporate governance code compliance and environmental, social and governance disclosures.

3. A critical approach to the true influence of female directors on environmental innovation: when are women greener?

Accordingly, we analyse how corporate governance may impact three relevant and totally differentiated areas at the business level: business financial performance, disclosure of non-financial information, and environmental sustainability practices.

Specifically, these objectives have led to independent empirical studies, which are summarized below and explained in detail in section 5:

1. Does compliance with corporate governance codes help to mitigate financial distress?

This study aims to analyse whether compliance with CGC helps to mitigate firms' financial distress. Three different levels of compliance are examined: overall compliance, compliance with recommendations regarding the board of directors, and compliance with recommendations on board subcommittees. This topic is timely and relevant due to the ongoing debates surrounding both the effects of CGC compliance and the determinants of financial distress.

First, the adoption and repercussion of these codes has become a societal concern. Consequently, scholars, public opinion, and politicians have pushed legislators and professional bodies to reinforce governance codes in order to increase internal control and accountability (Cuomo *et al.*, 2016). These CGC are based on recommendations about governance mechanisms and have gained increased visibility and importance in capital markets for investors and regulators (Cicon *et al.*, 2012). Although compliance levels are generally high, most firms fail to fully comply with all the codes` recommendations since the effects of CGC compliance remain largely unexplored (Kabbach de Castro *et al.*, 2017). Previous research has investigated whether there is an economic rationale behind compliance with CGC recommendations or whether this is merely an ethical issue that is pursued for social legitimacy reasons. In this regard, some studies suggest that CGC compliance leads to positive market reactions by increasing market value (Goncharov *et al.*, 2006; Kaspereit *et al.*, 2017) and corporate reputation (Hooghiemstra and van Ees, 2011).

Another branch of research argues that CGC compliance may positively impact major corporate strategic decisions and help to improve firm performance (Bassen *et al.*, 2006; Stiglbauer, 2010). However, research into the effectiveness of CGC is scarce, and there are still major gaps in the literature, which calls for new research on the potential benefits of CGC compliance. In this sense, recent inquiry has highlighted the need to provide a more careful examination of code content and to further explore the relationship between code compliance and other firm financial outcomes (Cuomo *et al.*, 2016). This research extends previous literature by filling these two research gaps. First, this study makes an in-depth analysis of CGC, since it focuses on three different levels of compliance. To that end, it considers overall CGC compliance, as do previous studies, whilst also taking into account compliance with recommendations about the board of directors and about board subcommittees, which is one of the novelties of this study. Second, the study focuses on an important firm outcome in the literature addressing business and finance; namely, the financial distress of companies, thereby providing a better insight into the effects of CGC compliance.

Second, the debate surrounding the determinants of financial distress has been sparking interest in recent decades, and has been accentuated particularly after the last financial crisis, given the major consequences it has for all of a firm's stakeholders (Mselmi *et al.*, 2017; Boubaker *et al.*, 2018). Previous research has highlighted the complexity of predicting firms' financial distress situations for agency credit ratings, governments or financial creditors and has emphasized the role played by corporate governance mechanisms in preventing business failure (Manzaneque *et al.*, 2016a). One implicit premise involved in explaining this potential association is that corporate governance is expected to have important implications for corporate decisions, especially when the business runs a high risk of failure (Dowell *et al.*, 2011). In this sense, the nature of the link between corporate governance mechanisms and the likelihood of financial distress has been discussed among researchers and policymakers alike, and the role of corporate governance in mitigating financial distress remains a core issue today, particularly in light of the financial crisis and the financial scandals involving major companies around the world (Manzaneque *et al.*, 2016b; Udin *et al.*, 2017). However, the literature addressing the association between corporate governance and the

likelihood of firms' financial distress is limited and has thus far failed to explore the impact of CGC compliance. In theory, the ultimate objective of CGC is to recommend best governance practices so as to mitigate agency conflicts, and thereby protect shareholder interests and ensure business prosperity.

2. Corporate governance code compliance and environmental, social and governance disclosures.

This study aims to explore whether compliance with the recommendations contained in CGC contributes to environmental, social and corporate governance disclosure practices. This research is timely and relevant for different motivations that are discussed below, and fills a significant gap in the previous literature by considering active academic, professional, and regulatory debates on the role of CGC and the need to increase ESG information.

Corporate governance is a key issue vis-à-vis understanding how companies work and it has become especially important for companies, regulators, and academics as well as for society as a whole. For this reason, legislators and regulators at both a national and international scale have expressed the need to manage corporate governance mechanisms properly. Notably, most developed countries have published numerous CGC. The emergence of these codes has led to intense debate at the academic, professional, and regulatory levels concerning their effectiveness. The relevance of these codes lies in listed companies' general conviction regarding the importance of being managed properly and transparently as a fundamental element for creating value in organizations, increasing economic efficiency and boosting investor confidence (CNMV, 2015).

However, what impact CGC compliance might have on companies remains an open question in the literature, and there is intense debate as to whether compliance with CGC is an economic or an ethical issue (Hooghiemstra and van Ees, 2011). CGC focus on several recommendations concerning corporate governance mechanisms and have gained significant visibility and importance in capital markets (Cicon *et al.*, 2012). Although CGC compliance levels are generally high, as mentioned before, most companies do not follow all the recommendations, possibly because the effects of CGC compliance remain mostly unexplored, with further research being needed (Kabbach de Castro *et al.*, 2017). Earlier research focused on whether

compliance with CGC had any effect on business performance and the company's market valuation (Fernández-Rodríguez *et al.*, 2004; Stiglbauer and Velte 2014; Kaspereit *et al.*, 2017). Nevertheless, the results have failed to prove conclusive, and recent research has stressed the need to make further progress in studying what consequences CGC compliance might have for a company.

Cuomo *et al.* (2016) highlight the existence of two important gaps in current research. The first relates to the need for a more detailed analysis of compliance with these codes. The second suggests the importance of studying the effect of compliance with the recommendations contained in the CGC on other types of issues. Therefore, this research aims to contribute to previous literature and to cover both matters. To this end, this study performs an in-depth analysis of CGC compliance, focusing not only on compliance at the global level, but also on compliance with recommendations specifically related to the board of directors, and with those associated with the different board committees. Accordingly, three different levels of CGC compliance are considered. Furthermore, other contributions of this study are an analysis of the relationship between the different levels of CGC compliance and the disclosure practices of ESG information.

Information disclosure is a crucial aspect within corporate strategies, and several studies highlight that improved corporate governance mechanisms should lead to better oversight of companies' disclosure processes and to a reduction in information asymmetries in capital markets (Cerbioni and Parbonetti, 2007). ESG information has acquired particular relevance in recent years for investors, entities, regulators, creditors, as well as all types of company stakeholders (Helfaya and Moussa, 2017; Dias *et al.*, 2018; Yu *et al.*, 2018). In particular, ESG disclosure has become a critical aspect of business strategy (Lokuwaduge and Heenetigala, 2017). One of the main reasons why companies disclose ESG information is because they are highly conditioned by existing regulations, although the absence of a mandatory and common framework leads to diversity in the reports presented, thereby complicating any comparisons (Lokuwaduge and Heenetigala, 2017). However, progress has been made in the area of regulation. European Union Directive 2014/95/EU on the disclosure of non-financial information is evidence of this. It establishes the obligation for large companies which are entities of public interest,

and which at the end of the financial year have over 500 employees on average, to include in the management report a non-financial statement containing information. This information must help to understand the company's evolution, results, and situation, together with the impact of its activity, relative at least to environmental and social issues, as well as to employees, respect for human rights and the fight against corruption and bribery (European Union Directive 2014/95/EU).

In this sense, there is an active debate regarding how relevant the ESG reports disclosed by companies might be to the information that interests the different economic agents in capital markets. In particular, recent studies have revealed that most investors consider that the disclosure of this type of information should be improved due to its relevance for companies and investors (PriceWaterhouseCoopers, 2016). Indeed, many studies emphasize that ESG information is vital in terms of enhancing investment decisions (Ioannou and Serafeim, 2017). In this regard, previous literature considers that the disclosure of ESG information entails significant benefits in capital markets, as it allows agency conflicts and information asymmetries to be reduced (Cheng *et al.*, 2014). Consequently, studying the determinants of voluntary disclosure practices of this type of information is crucial for companies, regulators, and academics, and remains an issue which demands further inquiry (Galbreath, 2018). In theory, companies with better corporate governance practices are likely to supervise the information preparation process more effectively in an effort to minimize agency problems which, to this end, would also tend to improve social disclosure. Nevertheless, there is no conclusive evidence on the link between CGC compliance and ESG disclosure.

3. A critical approach to the true influence of female directors on environmental innovation: when are women greener?

The objective of this study is to examine the influence of board gender diversity on environmental innovation. This topic is timely and relevant for several reasons which are commented below. It contributes to the literature related to: a) environmental innovation, b) research on gender diversity, and c) methodological approaches on gender diversity studies.

Firstly, recent governance failures as well as social and environmental excesses have put ever-increasing pressure on boards of directors as drivers of sustainable business strategies (Jain and Jamali, 2016; Arayssi, *et al.,* 2020). In the current context, environmental innovation has become crucial for minimizing firms' environmental problems and for addressing consumer and government concerns[1] as well as increasing economic outcomes through the efficient use of resources (Horbach and Jacob, 2018). Therefore, given both the economic and environmental benefits, it is essential to know how boards of directors, as the top decision-making authority in firms, can shape environmental innovation policies.

Analysing the impact of board gender diversity on environmental innovation may prove particularly relevant, since female representation on boards has been at the core of political, professional and academic discussions worldwide (Cucari *et al.*, 2018; Amorelli and García-Sánchez, 2020). However, in terms of research on gender diversity, empirical evidence on this issue is incipient and scarce and although some studies suggest that female directors may influence environmental innovation (Galia *et al.*, 2015; Arena *et al.*, 2018; Nadeem *et al.*, 2020) the existing findings are still far from complete.

Specifically, the one-size-fits-all approach may be inappropriate to understand the true influence of female directors, which may be dependent on certain factors, and more research is needed to achieve more definite and generalizable findings concerning the conditions in which women in the boardroom impact environmental innovation. In this regard, recent research has emphasised the importance of exploring new methodological approaches and of taking into account the organizational context in order to ascertain the actual effect of female directors (Kirsch, 2018; Bravo and Reguera-Alvarado, 2019; Bolourian *et al.*, 2020). Accordingly, this study extends previous research by performing an in-depth analysis of the relation between board gender diversity and environmental

[1]International bodies and public representatives have strongly positioned themselves in favour of environmental innovation policies as a way to protect the environment and create a climate of social welfare (OECD (2009); European Commission (2011); United Nations Climate Change (2015); UKRI (2019)).

innovation in an effort to unravel what really shapes board female influence on environmental innovation.

1.3. Structure of the thesis

This work is composed of several parts in order to contextualize the situation concerning corporate governance and board of directors, define the theoretical framework, and develop the empirical analysis.

Specifically, this thesis is structured as follows:

- Chapter 2 provides a contextual framework, focusing on the relevance of corporate governance, highlighting the importance of the board of directors as an internal corporate governance mechanism. A study of board of directors' characteristics is provided, highlighting the significance of board gender diversity.

- Chapter 3 describes the legal context and examines CGC. This chapter contains a review of Spanish CGC that have been in force recently up to the 2015 Good Governance Code of Listed Companies, compliance with which has been evaluated.

- Chapter 4 discusses the theoretical framework of corporate governance, board of directors and board gender diversity.

- Chapter 5 deals with the empirical study. This section is divided into three different subsections which respond to the sub-objectives of this thesis, each of which includes their own objective, hypothesis development, research method and results as well as discussion and conclusions.

- The concluding chapter (Chapter 6) reports the final considerations as well as implications, limitations, and future research directions.

- Finally, the references are provided.

CHAPTER 2

Contextual framework

CHAPTER 2: CONTEXTUAL FRAMEWORK

2.1. Corporate Governance

Corporate governance first gained importance in the 1970s in the United States. The Federal Securities and Exchange Commission (SEC) included corporate governance in the official revision agenda in the mid-1970s, and the term "corporate governance" appeared for the first time in the Federal Register in 1976 (Ocasio and Joseph, 2005). The official gazette of the federal government regulated for the first time on matters of managerial opportunism. By this time, several incidents of illegal conduct by American companies had been discovered, which led the SEC to start talking about corporate governance. Since then policy makers have established legislation and recommendations on the matter worldwide, and since the 1990s regulators at the national and international level have discussed good governance, with concern over the issue now being reflected in a series of reforms that are included in CGC.

In particular, a number of business scandals have placed corporate governance at the centre of controversy, highlighting its impact and evidencing the need for good governance. Major scandals include those such as Enron, Volkswagen and Toshiba. The scandal involving Enron, an American corporation, came to light in October 2001. Initially, its business involved distributing oil, natural gas and electricity, after which it moved into energy distribution, gaining importance in the energy sector, and eventually consolidating its position in the sector. The scandal came about because Enron manipulated the energy crisis and sought to create energy shortages in California, which led prices to skyrocket, triggering outages that yielded even greater profits for the firm. Behind all of this lay hidden multi-million dollar losses, unaccounted for liabilities and "parallel" accounting, which finally came to light, leading the company into bankruptcy. It was actually the mismanagement practices of its managers that plunged the corporation into bankruptcy, dragging the auditing firm that audited its accounts - Arthur Andersen, one of the "big five" at the time, with it. The case of Enron is considered one of the most significant cases of corporate governance scandals ever.

The second case involved Volkswagen, a German corporation which, in 2015, was the subject of another of the biggest corporate governance scandals. The problem

involved diesel combustion gases, which are considered carcinogens and directly related to lung cancer according to the World Health Organization. Volkswagen thus invested in research to improve the image of diesel engines, with the company introducing a diesel model that was marketed as being less polluting for the environment and less damaging for health. Sometime later it was discovered that the company had been manipulating the engines, whose emission levels in fact exceeded the established limits. The consequences for Volkswagen were million dollar fines, company discredit and dismissals as well as criminal liability for its managers.

The third case involved Toshiba, a Japanese corporation which was involved in a scandal in 2016, following an investigation which claimed that the company had declared non-existent profits and had been engaging in inappropriate accounting practices. All of this caused Toshiba's share price to plummet, reflecting the loss of investor confidence.

These three corporate scandals emphasize the need for companies to be properly managed and are largely a sign of concern about corporate governance. Since then, corporate governance has become a matter of worldwide debate amongst academics, regulators, executives and investors.

Initially, corporate governance mechanisms were proposed in order to minimize agency conflicts related to the separation of ownership and control (Jensen and Meckling, 1976). Agency problems lead managers to present a short-term vision, at the expense of long-term results for the company, which is why firms need corporate governance mechanisms to be well managed, thereby safeguarding shareholders' interests (Khan, 2011). As a result, corporate governance should play a vital role in the formulation and oversight of corporate strategies. Under this premise, corporate governance becomes a key factor in increasing decision-making quality. Among its main functions, there is major consensus regarding the need for corporate governance to offer mechanisms aimed at enhancing the quality of the information disclosed by companies as well as increasing and boosting transparency (Rodríguez-Ariza *et al.*, 2014).

In particular, several corporate governance mechanisms can be highlighted. These can be classified into internal and external mechanisms (Agüero, 2009; Tejedo-

Romero *et al.*, 2017). The difference is based on whether a governance mechanism action originates within the firm or comes from outside (Aguilera *et al*., 2015):

a. Internal mechanisms: previous studies focus their attention on ownership structure, the board of directors and incentive systems (Guerras and Navas, 2002; Denis and McConnel, 2003):

- Ownership structure. This refers to the level of participation in company capital, which then determines power relations (Briano-Turrent and Saavedra-Garcia, 2015). If the owners are the managers of a company, there are no conflicts of interest and therefore no agency problems. However, decentralization is a direct consequence of an organization's growth and implies that people outside the original ownership structure become part of the management, which is why potential conflicts of interests may then appear between them. Jensen and Meckling (1976) claimed that if managers are also company shareholders then they tend to be more committed to the company's results, which may ensure that the interests of shareholders and managers are closely aligned, and thereby prevent opportunistic behaviour. Shleifer and Vishny (1986) highlighted ownership concentration as a mechanism which may resolve the agency problem between owners and managers since it is easier for large investors to control managers' activities than it is for small shareholders to do so (Shleifer & Vishny, 1997). Nevertheless, agency conflicts can equally arise between majority and minority shareholders since preponderance shareholders could follow private benefits without respecting the interests of small investors (Shleifer and Vishny, 1986). Furthermore, there are other types of ownership apart from private ownership, such as public enterprises, where the company belongs to the state, or cases in which ownership is in the hands of institutional investors.

- Board of directors. The board of directors is a company's main decision-making and governing body, since it is responsible for corporate strategy and plays a key monitoring role (Galbreath, 2018), such as evaluating the tasks carried out by the top management and the CEO, and assessing the firm's strategy (Pugliese *et al.*, 2009). This is expected to minimize the costs

incurred when management pursues its own interests at the expense of shareholders' interests (Hillman and Dalziel, 2003). The board thus acts as a formal connection between managers and owners (Monks and Minon, 1995). Nicholson and Newton (2010) underlined several board of director roles: a) strategy implementation, b) control, and c) resource provision. The strategy implementation role refers to the task of developing, ratifying, supervising, and executing strategy (Brauer and Schmidt, 2008). The control role describes directors' responsibility to monitor managers on behalf of shareholders (Hillman and Dalziel, 2003). The resource provision role refers to ensuring company access to resources (Hillman and Dalziel, 2003), in particular providing the company with financial resources, and forging a good corporate reputation (Mintzberg,1983).

Board of director mechanisms have been examined in detail in the literature in an effort to determine board effectiveness (Alfraih, 2016; Makhlouf *et al.*, 2017; Omer and Al-Qadasi, 2020). How boards function, measured as board independence, size, CEO duality and board meetings, together with directors' characteristics as reflected by age, diversity, tenure, and sitting on several committees, has been analysed in numerous contexts (Beiner *et al.*, 2004; Cheng, 2008; De Villiers *et al.*, 2011; Fuzi *et al.*, 2016; Liu *et al.*, 2015; Duru *et al.*, 2016; Kiliç and Kuzey, 2016).

- Remuneration system. Incentive systems are important since they may help to align the interests of managers and shareholders (Jensen and Meckling, 1976). If managers own shares in the firm, they will receive a percentage of the firm's profits in the form of dividends, such that this might mitigate agency costs (Jensen and Meckling, 1976). Barbosa-Ramírez *et al*. (2013) indicate that the goal is to create value for all stakeholders, which implies enhancing shareholder value as well as establishing adequate incentives for managers so that they see themselves as forming a key part of the organization and assume certain business risks in order to maximize company value.

  The purpose is to introduce adequate incentive systems and control mechanisms so that the agent protects the interests of the principal.

b. External mechanisms: internal corporate governance mechanisms enhance the creation of value, considering information asymmetries and agency problems. Nevertheless, there are several external mechanisms which may also influence corporate governance effectiveness (Gómez-Ansón *et al.,* 2002; Aguilera *et al*., 2015). Prominent amongst these are the legal and political system, market control and external analysts and auditors.

- The legal and political system: firms carry out their activity within the legal and political framework in which they operate. The legal system establishes the protection of stakeholders' rights and may regulate internal and external stakeholders' relationships. In addition, it determines the transparency policy related to information disclosure obligation, and dictates strategic and ethical guidance (Aguilera *et al*., 2015).
- Market control: this mechanism has been the focal point of attention of external mechanisms since it can be associated with greater protection of stakeholders' rights (Aguilera *et al*., 2015).
- External analysts and auditors: the external audit verifies that the information published by companies reflects the true image of its assets, financial situation and business results in all its significant aspects. The audit aims to contribute to the requirement of transparency in the information disclosed by companies. Likewise, rating agencies involving analysts have received a great deal of attention in terms of both decreasing information asymmetry and sanctioning improper or unlawful activities (Aguilera *et al*., 2015).

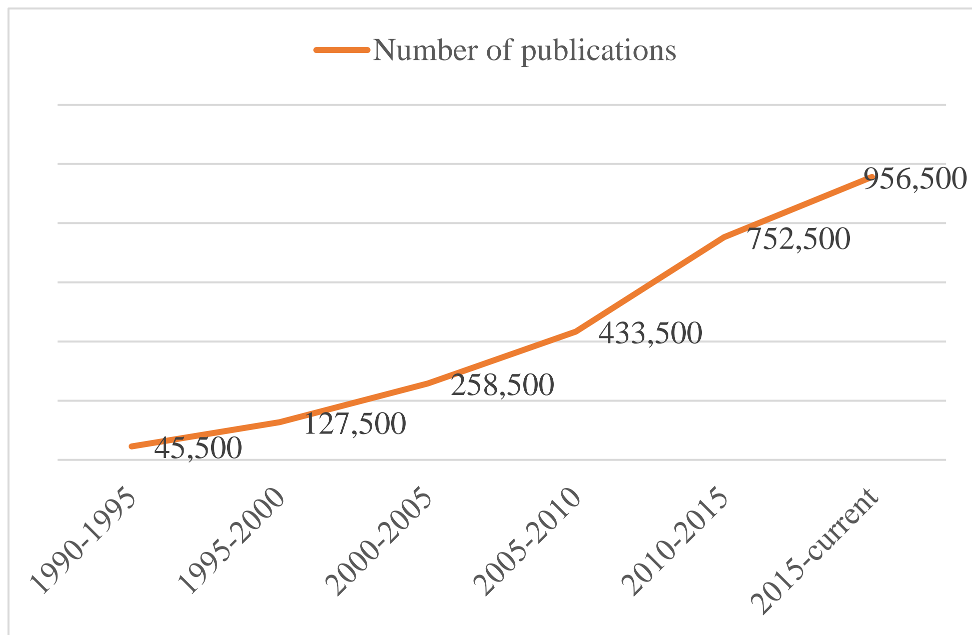
2.2. Board of directors

The board of directors is an essential corporate governance mechanism and lies at the heart of the debate regarding corporate governance (Adams *et al.*, 2010) because it has the power to implement firm strategy (Galbreath, 2018). Additionally, the board of directors plays a supervisory role (Chiang and He, 2010), and is a decisive control system which monitors the activities of managers and CEOs, and oversees the development of firm strategy (Pugliese *et al.*, 2009). It is therefore expected to reduce managerial opportunism costs (Hillman and Dalziel, 2003). Furthermore,

boards are assumed to bring useful resources to firms, such as advice, expertise, connections to environmental contingencies, and legitimacy (Hillman and Dalziel, 2003). As a result, boards play a role in terms of strategy implementation, control, and resource provision (Madhani, 2017). Specifically, boards must be responsible for monitoring decisions in order to pinpoint and prevent financial instability (Chang, 2009; Manzaneque *et al.*, 2016a) as well as implement the measures required to help overcome potential failure (Fich and Slezak, 2008).

Due to its growing relevance in the business sphere, since the 1990s the board of directors has been a subject of debate at the academic level, and has become a topic that has spawned many scientific publications. A search in "Google Scholar" (July 2021) shows approximately 1,890,000 scientific articles dealing with the board of directors. Figure 1 represents the number of publications by time periods. As can be seen, academic activity related to the board of directors continues to grow.

Figure 1. Academic response to the board of directors



Source: own elaboration from the information available at Google Scholar (July 2021)

Based on the fact that board of director literature is extensive, in this thesis a thorough review of the most widely researched areas of analysis in this discipline

is carried out [2]. In particular, given its link to the aims of this project, the review focuses on studies that explore board of director impact. Although inquiry into the board of directors is multidisciplinary in nature, several branches of research have arisen and become significant, some of which are summarized below.

a) The board of director/financial performance linkage is the most widely explored relationship with regard to the board of directors. Some of the measures used to quantify business financial performance include Tobin's q, market capitalization, growth opportunities, ROA and ROE.

b) Board of directors and transparency/information disclosure: the composition and characteristics of the board of directors is crucial vis-à-vis corporate transparency (Torchia and Calabrò, 2016). In addition, it has an impact on both non-financial information (Cheng and Courtenay, 2006; Lim *et al.*, 2007; Donnelly and Mulcahy, 2008) and financial disclosure (Torchia and Calabrò, 2016). In order to measure transparency, researchers commonly draw on self-constructed indices, analyst forecasts, or scores provided by analyst ratings such as those shown in the "Informe Reporta" in the Spanish setting, among others.

c) Board of directors and corporate social responsibility (CSR hereinafter). Previous studies have highlighted that board composition impacts CSR practices (Fernández-Gago *et al.*, 2016; Sundarasen *et al.*, 2016; Godos-Díez *et al.*, 2018). CSR activity is a broad concept that encompasses the measurement of both disclosure practices and performance. As regards CSR disclosure, content analysis of specific concerns, such as ESG, analyst assessments, Global Reporting Initiative (GRI) information measures, or carbon disclosure project (CDP) reporting are several examples of the most commonly used variables. In relation to CSR performance, the literature often draws on widely used measures provided by analysts and has included commercial databases, such as CSR scores, ESG scores, or other variables for CSR quality.

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[2] All references come from Google Scholar, which was consulted in July 2021.

d) Board of directors and corporate reputation: corporate reputation is another area of research interest linked to the board of directors. The composition and characteristics of board members have been widely analysed in order to predict corporate reputation (Brammer *et al.*, 2009; Musteen *et al.*, 2010; Bravo *et al.*, 2015). When quantifying corporate reputation, previous research has tended to resort to existing databases and analyst ratings, among others.

e) Board of directors and other strategies: previous studies argue that boardroom composition has an impact on other business outcomes as illustrated by innovation, internationalization, fiscal measures, dividend policies, fiscal policy, mergers, and acquisitions.

In all these research areas, these types of studies have incorporated a number of different measures addressing the structure and functioning of the board as well as the characteristics of board members. As regards the main measures associated to board structure and functioning, the literature particularly highlights those based on: a) board size; b) board independence; c) board activity; d) the existence and structure of certain board subcommittees, among others.

a) Board size has been traditionally measured as the number of board members (Cheng, 2008; Guest, 2008). Taking current recommendations as a reference, in some countries like Spain the desirable size could range between 5 and 15 directors. It is assumed that larger boards could lead to difficulties in decision making due to problems involving both communication as well as coordination (Jensen, 1993; Eisenberg *et al.*, 1998), whereas a low number of directors may entail problems concerning a lack of resources or time, thereby supporting the argument of resource dependence theory (Coles *et al.*, 2008; Adhikary *et al.*, 2014).
b) Board independence. As regards board member independence, the "Comisión Nacional del Mercado de Valores" (hereinafter, CNMV), which is the body in charge of supervising and inspecting the Spanish stock markets and the activity of those who intervene in them, proclaimed in 1998 the principal role of independent directors— directors who are not linked to the management team or to the control shareholding nucleus that most influence it (CNMV, 1998) —.

In this sense, directors can belong to diverse categories (Ley de Sociedades de Capital, 2010):

- executive directors— "*those who perform management functions in the company or its group, whatever the legal relationship they have with it. Nevertheless, directors who are senior managers or directors of companies belonging to the group of the dominant entity of the company will have in this the consideration of proprietary directors*".
- non-executive directors— "*They are all the remaining directors of the company, and may be proprietary, independent or other external".* Two different categories of non-executive directors can be highlighted:
  - Proprietary directors— "*Those who have a stake shareholding equal to or greater than that legally considered significant or that have been appointed due to their condition of shareholders, although their shareholder participation does not reach the cited amount, as well as those who represent shareholders of the above-mentioned".*
  - Independent directors— "*directors who are selected because of their personal and professional situation and who can perform their functions without being conditioned by relationships with the company or its group, its significant shareholders or its managers".*

In particular, board independence is usually measured as the proportion of independent directors among the total number of directors (Abdullah *et al*., 2011; Liu *et al*., 2015).

c) Board activity. Board activity is generally quantified as the number of board meetings held in a year (Brick and Chidambaran, 2010; Chou *et al*., 2013). Board meetings allow directors to devote more time to analysing and addressing corporate strategy (Wincent *et al.*, 2010). In this line, the discussion concerns whether or not meetings and board attendance are thought to be significant conduits through which directors gain firm specific information and are able to comply with their monitoring role (Ntim and Osei, 2011). In contrast, other researchers contend that board meetings are not guaranteed to prove useful because of the limited time available to directors and because more frequent board meetings may lead to less attendance (Lin

et al., 2014). In this sense, one branch of studies has found a negative association between board meetings and firm performance (Rodríguez-Fernández *et al*., 2014; Johl *et al*., 2015).

d) Existence and structure of certain subcommittees. Audit committees (Aldamen *et al*., 2012; Bravo and Reguera-Alvarado, 2019) and CSR/sustainability committees (Shaukat and Trojanowski, 2016; García-Sánchez *et al*., 2019) have been widely studied in the literature. The audit committee is responsible for both financial and non-financial information since it should supervise both financial statements and associated documents as well as CSR disclosures (Al-Shaer and Zaman, 2018; Bravo and Reguera-Alvarado, 2019). The CSR/sustainability committee advises and encourages directors to implement the GRI-IFC strategy (García-Sánchez *et al*., 2019) and plays a significant role in helping managers to develop CSR strategy and examine CSR performance (Mackenzie, 2007).

Apart from these characteristics based on the structure and functioning of the board of directors, previous studies have also largely employed measures regarding the personal attributes of board members. In particular, these attributes can be divided into several categories (Johnson *et al*., 2013); a) demographics; b) human; c) capital.

a) Director demographics. Demographic characteristics include general information about groups of people which can be attributes and social characteristics. Previous research highlights that demographic characteristics shape behaviour that may influence cognition and decision making, thereby conditioning firm performance (Forbes and Milliken, 1999). Within demographic characteristics, age, educational background, gender, race and ethnicity have thus far been examined:

- Age: this can be measured as how old directors are (Bilimoria and Piderit, 1994a; 1994b); as a group average (Post *et al*., 2011); and as a standard deviation of a group (Bohren and Strom, 2010). Johnson *et al.*, (2013) highlight that the effect of directors' age on firm outcomes remains controversial. On the one hand, older executives are less likely to start new directions and also tend to be more risk adverse (Platt and Platt, 2012). On

the other hand, they can contribute thanks to their valuable experience (Platt and Platt, 2012). Bonn *et al.*, (2004) found a negative association between board age and firm financial performance. Nevertheless, John *et al.*, (2020) showed that board age positively impacts firm value.

- Educational background. This has been quantified as holding a degree (Singh, 2007) or belonging to a group that hold certain types of degree (Dalziel *et al*., 2011). Academic training conditions the decision-making capacity. John *et al.* (2020) highlight that educational background has a significant positive impact on firm value. Indeed, previous research has established that the educational qualifications of board members positively affect firm performance (Darmadi, 2013). In particular, the educational and functional background heterogeneity of directors is seen to enhance innovation (Sarto *et al.*, 2019) and enrich corporate social performance (Harjoto *et al.*, 2019).

- Gender. Board gender diversity has been widely examined in the literature. Kılıç and Kuzey (2016) reported that women directors have a positive impact on financial performance. Likewise, there is empirical evidence that the inclusion of female directors promotes firm value (Carter *et al.*, 2003; Nguyen and Faff, 2007). Furthermore, women are more sensitive and might be predisposed to take part in CSR and environmental decisions (Nielsen and Huse, 2010). Indeed, there is empirical evidence on the positive effect of female directors on CSR (Setó-Pamies, 2015; Galbreath, 2018). Given its importance, board gender diversity is discussed in a later section.

- Race and ethnicity. Several measures relating to belonging to one or another category, or more generic measures of diversity, have commonly been used. Race and ethnic diversity have not been the subject of much research, although Ntim (2015) did find that ethnic diversity is a more appreciated quality than gender diversity in the South African stock market. In addition, Richard (2000) established that cultural diversity, measured as racial diversity, adds firm value and can lead to competitive advantage.

b) Human capital. Human capital refers to the abilities and experiences that directors can contribute to the decision-making process individually. It involves competencies acquired at the individual level, such as experience, and depends on directors' international experience, knowledge of the company and environment, industry familiarity, CEO experience and financial know-how (Johnson *et al.*, 2013; Volonté and Gantenbein, 2016), which could be summed up in:

- Financial or industry experience: the literature assumes that directors' human capital is expected to upgrade firm performance until it can maximize board effectiveness (Ployhart and Moliterno, 2011; Khanna *et al.*, 2014). Volonté and Gantenbein (2016) found empirical evidence that directors' human capital impacts firm performance, considering business strategy.
- Experience in the company, which is also known as tenure. Long-serving directors can be expected to develop certain particular expertise on the company which may help them to perform their roles more efficiently. Schnake *et al.* (2005) evidence that longer-tenured boards improve directors' capacity to monitor managers and so avert fraud, in addition to proving more advantageous in terms of controlling managerial opportunism when applying immoderate cash flow (Sharma, 2011). In contrast, Coles *et al.* (2015) highlighted that longer board service may cause directors to develop groupthink, which diminishes firm value in dynamic industries. Huang and Hilary (2018) pointed out that board tenure presents a U-shaped relation with firm value and accounting performance. Hence, additional research is required to explain these mixed results.

c) Social capital. Social capital has been defined in many ways. Burt (1992) determined that social capital concerns the individual capacity to secure resources through relationships. Lin (2001) defined it as an "*investment in social relations with expected returns*". Kilduff and Tsai (2003) refer to resources available to an individual which they can access through their links with others within a job network. Nevertheless, social capital can entail more costs than benefits in certain situations (Kim and Canella, 2008). For instance,

forming part of too many boards might lessen such benefits (Kor and Sundaramurthy, 2009) because of the need to attend to information which directors must compare as a result of the other boards they sit on (Khanna *et al.*, 2014).

Social capital theory established the need to distinguish types of knowledge between internal and external sources (Adler and Kwon, 2002). Indeed, Kim and Cannella (2008) divided social capital between interpersonal connections that involve others within the organization, and links that involve others who are outside the organization, arguing that both categorizes are based on distinct types of network links and provide the board with several resources. The former refers to internal social capital, whereas the latter applies to external social capital.

- Internal social capital includes ties and connections with other people within the company, especially other directors on the board (Kim and Canella, 2008), which could be measured by surveys on board members. Previous research emphasizes that personal relationships between directors and the CEO might alter the advisory function of directors (Jones *et al.*, 2008; Rhee and Lee, 2008). In particular, directors who develop bonds of friendship are more likely to reveal their concerns regarding company strategy (Westphal and Bednar, 2005).
- External social capital refers to ties and links with outsiders: investors, customers, suppliers… (Kim and Canella, 2008). The number of connections that directors have with people outside the organization determines a director's social capital, since more connections may imply fast access to data, ideas, and resources (Oh *et al.*, 2006). Furthermore, outside directors sitting on several board leads to enhanced connections with other directors and executives (Beckman and Haunschild, 2002; Hillman and Dalziel, 2003). Indeed, outside directors are linked to the firm in which they provide services (Johnson *et al.*, 2013). When the CEO of a focal company is also a board member of a director's home firm this causes a double loop known as director interlock (Johnson *et al.*, 2013), which allows information interchange and resources in both directions, and

which can both benefit or damage the firm. Moreover, across certain industry positions directors could enrich their relations with customers, suppliers, distributors (Certo, 2003), which could prove useful and valuable in obtaining legitimacy and in helping new businesses to emerge (Certo *et al.*, 2001; Hillman and Dalziel, 2003). Additionally, director status, prestige and reputation may be key indicators to external stakeholders about the organization (Certo, 2003). Johnson *et al.* (2011) argued that directors who enjoy a high status tend to strive to preserve or improve their prestige.

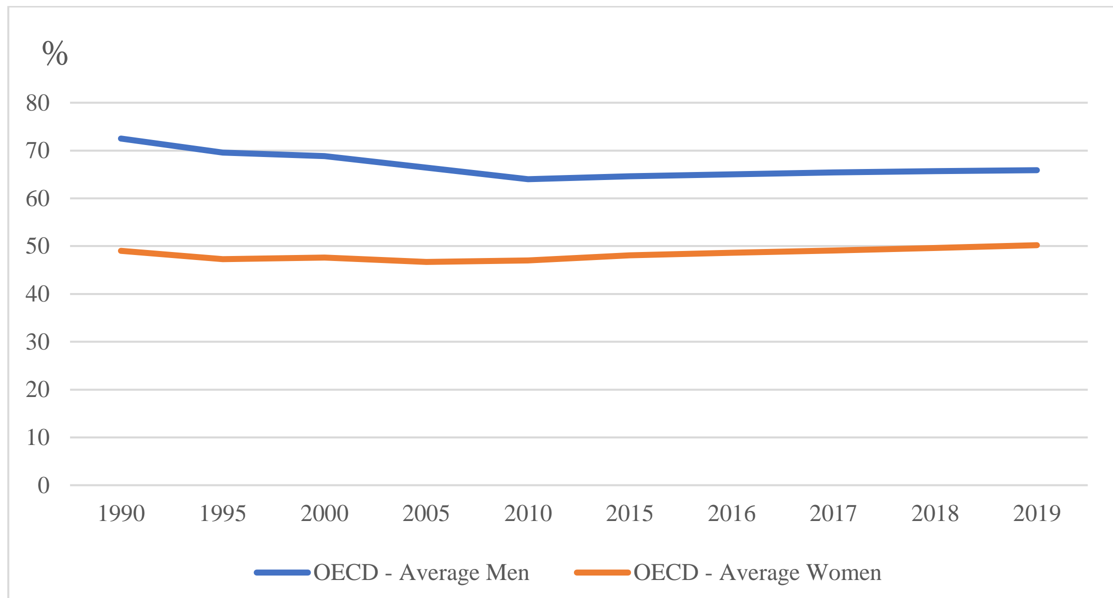
2.3. Board gender diversity

Given the special importance of board gender diversity from a legislative, professional and academic viewpoint, studying this attribute has become prominent in the literature concerning board composition, and particularly, the demographic characteristics of board members.

In addition, board gender diversity plays an important role within the objectives of this project. Therefore, in this section, a specific review of board gender diversity and its importance in the professional and academic arena are provided, while the overview of the legislative perspective is provided in chapter 3.

Although women account for half of the world's population, they tend to experience more problems than men when it comes to accessing the job market. Indeed, the Organisation for Economic Co-operation and Development (OECD) calculates several employment indicators which reflect this reality and which can be seen in Figure 2.

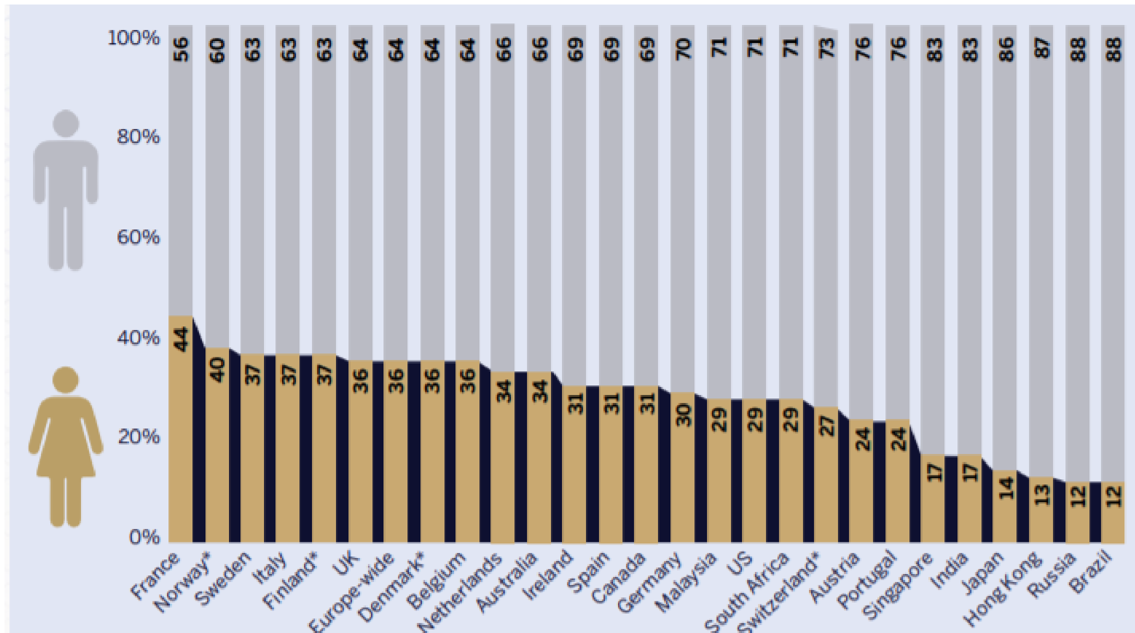
Figure 2. Employment/population ratio by sex



Source: OECD

This inequality is extremely latent in the top management positions of companies and particularly in their boards of directors. Female directors have traditionally lacked representation in the boardroom, and although the trend is moving upwards there is still a long way to go. Figure 3 shows the current percentage of female directors on boards. Despite the fact that many countries are making a major effort to alleviate the situation, women are truly underrepresented on boards, reflecting that gender parity still poses a significant challenge. From a business point of view, there has been a strong response to regulatory measures on board gender diversity, with the vast majority of companies in different countries having increased the number of female directors.

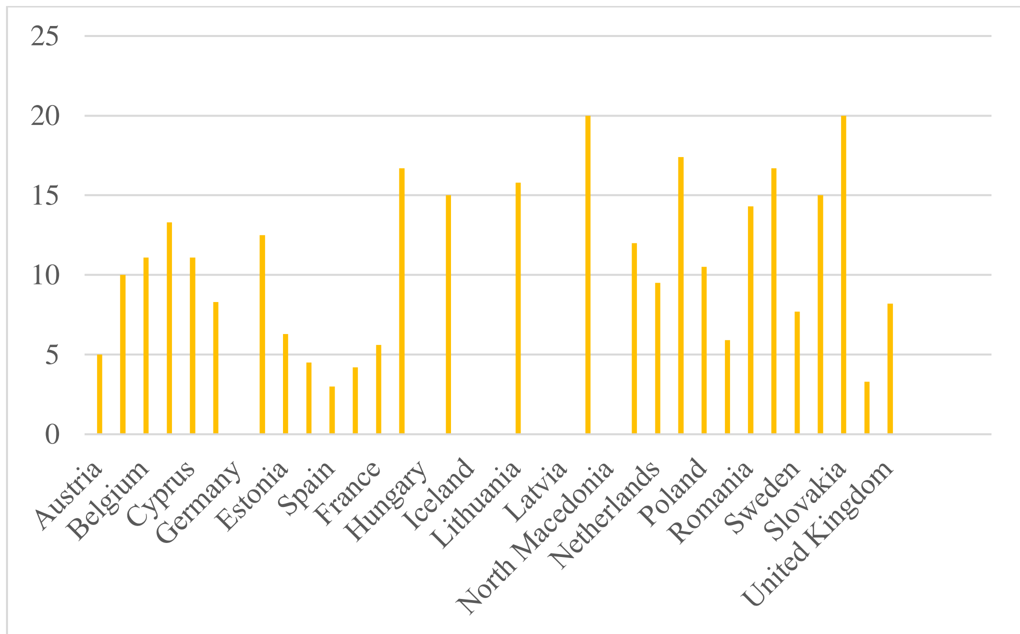
Figure 3. Percentage of women directors at the end of 2020



Source: BoardEx Global Gender Balance Report 2021

Nevertheless, positions of power, such as chief executive officer (CEO), are still mostly held by men. Figure 4 represents the percentage of female directors who occupy the CEO position.

Figure 4. CEO positions held by women by country (%)



Source: European Institute for Gender Equality. Gender Statistics Database 2021

Bilimoria (2006) established that one key aspect to breaking the glass ceiling and removing the barriers to female promotion is related to the presence of women in top leadership positions that have great visibility and legitimacy. Indeed, firms that have female CEOs can be seen as engaged to advancing towards a more equal society for both sexes (Daily *et al.*, 2003). Yet, the truth is that women face enormous difficulties when seeking to access such positions. In this sense, the data seems controversial. On the one hand, numerous countries are increasing female representation on boards, which can be explained by the fact that legislation and CGC call for board gender diversity. Indeed, most CGC recommend the presence of women on boards but do not expressly indicate that they should exercise power. On the other hand, power positions on boards are occupied by men. Both the number of CEO and committee chair positions as directors held by women remain low. Based on this argument, it seems reasonable to ask why countries are increasing the number of female directors in the boardroom. Is it because of the economic benefits this entails? Is it to avoid being punished by investors, the market, or the competent authority? Attempting to answer these questions takes us to the academic arena.

Despite the many studies on board gender diversity, it is striking that there is hardly any research on the reasons that lead companies to include women on the board. Iannotta *et al.* (2016) determined that the establishment of legislation on gender quotas in each country is not enough in itself to obtain a higher number of female directors, which suggests that its expansion from one country to another may be because of institutional isomorphism or social legitimacy rather than rational arguments. To sum up, although the response to demands for board gender diversity has been strong from the business point of view, much more research is needed to find out what really drives companies to increase the number of female directors.

On an academic level, gender diversity is one of the directors' characteristics to have received most attention from research studies into the board of directors. Indeed, a search in Google Scholar with the terms "*board gender diversity*" yields over 2,500,000 hits[3].

In addition to legislation, several situations in practice favour female board representation. In this sense, some literature focuses on analysing the determinants of board gender diversity. Previous research highlights that cultural environment (Adams and Kirchmaier, 2016; Carrasco *et al.*, 2015); directors' personal traits (Singh and Vinnicombe, 2004; Sheridan and Milgate, 2005), and board composition (Westphal and Stern, 2007; Bravo and Reguera-Alvarado, 2019) are determinant elements which promote female access to the board. Hofstede's cultural model (Hofstede, 1980) postulated that there are cultural differences between countries. In this regard, organizations must establish their structure following and respecting the set of rules and principles predominant in the country in which they provide services (Carrasco *et al.*, 2015). Considering culture as a set of generally accepted values and principles, how company structure is formed is likely to be highly conditioned by the main cultural values prevalent in a society (Carrasco *et al.*, 2015). Second, women evidence less overconfidence, greater risk-aversion and are more universally oriented than men (Adams, 2016). Third, as regards board composition, the literature posits that female director access to boards is conditioned by how many directors on the present board are women. Indeed, a position vacated by one

[3]Information available in Google Scholar in August 2021

female director is likely to be filled by another of the same sex (Farrell and Hersch, 2005).

Analysing the effects of gender diversity on corporate policies has become a fundamental question. In this sense, many studies argue that the presence of women on the board can entail positive effects. In particular, previous literature has widely shown organizational benefits related to board gender diversity. One stream of studies highlights the benefits of female directors on firm financial performance (Kılıç and Kuzey, 2016; Bin Khidmat *et al.*, 2020; Brahma *et al.*, 2021; Innayah *et al.*, 2021). Furthermore, the presence of women in the boardroom is associated with higher firm value (Nguyen and Faff, 2007; Agyemang-Mintah and Schadewitz, 2019), corporate social performance (Kyaw *et al.*, 2017; Izco *et al.*, 2020), and CSR practices (Yasser *et al.*, 2017; Yarram and Adapa, 2021). In contrast, some studies have highlighted the negative effects of female board representation, emphasizing that rather than having effective power women are mere symbols, and may pose integration problems. Kanter (1977a) argued that when the presence of women in larger groups is moderated, they are often considered as tokens, and are readily marginalized. This perspective suggests that women are seen as unequal board members when they are underrepresented, which limits their effective participation in decision making and might neutralize their impact on strategic discussions (Cook & Glass, 2018).

CHAPTER 3

Legal context

CHAPTER 3: LEGAL CONTEXT

3.1. Corporate Governance Codes

An increasing number of countries have joined the initiative to create CGC, which provide companies with an action guide on corporate governance that can offer diverse benefits (Acero and Alcalde, 2010). CGC include a large number of recommendations related to corporate mechanisms to help company top management to carry out their functions properly. Most countries have introduced CGC over the last few decades. Table 1 includes the main CGC from around the world.

Table 1. International CGC

Country	Corporate governance code
Australia	ASX Corporate Governance Principles and Recommendations: 4th Edition
Austria	Austrian Code on Corporate Governance (2021)
Belgium	Belgian Code on Corporate Governance 2020
Brazil	Código Brasileiro de Governança Corporativa – Companhias Abertas
Canada	Corporate Governance Guideline- 2018
Denmark	Recommendations on Corporate Governance
Finland	Finish Corporate Governance Code 2020
France	Corporate Governance Code of Listed Corporations 2020
Germany	German Corporate Governance Code 2019
Hong Kong S.A.R., China.	Review of Implementation of Corporate Governance Code 2018 (HKEX)
Ireland	Irish Stock Exchange Listing Rules applying UK Corporate Governance Code with Irish Annex
Italy	Italian Corporate Governance Code 2020

Japan	Japan's Corporate Governance Code Seeking Sustainable Corporate Growth and Increased Corporate Value over the Mid- to Long-Term 2018
Malaysia	Malaysian Code on Corporate governance (2021)
Netherlands	Dutch Stewardship Code 2018
Norway	The Norwegian Code of Practices for Corporate Governance 2018
Portugal	Code of Corporate Governance 2018 (Revised in 2020)
Russia	Russian Code of Corporate Governance (2014)
Singapore	Code of Corporate Governance 2018
South Africa	South Africa. King Report on Corporate Governance for South Africa - 2016 (King IV Report)
Spain	Good Governance Code of Listed Companies. Revised June 2020
Sweden	The Swedish Corporate Governance Code (2016)
Switzerland	Swiss Code of Best Practice for Corporate Governance
United Kingdom	Co-operative Corporate Governance Code
United States	Corporate Governance Principle for US Listed Companies-2017

Source: European Corporate Governance Institute (ECGI).

In Spain, five CGC have been established since the late 1990s, known as the Olivencia Report (1998), Aldama Report (2003), Conthe Report, distinguished as the Unified Good Governance Code of Listed Companies (2006), and the Good Governance Code of Listed Companies (2015), which was revised in 2020. A brief summary of the main aspects of each of these codes is included below:

1. The Olivencia Report

The Olivencia Report (1998) was an ethical code aimed at listed companies and whose application was voluntary, such that companies could either choose to

comply with it, or explain why they did not follow its recommendations. Companies were requested to inform the CNMV about fulfilment of the recommendations, although there was no obligation to do so. The main functions of the board of directors were management supervision and control. In this first Spanish Code, two board committees were specifically detailed; the audit committee and the appointments and remuneration committee, with the code being made up of 23 recommendations. According to the subsequent monitoring carried out by the CNMV in the three years immediately following publication of the report (Acero and Alcalde, 2010), the measures were not widely applied.

2. The Aldama Report

A few years later, in accordance with the 2002 requirement of the Ministry of Economy, the "*Comisión Especial de Promoción de la Transparencia y Seguridad en Mercados y Sociedades Cotizadas"*, also known as the Aldama Commission (named after its president) was set up. The Aldama Report (2003) was implemented and followed the general lines of its predecessor, the Olivencia Report, although it also introduced other issues such as ensuring the transparency and security of financial markets, dealing with loyalty and diligence duties and the problems caused in this regard, board of director performance, general shareholder meetings, as well as listed companies' links with other advisory and commercial companies (Banegas *et al.*, 2006). Compliance with the recommendations included in the Aldama Report was voluntary. However, the "comply or explain" principle prevailed. The most relevant contribution of this report was to advise companies to publish an annual corporate governance report explaining the practices that corporations were carrying out in this regard. This recommendation is included in article 116 of "*Ley 26/2003, por la que se modifica la Ley del Mercado de Valores y la Ley de Sociedades Anónimas*, *con el fin de reforzar la transparencia de las sociedades anónimas cotizadas",* which establishes that the aforementioned report should be made available to the CNMV as well as being published as a relevant event. The content and structure of the annual corporate governance report is established by the Ministry of Economy or by the CNMV, which means that this report is standardised, thus enabling comparisons to be made between reports from

different companies and helping stakeholders to understand it (Acero and Alcalde, 2010).

3. The Conthe Code

Three years later, the government created a special working group to guide the CNMV in harmonizing and updating the recommendations of the Olivencia and Aldama Reports on the good governance of listed companies. In 2006, the aforementioned group approved the Draft Unified Code of Recommendations on Good Governance of Listed Companies. It includes both a series of recommendations aimed at listed companies and a draft of complementary recommendations aimed at Spanish financial institutions, the CNMV, and the government, and totalled 74 recommendations. The basic principles by which it is governed are voluntariness, although this is delimited by the principle of "comply or explain", and generality. It introduces new features such as board gender diversity, a commitment to women, such that recommendation 19 of the code establishes that when the number of female directors is scarce or nil, the board must explain the reasons for this and the measures taken to address it. It also includes specific recommendations on the chairman and secretary of the board of directors and ensures greater transparency in remuneration (recommendations 40-51).

4. Good Governance Code of Listed Companies

The Good Governance Code of Listed Companies was published by the CNMV in 2015. Its objectives are to ensure the proper functioning of the governing and administrative bodies of Spanish companies so as to lead them to the highest levels of competitiveness; generate trust and transparency for national and foreign shareholders and investors; improve the internal control and corporate responsibility of Spanish companies, and ensure adequate segregation of functions, duties and responsibilities in companies, from a perspective of maximum professionalism and rigour. Although it follows the same line as its predecessor, it also introduces new features, and is based on a new structure that establishes the principles by which concrete and specific recommendations are created. Several recommendations from the Unified Code (2006) have since become laws, which is why they no longer appear in this code published in 2015, added to which it also incorporates a number of recommendations on CSR.

The predominant principle of the Code is voluntariness, subject to the principle of "comply or explain". Similarly, this Code establishes that it is up to shareholders, investors and markets to evaluate the explanations that the different listed companies give for failing to follow the recommendations ("does not comply") or for only partially fulfilling them ("partially complies or explains"). Finally, and as its name suggests, the Code establishes that it is aimed at listed companies, which are those whose shares are traded on an official secondary stock market.

5. Good Governance Code of Listed Companies. Revised June 2020

The 2020 review process of the previous code affected, with differing degrees of intensity, recommendations 2, 4, 6, 7, 8, 14, 15, 22, 24, 37, 39, 41, 42, 45, 53, 54, 55, 59, 62 and 64. In particular, the first two modified recommendations are related to general features. Recommendations 6 to 8 refer to general shareholder meetings, while the remaining recommendations concern the board. As regards the main novelties of the review, it is worth highlighting that removed from the Code was the recommendation that "*the director selection policy promotes the objective that in the year 2020, the number of female directors represents at least 30% of the total members of the board of directors"* (Recommendation 14 from the Good Governance Code of Listed Companies 2015). At the end of 2020, the percentage of women directors on Spanish listed companies stood at 26.1%. Indeed, new recommendation 15 established that "*the number of female directors represents at least 40% of the members of the board of directors before the end of 2022 and thereafter, previously being less than 30%"*. Moreover, recommendation 37 refers to the structure of the executive committee, including as a novelty that it should be composed of at least two non-executive directors, one of whom should be independent. Additionally, the review of the code incorporates a new audit committee function, which should ensure that internal control policies are applied successfully (Recommendation 42). Finally, it is also worth mentioning recommendations on sustainability policies, which are an innovation in this latest version of the code.

To sum up, Table 2 lists the main contributions of each of the Spanish CGC.

Table 2. Spanish CGC

Code	Number of recommendations	Contribution
Olivencia Report (1998)	23	-Board of directors' functions: supervision and management control. -2 committees: Audit Committee and Appointments and Remuneration Committee.
Aldama Report (2002)	24	- Ensure the transparency and security of the financial markets. - Publication of the Corporate Governance Annual Report.
Unified Code (2006)	74	-Introduction of board gender diversity issues. -Particular recommendations about the Chairman and Secretary of the board. -Wide-ranging transparency in remuneration.
Good Governance Code of Listed Companies (2015)[4]	64	- New structure that establishes the principles by which specific recommendations are created. -Establishment of CSR recommendations.
Good Governance Code of Listed Companies. Revised June 2020	64	-Female directors should represent at least 40% of board seats by 2022. -Sustainability policy recommendations.

Source: own elaboration based on the information published by the CNMV

[4] Appendix A contains the recommendations contained in this Code, compliance with which has been analysed.

3.2. Board of directors

CGC include different aspects, such as a) responsibilities; b) structure; c) composition; d) activity and functioning; and e) organization of the board of directors. Specifically, in the Spanish context, some of the recommendations included in the CGC in relation to the previous issues are highlighted below (Good Governance Code of Listed Companies. Revised June 2020):

a) Regarding board responsibility, recommendation 12 establishes that boards should carry out their functions with independent judgement, and that their aim should be to pursue corporate interests, which means securing a profitable and sustainable business in the long term.

b) Board structure is regulated in recommendations 13 and 14, specifying issues such as board size or gender:

- Board size: between five and fifteen members.

- Boards should approve a policy that guarantees an adequate composition of the board, favouring diversity of knowledge, experience, age and gender[5].

c) Recommendations 15 to 19 refer to board composition:

- Proprietary and independent directors should represent the vast majority of the board of directors, and the number of executive directors should be the minimum required.
- Female directors should account for at least 40% of board seats by the end of 2022, and thereafter, not previously being less than 30%.
- Independent directors should account for at least 50% of the board of directors.

d) With respect to board activity and functioning, there are several recommendations, ranging from 25 to 36 which are summarized in Table 3, and which include matters linked to the dedication of directors, meetings, and the existence of specific committees, among others.

[5] It is considered that a measure favours gender diversity when it encourages the company to have a significant number of female managers.

Table 3. Recommendations on board activity and functioning

Subject matter	Recommendation
Director dedication	The Appointments Committee should ensure that non-executive directors have enough time to carry out their functions properly. The maximum number of boards on which a director can sit must also be established.
Frequency of meetings and board attendance	At least eight times a year. If a director cannot attend a meeting, which may be for an exceptional reason, he/she can delegate his/her vote.
Information and advice to directors	The company must provide the systems for managers to access the advice required to perform their functions. Prior to the meeting, the agenda must be known, which includes all the points to be discussed.
Chairman/Chairwoman	The Chair must perform the legal and statutory functions that have been attributed as well as organize the schedule of dates and matters to be discussed and the evaluation of the board. Furthermore, he/she will be the head of the board and responsible for its operation.
Board of Directors Secretary	The Secretary must ensure that the recommendations contained in the CGC are complied with.
Board evaluation	The Board should evaluate its actions once a year and adopt timely corrective measures.

Source: Good Governance Code of Listed Companies. Revised June 2020

e) As regards board organization, CGC recommendations from 37 to 54 establish several aspects concerning the existence of certain board committees:

e1) Executive committee. If there is an executive committee, it should contain at least two non-executive directors, one of whom should be independent. The secretary should be the same as for the board.

e2) Audit committee. It should be an internal audit unit. The Code also establishes audit committee functions such as monitoring and evaluating the development process and the integrity of financial and non-financial information, as well as risk control and management systems. It should ensure the independence of the department that assumes the function of internal audit, among others.

e3) Risk control and management function. The risk control and management policy should identify the various financial and non-financial risks; a risk control and management model; the level of acceptable risk in accordance with the company; the measures to mitigate risk; and information systems and internal control. The Code indicates there should be an internal control and risk management function exercised by an internal department.

e4) Appointments and Remuneration committee. The vast majority of the directors should be independent. These must be two separate committees if the company is highly capped. The Code sets out the remuneration committee functions, such as ensuring that any conflicts of interest do not harm the independence of external advice provided to the committee.

e5) Others specialized committees. Supervision and compliance with environmental, social and corporate governance policies will be attributed to the audit, appointments, sustainability or CSR committee or to another specialized commission.

In particular, within demographic characteristics, gender diversity has received a great deal of attention from diverse points of views. Because of this, and considering that one of the specific objectives of this thesis focuses on board gender diversity, the next section is dedicated to contextualising the legal framework concerning the presence of female directors on the board.

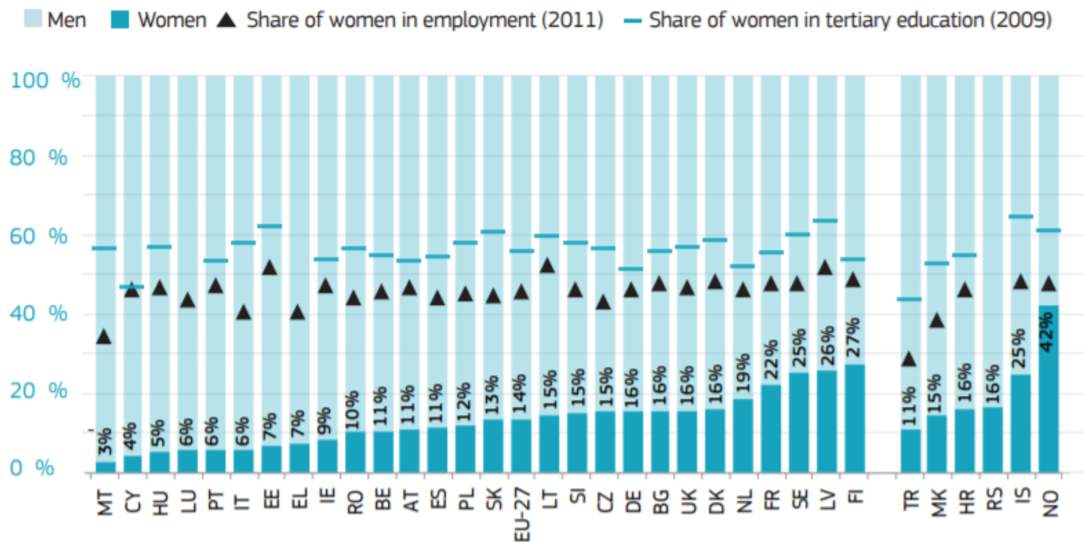
3.3. Board gender diversity

The inclusion of women in the labour sphere is a reality that is still characterized by the existence of inequalities, since there are some positions, especially in senior management, which have traditionally been held by men, and which women may face various difficulties when attempting to access. Because of that, from a

legislative perspective, regulators and professional bodies have increasingly issued laws and recommendations to guarantee equal opportunities between women and men on boards of directors. In particular, board gender diversity has received much attention since boards may serve as an example to the rest of the company's levels.

This thesis specifically reviews the situation of board gender diversity at the international level, emphasizing the quota laws established in some countries and the recommendations on board gender diversity included in each national CGC. At the regulatory level, the vast majority of countries are making efforts to regulate this situation, either through laws or recommendations, in order to include women in the boardroom. Norway was first country to do so, establishing quota laws to guarantee equal opportunities between male and female directors. This was then followed by several European countries. The European Commission later established in 2012 a proposal for a Directive of the European Parliament and of the Council on improving the gender balance among non-executive directors of companies listed on stock exchanges, together with other related measures. The background of this proposal was that company boards in the European Union were characterised by persistent gender imbalances, as evidenced by the fact that only 13.7% of corporate seats in the largest listed companies were held by women (15% among non-executive directors) at the time (European Commission, 2012). Figure 5 shows the proportion of each gender represented on the board of directors at the time the directive was published.

Figure 5. Women and men on the boards of the largest listed companies, January 2012



Source: European Commission, database on women and men in decision-making and Eurostat, Labour Force Survey. Note: data on share of employment not available for RS; data on tertiary education not available for LU, EL and RS.

In response to the significant underrepresentation of women in European company boardrooms, this directive established (Proposal for a Directive of the European Parliament and of the Council on improving the gender balance among non-executive directors of companies listed on stock exchanges and related measures, 2012):

"Article 4. Objectives with regard to non-executive directors

1. Member States shall ensure that listed companies in whose boards members of the under-represented sex hold less than 40 per cent of the non-executive director positions make the appointments to those positions on the basis of a comparative analysis of the qualifications of each candidate, by applying pre-established, clear, neutrally formulated and unambiguous criteria, in order to attain the said percentage at the latest by 1 January 2020 or at the latest by 1 January 2018 in case of listed companies which are public undertakings.

2. The number of non-executive director positions necessary to meet the objective laid down in paragraph 1 shall be the number closest to the proportion of 40 per cent, but not exceeding 49 per cent.

3. In order to attain the objective laid down in paragraph 1, Member States shall ensure that, in the selection of non-executive directors, priority shall be given to the candidate of the under-represented sex if that candidate is as equally qualified as a candidate of the other sex in terms of suitability, competence and professional performance, unless an objective assessment taking account of all criteria specific to the individual candidates tilts the balance in favour of the candidate of the other sex".

Under this scenario and, in accordance with this directive, several measures were taken by the Member States, which can be divided into two major blocks; a) legislative measures, and b) voluntary/recommended initiatives.

a. Legislative measures

Several Members States have appealed to legislative initiatives determining quotas or targets for board gender representation. Compulsory quotas may be classified into two categories: hard quotas and soft quotas. Hard quotas imply sanctions for every listed company in the event of non-compliance, which can range from a "lax" penalty to forcing a firm which does not comply to de-list from a national stock market or even to liquidate. Soft quotas appeal to public companies which may be penalised when failing to respect the established quotas (Bravo-Urquiza and Reguera-Alvarado, 2019).

In the following paragraphs, a brief review of the some of the quotas imposed in different countries is provided, highlighting the target established and the year proposed to achieve this objective.

Austria: in November 2017, Austria enacted legislation for a 30% quota of women on supervisory company boards.

From 1 January 2018, appointments and postings to supervisory boards of listed stock companies, and of companies with more than 1,000 employees whose boards consist of at least six seats, must consist of a minimum of 30% of the underrepresented sex. Only "single gender" companies (defined as companies that

have a workforce with less than 20% employees of one sex) are exempt from the new regulations. The 30% quota is sanctioned with an "empty seat" policy meaning that appointment votes and postings that fail to meet the required minimum are void and board members holding such seats are barred from voting. The new regulations take effect on 1 January 2018 and are applicable to all board elections from that date onward. Current seat holders on company boards will not be affected (Act on Equality of Women and Men on Supervisory Boards, 2017).

Belgium: in June 2011, Belgium established a quota of one third of women in the board of directors, coming into force from 2012 in public companies and listed companies. Enterprises were given six years (until 2017) to attain the objective, while small and medium sized companies (SMEs) were granted eight years.

France: in January 2011, France approved a law on mandatory quotas for listed companies and for companies with more than 500 employees or with a turnover and / or assets of more than 50 million euros. The deadline to comply with the aforementioned legislation, which requires that at least 40% of board seats be held by women, expired in 2017. It required at least 20% of women on boards by the beginning of 2014, and 40% on 01/01/2017, with a penalty for non-complying companies equivalent to 1% of their wage bill.

Germany: the first step in this matter was the establishment of a quota law in January 2016, forcing companies with over 2,000 employees to respect quotas of 30% of women on supervision boards vis-à-vis new appointments. Companies with fewer than 2,000 employees are required by law to publicly disclose their goals for female participation in company management, and whether or not those goals are being met. However, it does not contemplate mandatory hiring or sanctions in the event of non-compliance. The second step came in January 2021, when Germany approved a mandatory gender quota for DAX companies. The initiative, which must be debated by the Federal Parliament, envisages that when the board of a listed company has more than three members, at least one of these must be a woman.

India: under Section 149(1)(b) of the Companies Act, 2013, India ordered that at least one seat on the board of directors of listed companies be occupied by a woman.

Provided further that such class or classes of companies as may be prescribed, shall have at least one woman director (The Companies Act, 2013). *This section came into force on 1st April 2014.*

Italy: State Law no. 120/2011 established a quota law for the board of directors of listed companies and public companies (so-called "pink" quotas) to balance female and male director access to board seats. Although compulsory, quotas are temporary since they only last three terms in office for directors (nine years).

By Act 120/2011, the governing bodies of publicly-listed companies, from 12 August 2012 onwards, must renew their boards by reserving a quota of at least one-fifth to the less represented gender. From the second and third renewal of the corporate bodies, women should be at least one-third. The process for amending the statutes of the above companies is a factor that should not be underestimated. The law will be valid for three terms, until 2022; and it provides a mechanism for rounding up. The decimals arising from the application of one-fifth and one-third are rounded up to the higher number. The provisions of law establish a legal dual-track: for publicly-listed companies, the discipline stems from the Act under reference, also known as the Golfo - Mosca Law and in detail by a subsequent Regulation of CONSOB (Italian Stock Exchange Authority); for State-owned companies, the discipline is governed by a subsequent Regulation, the D.P.R., dated November 30, 2012. As for the latter, oversight is attributed to the President of the Council of Ministers or delegated to the Minister for Equal Opportunities (Law 12 July 2011, n. 120).

Norway: the law requires women in companies to represent at least 40% of the boardroom and was approved by the Norwegian Parliament in 2003. It came into force in 2004, with a two-year transition period. It required a minimum representation of 40% by 2008 in publicly-owned or listed companies. The law envisages sanctions and even expulsion from the stock market in the event of non-compliance.

Portugal: Portugal established a minimum of 20% women directors from the first elective general meeting after 1 January 2018, and 33.3% from the first elective general meeting after 1 January 2020. This applies to the renewal and replacement of terms in office, but not to current terms (article 5). Non-compliance of the

minimum thresholds leads to a non-compliance declaration by the Portuguese Securities Market Authority and causes the appointment act to qualify as merely provisional (article 6) (Law 62/2017, August 1).

b. Voluntary/Recommended initiatives

These initiatives include; a) a voluntary target, which refers to a recommended percentage of women in the boardroom without any sanction should there be non-compliance; or b) general recommendation which calls for board gender diversity.

b1) Voluntary target:

Australia. Australian CGC recommend that if the entity was in the S&P/ASX 300 Index at the commencement of the reporting period, the measurable objective for achieving gender diversity in the composition of its board should be to have not less than 30% of its directors of each gender within a specified period.

Malaysia. The Malaysian government recommended having at least 30% women as decision makers in the corporate sector. Companies should strive to boost female representation on the board if there are appropriate candidates available when board vacancies emerge.

Netherlands. The Netherlands government advice group recommends 30% quotas of female directors. Parliament is currently debating a law which would oblige listed companies to have one third of their supervisory board made up of women.

Spain. Spain determined that women should represent at least 40% of board seats in large public and limited liability listed companies by 2022, under the principle "comply or explain".

Switzerland. In September 2020, the Swiss Federal Council decided to demand that large companies introduce a gender quota of 30% for their boards of directors and of 20% for their executive boards, to come into force on 1 January 2021. This amendment to the Code of Obligations, which is part of a larger overhaul of Swiss company law, had been adopted by the Swiss Parliament on 19 June 2020. Companies that in two consecutive years have a balance sheet of more than 20 million Swiss francs or whose sales revenue exceeds 40 million Swiss francs, or that have an annual average of more than 250 full-time positions are required to

include information on the gender quota in their annual remuneration report. If the quota is not met, companies are required to comply or to explain why, and to describe the measures that have been and will be taken to increase the numbers for the underrepresented gender (Federal Act on the Amendment of the Swiss Civil Code. Part Five: The Code of Obligations, article 734f, 2021).

United Kingdom. The UK Government recommended a voluntary target of a minimum of 33 percent female representation on FTSE 350 boards by 2020 and also recommended that FTSE 100 companies should aim for a minimum of 33 percent female representation across their executive committee and direct reports to the executive committee by 2020 (FTSE Women Leaders, 2016).

b2) General recommendation

It refers to mentions in the CGC of each country that propose board gender diversity, without highlighting any particular percentage to be reached by female directors. This is the case of Sweden, Finland, Denmark, South Africa, Singapore, Hong Kong, Brazil, and Japan.

In contrast, although they are exceptions, there are some countries whose CGC do not include any type of recommendation on board gender diversity. These countries include Canada, Ireland (Irish Annex of the UK Corporate Governance Code), the United States, and Russia.

Taking into account that this thesis focuses on CGC, a summary of the recommendations previously commented on and which appear in each country's CGC is provided, regardless of whether they are voluntary or mandatory, because they have become laws. This is shown in Table 4.

Table 4. Gender diversity in national CGC

CGC	Recommendations on board gender diversity
Australia. ASX Corporate Governance Principles and Recommendations: 4th Edition	Recommendation 1.5 *A listed entity should:* *(a) have and disclose a diversity policy;* *(b) through its board or a committee of the board set measurable objectives for achieving gender diversity in the composition of its board, senior executives and workforce generally.* *If the entity was in the SandP/ASX 300 Index at the commencement of the reporting period, the measurable objective for achieving gender diversity in the composition of its board should be to have not less than 30% of its directors of each gender within a specified period.*
Austria. Austrian Code on Corporate Governance (2021)	V. Supervisory board Qualifications of Members, Composition, and Independence of the Supervisory Board *52. When electing the members of the supervisory board, the general shareholders' meeting shall take due care to check the expertise and personal qualifications of the supervisory board members and to ensure a balanced composition with respect to the structure and the business of the company.* *Furthermore, reasonable attention is to be given to the aspect of diversity of the supervisory board with respect to the representation of both genders and the age structure, and in the case of exchange-listed companies, also with a view to the internationality of the members.*

	The supervisory board shall be made up of at least 30 percent women and at least 30 percent men, provided the supervisory board consists of at least six members (shareholder representatives), and the staff representatives must consist of at least 20 percent female and male employees each.
Belgium. The 2020 Belgian Code on Corporate Governance	Principle 3. The company shall have an effective and balanced board *The composition of the board should be determined so as to gather sufficient expertise in the company's areas of activity as well as sufficient diversity of skills, background, age and gender.*
Brazil. Código Brasileiro de Governança Corporativa – Companhias Abertas	2.2. Composition of the board of directors. Recommended practices 2.2.2 *The board of directors should approve an appointment policy establishing:* *(ii) that the board of directors should be composed taking into consideration the time availability of its members for exercise of their duties and diversity of knowledge, experiences, conducts, cultural aspects, age, and gender.* 3.2. Appointment of executive management members. Principle *The process of appointing and filling positions in the executive management and managerial positions should seek to form a group aligned with the principals and ethical values of the company, taking into consideration diversity, including gender diversity, seeking occupation of such positions by people with complementary abilities and qualified to face the challenges of the company.*

Denmark. Recommendations on Corporate Governance (2017)	3. Composition and organization of the board of directors 3.1. Composition Recommendation 3.1.2. *The Committee recommends that once a year the board of directors discusses the company's activities to ensure relevant diversity[6] at management levels, prepares, and adopts a policy on diversity. The policy should be published on the company website.*
Finland. Finnish Corporate Governance Code 2020	Recommendation 8 – Composition of the Board of directors *The composition of the company's board of directors shall reflect the requirements set by the company's operations and development stage.* *A person elected as a director must have the competence required by the position and the possibility to devote a sufficient amount of time to attending to the duties. The number of directors and the composition of the board of directors shall be such that they enable the board of directors to see to its duties efficiently. Both genders shall be represented in the board of directors.*

[6] Comment: diversity includes age, international experience and gender. A policy on diversity should concern matters relevant to the company in relation to diversity, which promote a relevant degree of diversity, strengthen management's qualifications and competencies and take into account the future development of the company.

France. Corporate Governance Code of Listed Corporations 2020	6. Membership of the board of directors: guiding principles *6.2. Each Board should consider what the desirable balance of its membership and that of the Board committees should be, particularly in terms of diversity (gender representation, nationalities, age, qualifications, professional experience, etc.). It should make public in the report on corporate governance a description of the diversity policy applied to members of the Board of directors as well as a description of the objectives of this policy, its implementation measures and the results achieved in the past financial year.* *7.* Gender diversity policy on the governing bodies *7.1. At the proposal of the executive management, the Board shall determine gender diversity objectives for governing bodies. The executive management shall present measures for implementing the objectives to the Board, with an action plan and the time horizon within which these actions will be carried out. The executive management shall inform the Board each year of the results achieved.* *7.2. In the report on corporate governance, the Board shall describe the gender diversity policy applied to the governing bodies as well as the objectives of this policy, the implementation measures and the results achieved in the past financial year including, where applicable, the reasons why the objectives have not been achieved and the measures taken to remedy this.*

Germany. German Corporate Governance Code 2019	C. Composition of the Supervisory Board Principle 11 *The composition of the Supervisory Board has to ensure that its members collectively possess the knowledge, skills and professional expertise required to properly perform their duties; furthermore, the <u>legal gender quota must be considered</u>.*
Hong Kong S.A.R., China. Review of Implementation of Corporate Governance Code 2018 (HKEX)	Chapter 1: Introduction Background *To help directors carry out their role more effectively, the Exchange also published, in July 2018, "Guidance for Boards and Directors" ("Guidance").16 The Guidance contains practical advice to boards and directors on their roles and responsibilities. It covers directors' duties and board effectiveness, board committees, board diversity - <u>including gender diversity</u> - and corporate governance for WVR Issuers.*
Italy. Italian Corporate Governance Code 2020	Article 2. Composition of corporate bodies Principle VIII *The company applies diversity criteria, <u>including gender ones</u>, to the composition of the board of directors, ensuring the primary objective of adequate competence and professionalism of its members.* Recommendation 8 *<u>At least a third of the board of directors</u> and the control body, where the latter is autonomous, <u>is to be comprised of members of the less represented gender</u>.*

	Companies adopt measures to promote equal treatment and opportunities among genders within the whole organisation, monitoring their specific implementation.
Japan. Japan's Corporate Governance Code Seeking Sustainable Corporate Growth and Increased Corporate Value over the Mid- to Long-Term 2018	Section 4. Responsibilities of the Board Principle 4.11 Preconditions for Board and Kansayaku Board Effectiveness *The board should be well balanced in knowledge, experience and skills in order to fulfil its roles and responsibilities, and it should be constituted in a manner to achieve both diversity, including gender and international experience, and appropriate size.*
Malaysia. Malaysian Code on Corporate Governance (2021)	II. Board composition Practice 5.5 *Appointments of board and senior management are based on objective criteria, merit and with due regard for diversity in skills, experience, age, cultural background and gender.* Guidance *G5.9 All boards should comprise at least 30% women directors. Numerous studies have proven the business case for board diversity, in particular the participation of women on boards. If the composition of women on a board is less than 30%, the board should disclose the action it has or will be taking to achieve 30% or more and the timeframe to achieve this. A reasonable timeframe is one that is three years or less.*

Netherlands. Dutch Corporate Governance Code-2016	Chapter 2. Effective management and supervision 2.1.5 Diversity policy *The supervisory board should draw up a diversity policy for the composition of the management board, the supervisory board and, if applicable, the executive committee. The policy should address the concrete targets relating to diversity and the diversity aspects relevant to the company, such as nationality, age, gender, and education and work background.* Explanatory notes to the Code 2.1.5 Diversity policy & 2.1.6 Accountability about diversity *The legal target figure of at least 30% male/female diversity in the management board and the supervisory board.*
Norway. The Norwegian Code of Practice for Corporate Governance 2018	8. Board of directors: composition and independence *The composition of the board of directors as a whole should represent sufficient diversity of background and expertise to help ensure that the board carries out its work in a satisfactory manner. In this respect due attention should be paid to the balance between male and female members of the board. The board is responsible as a collegiate body for balancing the interests of various stakeholders in order to promote value creation by the company. The board should be made up of individuals who are willing and able to work as a team.*

Portugal. Code of Corporate Governance 2018 (revised in 2020)	I.2. Diversity in the composition and functioning of the company's governing bodies I.2.1. *Companies should establish standards and requirements regarding the profile of new members of their governing bodies, which are suitable according to the roles to be carried out. Besides individual attributes (such as competence, independence, integrity, availability, and experience), these profiles should take into consideration general diversity requirements, with particular attention to gender diversity, which may contribute to a better performance of the governing body and to the balance of its composition.*
Singapore. Code of Corporate Governance 2018	Board Composition and Guidance *2.4 The Board and board committees are of an appropriate size, and comprise directors who as a group provide the appropriate balance and mix of skills, knowledge, experience, and other aspects of diversity such as gender and age, so as to avoid groupthink and foster constructive debate.*
South Africa. King Report on Corporate Governance for South Africa - 2016 (King IV Report)	*Recommended practices. Composition* *10. The governing body should promote diversity in its membership across a variety of attributes relevant for promoting better decision-making and effective governance, including field of knowledge, skills and experience as well as age, culture, race and gender.*

Spain. Good Governance Code of Listed Companies., Revised June 2020.	Recommendation 14 *The board of directors should approve a policy aimed at promoting an appropriate composition of the board that:* … *c) favours diversity of knowledge, experience, age and gender. Therefore, measures that encourage the company to have a significant number of female senior managers are considered to favour gender diversity.* *To promote desirable gender diversity on the board of directors, it is recommended that female directors represent <u>at least 40% of the total number of members by 2022.</u>*
Sweden. The Swedish Corporate Governance Code (2016)	4. The size and composition of the board *4.1 The board is to have a composition appropriate to the company's operations, phase of development and other relevant circumstances. The board members elected by the shareholders' meeting are collectively to exhibit diversity and breadth of qualifications, experience and background. The company is to strive for <u>gender balance</u> on the board.*
Switzerland. Swiss code of best practice for corporate governance	Board of Directors and Executive Board 12. Composition *The Board of directors should be comprised of male <u>and female members</u>. They should have the necessary abilities to ensure an independent decision-making process in a critical exchange of ideas with the Executive Board.*

United Kingdom. The UK Corporate Governance Code 2018	3. Composition, succession and evaluation Principles *J. Appointments to the board should be subject to a formal, rigorous and transparent procedure, and an effective succession plan should be maintained for board and senior management. Both appointments and succession plans should be based on merit and objective criteria and, within this context, should promote diversity of gender, social and ethnic backgrounds, cognitive and personal strengths.*

Source: European Corporate Governance Institute (ECGI).

Due to legislations and recommendations, at the present time, boardroom diversity is clearly increasing, although women are still underrepresented, and progress is slow. Table 5 shows the percentage of female directors in each country as well as the quota or voluntary target of female representation.

Table 5. Proportion of women directors on the board and gender quota by country

Country	Index	Percentage of women on boards	Quota and expected date	Voluntary target	General recommendation
France	CAC 40	44%	40% in 2017	-	-
Norway	OBX	40%	40% in 2008	-	-
Sweden	OMX Stockholm 30	37%	No	No	Yes
Finland	OMX Helsinki 25	37%	No	No	Yes
Italy	FTSE MIB	37%	33% in 2016	-	-
Australia	SandP/ ASX 100	34%	No	30% in 2020	
Belgium	BEL-20	36%	33% in 2017	-	-
UK	FTSE 100	36%	No	33% in 2020	-
Canada	SandP/TSX 60	31%	No	No	No
Denmark	OMX Copenhagen 25	36%	No	No	Yes
Netherlands	AEX	34%	No	30% in 2015	-
Germany	DAX	30%	30% on 2016	-	-
South Africa	FTSE/ JSE Top 40	27%	No	No	Yes
Switzerland	SMI	27%	No	30% in 2021	-

US*	SandP 500	29%	No	No	No
Malaysia	FTSE Bursa Malaysia KLCI	29%	No	30%	-
Spain	IBEX 35	31%	No	40% in 2022	-
Austria	ATX	24%	30% in 2018	-	-
Portugal	PSI-20	24%	33.3% in 2020	-	-
Ireland	ISEQ 20	31%	No	33% in 2020	-[7]
India	BSE Sensex	17%	1 seat in 2014	-	-
Singapore	Straits Times	17%	No	No	Yes
Hong kong	Hang Seng	13%	No	No	Yes
Brazil	Bovespa	12%	No	No	Yes
Russia	RTS	12%	No	No	No
Japan	TOPIX Core 30	14%	No	No	Yes

**Although the US has no nationally mandated female board representation levels, several either exist or are being planned at state level. The most prominent of these is in California, which covers not only California-incorporated firms but also corporations that "have principal executive offices located in California", no matter where they are incorporated.*

Source: BoardEx Global Gender Balance Report 2021

[7] The Irish annex of the UK CGC does not mention board gender diversity. Therefore, I understand that where it is not explicitly stated in this annex, the UK CGC applies.

CHAPTER 4

Theoretical framework

CHAPTER 4: THEORETICAL FRAMEWORK

Corporate governance is an extensive and multi-theoretical subject of study. As mentioned previously, among internal corporate governance mechanisms, the board of directors plays a pivotal role. Several theories have been widely used in previous research to explain how boards may affect the decision-making process and, hence, corporate strategy.

Some of these theoretical approaches are presented in this section and, from different points of view, show what role the board of directors plays in the decision-making process within a firm.

4.1. Agency theory

Agency theory emerged in the 1970s as a framework for tackling the agency problem - where ownership is separated from management (Wang and Coffey, 1992). Agency theory is based on the conflicts of interest between the owners of the firm – shareholders – and those who manage the firm (Jensen and Meckling, 1976). This theory contends that the separation between ownership and control enables directors to prioritize their own interests, adopting different attitudes towards risk and thereby causing conflicts between owners (principals) and directors (agents), widely known as agency conflicts. This situation is inevitable since owners delegate management of their companies to managers, with the two groups pursuing conflicting interests, since the former seek to maximize their investment while the latter seek other types of personal benefits (Wang and Coffey, 1992; Werbel and Carter, 2002).

The principle on which the agency theory is based is profit maximization (Seifert *et al.*, 2003). This is explained by the fact that the agent pursues short-term-profit, given that their variable remuneration (incentives) depends on it, while the principal is interested in long-term sustainable profit (Godos-Díez *et al.*, 2011). Agency relationships arise in a context of information asymmetries (Iatridis, 2015; Zerbini, 2017) derived from the separation of ownership and control. Through this, managers benefit by engaging in activities that pursue their own self-interest and that negatively influence share value (Badu and Appiah, 2017). In order to avoid this undesirable circumstance, agreements between shareholders and managers can

be established in order to align their interests. Likewise, the company must establish supervision and control mechanisms that minimize the possibilities of using the company's resources so that shareholders may benefit (Fama and Jensen, 1983).

The precursors of the theory proposed that the key to overcome those conflicts of interest is to align the interest of owners and managers (Jensen and Meckling, 1976; Fama and Jensen 1983). Since its inception, this theory has been predominant in the corporate governance arena, especially vis-à-vis board of directors studies (Hillman *et al.*, 2000; Nicholson and Kiel, 2007). It is in this context where the board of directors becomes particularly important.

The monitoring function of boards, known as the control role, refers to directors' responsibility to monitor managers in the interests of shareholders (Hillman and Dalziel, 2003). Prominent amongst the board's supervisory functions are monitoring the CEO, monitoring board strategy, organising CEO turnover, as well as evaluating and establishing CEO and top manager remuneration (Hillman and Dalziel, 2003). In line with agency theory, the motivation for the board's supervisory role are board incentives, such that when these incentives align with shareholders' interests, directors will improve their monitoring ability and will be more efficient, which implies better performance (Jensen and Meckling, 1976; Fama, 1980).

In general, agency theory offers defined implications for monitoring and for the control role of the board (Eisenhardt, 1989). Moreover, this theory may also explain the board of directors' role in terms of company strategy. Nevertheless, its position with regard to the strategic function is not so clear. One stream of studies argues that boards play a key role in formulating and implementing company strategy (Zahra and Pearce, 1989; Useem, 2003). Agency theory declares that the board of directors has an impact on strategic decisions by avoiding opportunistic behaviour on the part of managers, protecting investors' interests (Mizruchi, 1983), taking part in reviewing and monitoring strategic decisions (Stiles and Taylor, 2001), and thereby becoming jointly responsible for them (Sundaramurthy and Lewis, 2003).

Two monitoring mechanisms which have commonly been used in agency theory are director independence and remuneration systems (Bartkus *et al.*, 2002).

a) Board independence. Considering that the principal role of the board is to monitor managerial opportunism and to control managers' actions so as to benefit shareholders, if the board is primarily made up of insider directors, then the likelihood of ineffective board monitoring increases (Dey, 2008). Furthermore, independent directors are also less committed to economic performance and may be more likely to advocate investments required for long-term sustainability (He and Jiang, 2019). Indeed, previous studies have found that board independence is negatively and significantly associated with agency conflicts (Badu and Appiah, 2017) and can reduce the firm's agency cost (Rashid, 2015). Jensen and Meckling (1976) define agency costs as "the sum of the monitoring expenditures by the principal; the bonding expenditures by the agent; and the residual loss". The former refers to the cost of the supervisory role which the principal may pay. The second denotes those costs derived from ensuring that the agent will not take certain decisions which would damage the principal or that the principal would be compensated in that case. The third indicates the loss borne by the principal because of their failing to take that decision. It may therefore be a loss in wealth when making decisions that they would not have made in his place (Jensen and Meckling, 1976).

b) Remuneration systems. Shen (2005) highlights the importance of rewarding incentives to non-executive directors in order to enhance board effectiveness. For many non-executive directors, the performance of the company they monitor has virtually no impact on their personal wealth since they have almost no shares in the company (Patton and Baker, 1987; Hambrick and Jackson, 2000). Accordingly, from the agency theory point of view, remuneration strategy is a key and powerful incentive system which motivates and commits managers to their supervisory functions (Shen, 2005).

4.2. Resource dependence theory

Resource dependence theory is another of the most commonly cited theories in the corporate governance sphere, and is vital to the sociology, organization, and management disciplines (Hillman *et al.*, 2009). This theory posits that the board of directors provides a crucial link in the firm and offers the necessary resources it

requires to maximize performance (Pfeffer and Salancik, 1978), with resources being understood as "anything that could be thought of as a strength or weakness of a given firm" (Wernerfelt, 1984).

Resource dependence theory considers an organization as an open system which may be influenced by whatever occurs in the company environment. Indeed, the context in which companies undertake their activity must be taken into consideration (Pfeffer and Salancik, 1978). In particular, directors can reduce environmental uncertainty and dependence (Hillman *et al.*, 2009). Specifically, resource dependence theory argues that board members can contribute to strategic decision-making by providing unique resources that the organization would not otherwise have access to (Pfeffer and Salancik, 1978; Hillman and Dalziel, 2003). Both the board's capacity to bring critical resources and the specific type of resources they provide are relevant. Previous research has shown that board members can provide their companies with valuable information as well as easier access to capital, interconnections with crucial suppliers, customers and other stakeholders (Baysinger and Zardkoohi, 1986; Mizruchi and Stearns, 1988; Freeman and Evan, 1990; Banerji and Sambharya, 1996; Frooman, 1999). The board can promote continued value creation (Hillman *et al.*, 2009), with the resources provided by directors making a contribution in (Pfeffer and Salancik, 1978):

a. advising and guidance,
b. legitimacy,
c. providing a link between external organizations and the company by conveying important information,
d. securing support from outsiders.

There is theoretical evidence that boards with several connections to company environments will furnish the organization with better access to resources (Nicholson and Kiel, 2007).

Therefore, the advice or resource provision assignment of board members involves real involvement in decision making and overseeing of strategic options, as well as guidance on tactical proposals (Pugliese *et al.*, 2014).

4.3. Stakeholder theory

Stakeholder theory is found within the framework of organization theories. According to stakeholder theory, companies must consider several stakeholder groups that either affect or are influenced by a firm's objectives (Freeman, 1984). Company stakeholders are "individuals that contribute, either voluntarily or involuntarily, to its wealth-creating capacity and activities, and who are therefore its potential beneficiaries and/or risk bearers" (Post *et al.*, 2002). Freeman (1984) tried to illustrate the relationship between the organization and its external environment converging with its actions within this environment. The elementary premise of stakeholder theory is that directors must manage company activity by reconciling the firm's objectives and needs with the requirements of all the stakeholders involved such as, suppliers, customers, regulators, the environment, the local community, and the general public (Madsen and Rodgers, 2015; Yasser *et al.*, 2017). According to Donaldson and Preston (1995), companies should consider their stakeholders for two reasons: (1) from a normative approach, their needs should be considered because it shows inherent value, and (2) from an instrumental focus, contrasting the interests of influential stakeholders could enhance company profits.

Thus, stakeholders are all groups which interact with the company. They can be classified into (Clarkson, 1995): a) primary, and b) secondary.

a) Primary stakeholders: those who have legitimacy vis-à-vis the company, which means maintaining formal relationships with the company (customers, suppliers, employees, shareholders…).

b) Secondary stakeholders: those who have no legitimacy rights; non-formal relationships (local community, government…).

In this sense, the board as the main decision-making body of the company must consider the general benefits of its decisions, not only for the company but also for its environment. Accordingly, stakeholder theory manifests the need to invest resources and time to address stakeholders' demands (Sasse and Trahan, 2007; O'Riordan and Fairbrass, 2014) which specifically involves seeking business benefits as well as pursuing the moral responsibility the company has towards its

stakeholders (McKnight and Linnenluecke, 2016). In particular, previous research has highlighted that taking into account the needs of stakeholders in management favours business results through the creation of intangibles such as trust and cooperation (Zhang *et al.*, 2014).

In particular, stakeholder theory arguments are connected to CSR principles (Carroll, 1991). Several CSR perspectives can be identified (Carroll and Shabana, 2010; Wójcik, 2018):

a) CSR as a marketing tool to create or improve corporate reputation (Wang and Gao, 2016). CSR practices could generate positive perceptions of the company among its stakeholders (Rothenhoefer, 2019). In this sense, the "favourable/adverse" reputation may influence or even determine present and future relationships between stakeholders and the company (Rothenhoefer, 2019). Saeed and Arshad, (2012) found that external and internal CSR activities positively impact corporate performance, generating intangible resources such as corporate reputation.

b) CSR as a source to acquire competitive advantage. Prior studies have found that socially responsibly activities could produce benefits because of cost reduction, which ultimately reduces business risk (Wang and Gao, 2016; Cook *et al.*, 2019). First, sustainable development enhances effectiveness by reducing energy costs (Lister, 2018). Second, CSR practices enrich community relations, leading to cost reduction, as illustrated by the costs associated to regulations governing business operations and gaining tax benefits (Carroll and Shabana, 2010). CSR practices may also lead to competitive advantage based on company differentiation or the firm's market products (Carroll and Shabana, 2010). In particular, CSR activities call for board members' ability to solve the social and environmental needs of diverse stakeholders whilst also implying innovation through the development of new technologies, corporate techniques and management systems which result in competitive differentiation (Engert *et al.*, 2016; Cook *et al.*, 2019).

c) CSR as a signal for stakeholders. CSR practices may enable certain firm characteristics to be perceived which would not otherwise be seen, thereby possibly reducing information asymmetries between company and

stakeholders (Su *et al.*, 2016). Hence, stakeholders may perceive the sustainability activities implemented by the board as a sign of transparency and commitment to social and environmental demands (Flammer, 2018).

d) CSR as a tactic to achieve win-win results. Recent researchers have documented a positive association between CSR practices and financial performance (Waworuntu *et al.*, 2014; Flammer, 2015; Cho *et al.*, 2019; Bahta *et al.*, 2020). Hence, firms which engage in CSR practices act responsibly towards their stakeholders while also improving corporate performance.

e) CSR to manage sustainability. Social and environmental excesses have put ever-increasing pressure on boards of directors as drivers of sustainable business strategies (Jain and Jamali, 2016; Arayssi *et al*., 2020). In this sense, CSR is perceived as a control mechanism that can safeguard the interests of diverse stakeholders and future generations. In particular, previous studies argue that boards tend to perform CSR practices in an effort to develop a business image that ensures a more sustainable future (Farinós, 2017).

4.4. Upper echelon theory

The main assumption of upper echelon theory is that board of director experience, values, and personalities significantly influence their understanding of the circumstances they are involved in and so impact their decisions (Hambrick and Mason, 1984). The predominant notion of upper echelon theory is that; a) executives take actions depending on their personal perception of the strategic situations they face, and b) these personalized interpretations are a reflection of executives' personalities, values, and experiences (Hambrick and Mason, 1984). Cyert and March (1963) highlight that decisions made under uncertain conditions are not objective, such that they require explanation and clarification. In order to really comprehend how and why companies act, it is therefore necessary to consider the biases and dispositions of the top decision makers; the board of directors (Hambrick, 2007). Hambrick (2007) introduces two ideas of upper echelon theory. The first centres on the characteristics of the top management team, rather than merely focusing on the CEO alone, in order to obtain more suitable answers to firm

outcomes, with the argument being that company management is a challenging and joint task. Indeed, previous studies have indicated that board composition impacts firm performance (Carpenter and Fredickson, 2001; McIntyre *et al.*, 2007; Rahman and Saima, 2018). The second refers to the fact that because psychological traits (experiences, values, personalities) are barely observable, the demographic attributes of top management, as reflected through educational background, industry and firm tenures, and personal associations, may be acceptable proxies of their cognitive frames and values, to predict strategic activities (Hambrick, 2007).

In addition, Hambrick (2007) proposed two moderating variables of the relationship between managerial characteristics and organizational outcomes; a) managerial discretion and, b) executive job demands. The former applies to the freedom of actions that directors enjoy (Carpenter *et al.*, 2004; Crossland and Hambrick 2011). Indeed, in external environments where there is high managerial discretion, directors' attributes would have greater predictive power of organizational outcomes than in contexts where board members have less decision-making capacity (Hambrick, 2007). The latter reflects the degree of challenge faced by directors (Hambrick *et al.*, 2005). Hambrick (2007) proposes that the link between managers' characteristics and company results will be stronger when executive job demands are high because managers who face difficult challenges seem to lack the time for an in-depth analysis of decisions and consequently place greater trust in their personal experiences. Nevertheless, if the degree of managerial challenges is lower, their decisions will be more exhaustive and will rely less on their personal background. The relationship analysed will thus be weaker in this kind of situation (Hambrick, 2007).

Furthermore, the attributes and strategic choices of board members are conditioned by the organization's situation, which means that the former will vary with different industry contexts (Hambrick and Mason, 1984). The effect of the organizational environment should thus be considered as a moderator in the relationship between the top management team composition and firm outcomes (Carpenter *et al.*, 2004; Finkelstein *et al.*, 2009). In this sense, Yamak *et al.*, (2014) argued that both industry and international firm contexts must be examined in order to truly understand the antecedents and repercussions of top management team composition

and behaviour. In particular, they identify three different upper echelon models (Yamak *et al.*, 2014): direct, mediation, and moderation models. In direct effect models, the organizational environment has a direct impact on top management team composition and/or procedures. In mediation models, board composition, structure and methods influence the association between company environment and strategic choices and results. In moderation models, organizational environment moderates the relationship between both top management team procedures and their composition and the firm's performance.

4.5. Institutional theory

Institutional theory is applied in sociology, business sciences, economics, and politics (Gutiérrez-Rincón and Salas-Páramo, 2015). The focal point of institutional theory is that organizations are institutions that have a meaning, a value and legitimacy for their members and leaders (Selznick, 1957). Its origin dates back to the 1950s in the economics and business sciences area. In the 1970-80s, this perspective re-emerged under the name of *"New Institutionalism or Neo-institutionalism"* (Meyer and Rowan, 1977; DiMaggio and Powell, 1983), which focuses on the role of institutions and their impact on business behaviour, the similarities between organizations and companies in terms of reshaping their environment (Gutiérrez-Rincón and Salas-Páramo, 2015). New institutionalism argues that organizations are influenced by pressures from their institutional environment, forcing them to modify their behaviour, methods and configuration, and moderating their economic activity (Ortas *et al.*, 2015).

In fact, institutional theory is based on the creation of socially commonly accepted rules and their application (Ortas *et al.*, 2015). This theory assumes that companies will adopt common approaches because of their need to adjust to institutions (Qiao and Wu, 2019). In this sense, organizational institutionalism analyses the adaptions and formations of organizations due to the pressures that the institutional environment exerts on them to gain social legitimacy (DiMaggio and Powell, 1983; Scott, 2001).

Institutions are norms, guidelines and regulations which condition social actors' behaviour, thereby making social life meaningful (North, 1990; DiMaggio and

Powell, 1991; Scott, 2001), such that the lack thereof will hinder economic activity (Aracil, 2019). Institutional theory illustrates that institutions influence business practice, which is known as isomorphism. Meyer and Rowan (1977) established that isomorphism is the process by which formal organizations adapt to their environment in order to manage commercial and technical interdependencies. Hence, the consequences of isomorphism are the integration of factors by companies not because of how efficient these factors are, but because of their external legitimacy (Meyer and Rowan, 1977). DiMaggio and Powell (1991) identified two types of isomorphism: competitive and institutional. Competitive isomorphism applies to efficiency, whereas institutional isomorphism guides uniform behaviour and prompts similar organizational configurations. Institutional isomorphism can be coercive, normative, and mimetic (Ortas *et al.*, 2015). Coercive isomorphism refers to pressures exerted by laws (formal) and codes of conduct (informal) on organizations. Normative isomorphism is triggered by the professionalization of decision makers (board of directors), leading to parallel socialization. It this sense, directors tend to recognize, understand and resolve issues or organizational problems in a similar manner. Mimetic isomorphism studies how companies can imitate their competitors because of uncertainty (Ortas *et al.*, 2015).

Furthermore, neo-institutional theory predicts that firms which operate in different countries establish distinct CSR preferences because their culture, as illustrated by beliefs and socially established norms, is influenced by organizational factors (Selznick, 1996), such as CSR practices (Frederick, 2006). Corporate governance mechanisms are thus influenced by the institutional environment. In this sense, Boytsun et al., (2011) postulate that the costs and benefits of corporate governance actions and board of directors' decisions may be impacted by social norms.

4.6. Signalling theory

Signalling theory deals with how the information asymmetry dilemma in a competitive environment may be addressed (Connelly *et al.*, 2011; Mavlanova *et al.*, 2012; Taj, 2016). Its origin can be traced back to Spence's work (1973) applied to the labour market, to understand how employees send signals about their ability to employers, by acquiring certain levels of education. The informative value of the

signals is explained because employers presume there is a positive correlation between educational level and a greater ability to perform a task (Spence, 1973).

The theory mainly fixes its attention on management's aim to share information and receive signals from the market, stakeholders and society (Bae *et al.*, 2018). Signalling theory holds that companies decrease the information asymmetry of external users through multiple signals (Connelly *et al.*, 2011). Likewise, information asymmetry involves inherent conflicts of interests between managers and agents and the signal decreases the gap by conveying pertinent and high-quality information to both groups (Connelly *et al.*, 2011; Taj, 2016). Signalling theory argues that the information which companies disclose is a signal designed to convey the attributes of the organization which may be hard to perceive, and which achieve organizational behaviour or behavioural intentions (Zerbini, 2017, Luffarelli and Awaysheh, 2018).

Signalling theory is based on information asymmetry between two parties and how they produce signals to combat this (Luffarelli and Awaysheh, 2018). The essential components of signalling theory comprise; a) signaller, b) signal, and c) receiver (Connelly *et al.*, 2011):

a) *signallers*— they are insiders, such as management or executives, who had some knowledge about an individual (Spence, 1973), organization (Ross, 1977), or product (Kirmani and Rao, 2000), which outsiders do not know and which would be useful for them.
b) *signal*— insiders acquire relevant private information which they have to communicate to outsiders. The signal includes two basics; the information itself and its sign, which can be either positive or negative (Luffarelli and Awaysheh, 2018). The theory basically focuses on the intentional disclosure of positive information, hiding negative data in the search for positive organizational attributes (Connelly *et al.*, 2011). Indeed, organizational behaviour could be a signal of good governance practices and might be legitimate for the receiver (Groening and Kanuri, 2018).
c) *receivers*—they are outsiders who cannot access organizational information but would like to obtain it.

Signalling theory is crucial to the social performance arena. The disclosure of social practices could be understood as signals by companies regarding their social orientation (Moratis, 2018). Signalling theory argues that CSR is a business strategy to indicate a commitment to being socially and environmentally responsible, which can lead to better performance (Connelly *et al.*, 2011; Zerbini, 2017). Disclosure of CSR information is assessed by both employees (Schaefer *et al.*, 2019) and investors alike.

Signalling theory has been used to examine board of director characteristics (Certo, 2003). Notably, research on board diversity has been applied to signalling theory in order to describe how companies create a heterogeneous boardroom in an effort to highlight their respect towards social values (Miller and Triana, 2009), for instance by ensuring equal opportunities for women and men, which can help to gain legitimacy (Certo *et al.*, 2001).

4.7. Social identity theory

Social identity theory is framed within the social psychology field, and originated from the research of Tajfel (1978). The theory focuses on the conception that individuals define others depending on several factors (social, cultural, environmental, ideological, economic, among others). This process is called *categorization* (Fosfuri *et al.*, 2011; Gao and Yang, 2016), which can be explained since an individual creates a perception of a group or a company based on its specific attributes (Gao and Yang, 2016). Through an identification procedure (Alias and Ismail, 2015), individuals thereby develop a bond with certain groups or organizations with whom they share several traits.

Social identity theory argues that people tend to identify with groups and organizations that exhibit similar values to theirs and to then act accordingly (Alias and Ismail, 2015). Indeed, previous research has applied social identity theory to the board of directors sphere (Hillman *et al.*, 2008; Withers *et al.*, 2012a), in the sense that directors may display diverse identities which shape how they carry out their supervisory role and resource provision function (Hillman *et al.*, 2008). Specifically, greater organizational identification encourages directors to perform better monitoring and to contribute to the firm with their best resources and

capabilities (Cannella *et al.*, 2015), which might positively impact firm performance (Golden-Biddle and Rao, 1997).

Additionally, this identification is generated both within the company and outside it (Brunton *et al.*, 2017), which is why people usually feel connected with firms that internally develop moral principles of their own (Alias and Ismail, 2015) as well as with socially well-perceived companies (Gao and Yang, 2016). Consequently, CSR practices may enhance stakeholder identification with the firm (Brunton *et al.*, 2017; Schaefer *et al.*, 2019).

4.8. Psychological theories

Psychology is a field of study within knowledge related to the creation of ideas, instruments, methods and processes of action related to behaviour and human experience. It attempts to explain behaviour in diverse situations in order to predict and control human behaviour (Sos, 2015). Multiple psychological theories can be identified depending on the area they focus on. Terjesen *et al.* (2009) distinguish several psychological perspectives related to the board of directors, and which centre on group-level processes.

a) Social identify.

b) Social network and social cohesion.

c) Gendered trust.

d) Ingratiation

e) Leadership

Women and men present distinct psychological features. Because of the avowed differences in behavioural traits among directors, if women occupy positions on the board, they will influence how the board evaluates the available information and makes decisions (Gul *et al*., 2011). As regards the differences between directors, following Adams (2016), female directors are on average less achievement-, conformity-, power-, security-, and tradition-oriented than male directors, but are more benevolence-, hedonism-, self-direction-, stimulation-, and universalism-oriented than men.

4.9. Tokenism theory

The term "token" refers to a subgroup symbolizing a numerical minority, less than 15 percent of the complete group, and which is seen as distinct from another within the same organization (Kanter, 1977a). Individuals categorised as "tokens" in an organization may present less problems as the group increases in size, which may lead to a reduced feeling of loneliness (Kanter, 1977a). In this sense, female directors can be seen as tokens in certain male-dominated boards, since the vast majority of boards are composed exclusively of one woman or a limited minority of female directors.

In addition, female directors can be negatively viewed by the financial markets when they are seen as symbols that merely seek legitimacy or by outside demands (Hillman, 2015). "Symbol" refers to the satisfaction of formal requisites, without presenting the proper characteristics of a job or position (Yang *et al*., 2019).

There are several reasons for a greater number of women serving on boards of directors (Cassell, 2000; Huse, 2005; Singh *et al*., 2007) although in many countries female directors are still tokens (Kanter, 1977a; Daily and Dalton, 2003; Terjesen *et al*., 2009).

This theory is in line with the critical mass theory, which holds that a group needs to reach a certain size if it is to affect policy and bring about change in decision-making processes (Konrad *et al*., 2008).

4.10. Group phenomena

The group phenomena viewpoint is framed in the social sciences sphere. This perspective highlights that the inclusion of women in the boardroom may have certain adverse effects on board activity.

The presence of varied groups within the board of directors when the board is composed of female and male directors may influence directors' capacity to evaluate information (Konrad *et al*., 2008) and possibly damage the decision-making process (Zhu *et al*., 2014). In this regard, the presence of female directors on boards brings about greater heterogeneity, which can lead to the existence of

opposing viewpoints and result in internal frictions (Stasser and Birchmeier, 2003), thereby complicating the decision-making process (Williams and O'Reilly, 1998).

CHAPTER 5
Empirical study

CHAPTER 5: EMPIRICAL STUDY

As mentioned before, the main purpose of this thesis is to explore current knowledge of corporate governance effects on certain firm outcomes. In particular, this general aim is divided into three more specific objectives, which look into the relation between board of directors and firm financial distress, non-financial information disclosure policy, and environmental innovation practices. Taking into consideration these objectives, the empirical analysis is composed of three independent studies:

1. Does compliance with corporate governance codes help to mitigate financial distress?
2. Corporate governance code compliance and environmental, social and governance disclosures.
3. A critical approach to the true influence of female directors on environmental innovation: when are women greener?

Therefore, each of these specific empirical studies is presented separately in this chapter. Although the motivation of these empirical studies was commented on in Chapter 1, in the following sections, for each individual piece of research, the objectives, research method, and main findings are explained.

5.1. Does compliance with corporate governance codes help to mitigate financial distress?

5.1.1. Objective

The succession of corporate scandals all over the world and the recent global financial crisis have brought to light deficiencies in governance mechanisms, which have had severe consequences in capital markets. Accordingly, the number of CGC has increased exponentially over the last few years. Indeed, most developed countries have recently introduced CGC and, consequently, researchers have paid a great deal of attention to investigating the effects of their compliance. As mentioned before, previous research indicates the relevance and complexity of predicting firms' financial distress situations for agencies' credit ratings, governments or financial creditors and has emphasized the role played by corporate governance mechanisms in preventing business failure (Manzaneque *et al.*, 2016a).

The main objective of this study is to analyse whether compliance with CGC may help to mitigate the financial distress of firms. As a significant number of recommendations contained in CGC relate to boards of directors and their committees, specific measures for compliance of recommendations regarding these issues are considered, and three objectives can be highlighted:

a) To analyse whether overall compliance with CGC recommendations would reduce the likelihood of financial distress.
b) To examine whether compliance with CGC recommendations regarding the board of directors would reduce the likelihood of financial distress.
c) To study whether compliance with CGC recommendations regarding board subcommittees would reduce the likelihood of financial distress.

5.1.2. Hypothesis development

The empirical debate regarding the determinants of financial distress focused on financial and accounting information many decades ago (Altman, 1968; Beaver, 1966; Zmijewski, 1984). Nevertheless, more recent research suggests that economic and financial data alone may lack sufficient predictive power to anticipate financial distress (Chang, 2009; Fich and Slezak, 2008). In particular, a number of studies have pointed out that variables related to corporate governance structures must be taken into consideration in order to better understand the determinants of financial distress (Habib *et al.*, 2020). Yet, the majority of these studies tend to examine specific corporate governance characteristics. In this regard, some studies find that companies with greater board independence and CEO duality are less likely to suffer financial distress (Salloum *et al.,* 2013; Baklouti *et al.*, 2016). Other studies have examined the relationship between board size and the likelihood of financial distress, although the evidence to emerge is mixed (Fich and Slezak, 2008; Manzaneque *et al.*, 2016a). Parker *et al.* (2002) found a negative significant association between CEO replacement and the likelihood of firm survival. Moreover, Shahwan (2015) considered certain items related to shareholders' rights and relationships with investors as potential drivers of financial distress. Several papers have also focused on ownership structure as a relevant corporate governance mechanism. For instance, the likelihood of corporate failure has been negatively associated with ownership concentration and state ownership (Li *et al.*, 2008), with

institutional ownership (Manzaneque *et al.*, 2016b; Udin *et al.*, 2017), and with board ownership (Abdullah, 2006). Although the majority of these studies have used corporate governance characteristics individually, recent literature also calls for the need to employ composite measures, which aggregates a number of governance indicators considering the interaction between multiple corporate governance mechanisms so as to provide a better overview of the effectiveness of corporate governance structures (Brown *et al.*, 2011; Jain and Jamali, 2016; Bravo *et al*., 2018). Consistent with this approach, this research focuses on aggregated measures regarding compliance with CGC recommendations in order to examine the effects of corporate governance on firms' financial distress.

CGC have several key universal principles for effective corporate governance (Aguilera and Cuervo-Cazurra, 2009) and have become widespread in the majority of developed economies. CGC are a form of soft regulations presenting a set of voluntary governance recommendations on relationships with shareholders and top management, the role and composition of the board of directors and its committees, auditing and information disclosure, and the selection, remuneration and dismissal of directors and top managers (Duh, 2017). The main objective of CGC is to strengthen internal control and maximize shareholders' interests, which implies safeguarding business prosperity. Despite the growing diffusion of CGC and the intense academic debate about the effectiveness of these codes, empirical evidence on the impact of CGC is still far from definitive. Research into the effect of CGC compliance on firm outcomes is inconclusive and further inquiry is required (Stiglbauer and Velte, 2014). Some studies suggest that complying with CGC recommendations leads to better strategic decisions and therefore document a positive association between CGC compliance and different measures of firm performance, such as price-to-book ratio, Tobin's q, or profitability (Fernández-Rodríguez *et al*., 2004; Bassen *et al.*, 2006; Stiglbauer, 2010; Luo and Salterio, 2014; Rodríguez-Fernández, 2016). Other authors have argued that CGC compliance can be used for ethical reasons to gain social legitimacy, which will improve investors' perceptions and lead to positive stock market reactions by improving firm value and share price (Goncharov *et al.*, 2006; Chavez and Silva, 2009; Kaspereit *et al.*, 2015; Kaspereit *et al.*, 2017) as well as corporate reputation (Hooghiemstra and van Ees, 2011; McCahery *et al.*, 2016). Nevertheless, many

studies fail to support the previous associations (Bassen *et al.*, 2009; McKnight and Weir, 2009; Jain *et al.*, 2011; Steger and Stiglbauer, 2011; Stiglbauer and Velte, 2014).

Despite the increasing discussions on the determinants of financial distress and the significant debates on the effectiveness of CGC, the literature has thus far failed to analyse whether CGC compliance may have an impact on firms' financial distress. The Spanish code, like most international CGC, includes a set of recommendations about general governance issues (such as anti-takeover mechanisms, functioning of the general meeting and the mechanics of voting), as well as specific recommendations regarding the board of directors and its committees. Therefore, this study aims to fill the previous research gap by examining three different levels of CGC compliance: (1) overall CGC compliance, (2) compliance with the recommendations regarding boards of directors, and (3) compliance with the recommendations related to board subcommittees. Since the main objective of corporate governance is to mitigate conflicts of interest between managers and shareholders (Shleifer and Vishny, 1997), the previous studies on CGC have largely relied on agency theory to explain the effects of their compliance (Cuomo *et al.*, 2016). Following the dominant agency theory (Jensen and Meckling, 1976), CGC recommendations must aim to protect investors and reduce managerial opportunism (Zattoni and Cuomo, 2010), which is likely to guarantee company survival and therefore minimize the probability of business failure (Udin *et al.*, 2017). In line with these premises, the potential relationship between financial distress and the different measures of CGC compliance according to the arguments of agency theory are explained.

First, overall compliance with CGC recommendations should strengthen the corporate governance structures of a firm. Beyond reinforcing boards of directors and certain committees, those recommendations related with voting rights, annual meetings, and other general issues are also expected to safeguard shareholders' interests and improve governance mechanisms (Lu *et al.*, 2008). Agency theory suggests that strong corporate governance prevents controlling shareholders and managers from benefiting from a company at the cost of non-controlling shareholders and other stakeholders (Manzaneque *et al.*, 2016a). This approach is

the one most often used in the literature, which highlights that adequate monitoring or control mechanisms of managerial decision-making processes are required in order to protect shareholders and other investors (Kiel and Nicholson, 2003; Stiglbauer and Velte, 2014). As a result, weak corporate governance may increase the probability of opportunistic behaviour by management or controlling shareholders, which could lead to an ethical conflict with shareholders and prioritize their personal aims against the overall company objective (La Porta *et al.*, 2000). Therefore, a high degree of overall CGC compliance may decrease the wealth expropriation risk and, in turn, minimize the probability of company failure (Lee and Yeh, 2004). Additionally, a reduction in agency conflicts would lead to important benefits for firms that are likely to improve their financial situation, such as more access to capital, a reduction in cost of capital (Reddy *et al.*, 2010), secure access to financial assets (Weber and Velte, 2011), and also would attract investment opportunities and improve capital market development (Udin *et al.*, 2017). According to the previous arguments, if compliance with the overall recommendations included in the CGC reduces agency costs and reinforces the quality of corporate governance structures, a higher degree of compliance should reduce the likelihood of company financial distress. Hence, the following hypothesis is formulated:

H1: Overall compliance with CGC will reduce the likelihood of financial distress.

Moreover, boards of directors are a crucial corporate governance mechanism (Adams *et al.*, 2010), since they are the highest decision-making authority within a firm and exert considerable power over corporate strategic actions (Galbreath, 2018). The board of directors is an essential control system which engages in decisive internal monitoring activities such as the evaluation of tasks carried out by the top management and the CEO, and the evaluation of firm strategy (Pugliese *et al.*, 2009), which is expected to minimize the costs incurred when management pursues its own interests at the expense of the shareholders' interests (Hillman and Dalziel, 2003). Specifically, boards must be responsible for monitoring decisions to detect and avoid financial instability (Chang, 2009; Manzaneque *et al.*, 2016a), and to impose the necessary measures to help overcome a possible failure situation (Fich and Slezak, 2008). For this reason, the vast majority of CGC explicitly include

a set of recommendations concerning the board of directors (Aguilera and Cuervo-Cazurra, 2009). These recommendations aim to strengthen the degree of independence, the qualification, the diversity and the pool of resources in the board, among other characteristics. These characteristics are expected to provide the board with valuable skills and competence to improve the monitoring discipline of directors, and their effectiveness when overseeing corporate strategy (Huse and Solberg, 2006; Srinidhi *et al.*, 2011; Field *et al.*, 2017). Therefore, greater compliance with these recommendations must lead boards to be in a better position to monitor business decisions to minimize the risk of failure (Dowell *et al*., 2011) and ensure the financial situation of the firm (Simpson and Gleason, 1999). In line with the previous arguments, it could be assumed that boards with a higher compliance of CGC recommendations are in a better position to reduce the probability of financial distress. The following hypothesis is therefore formulated:

H2: Compliance with CGC recommendations regarding the board of directors will reduce the likelihood of financial distress.

Corporate governance mechanisms also include several board subcommittees, such as the audit committee, the appointments committee, the compensation committee, or the corporate governance committee. These committees make particular decisions and play an important role in overseeing corporate strategy to protect the interests of shareholders (Detthamrong *et al.*, 2017). Compliance with the recommendations related to these committees should improve their quality and therefore their effectiveness when carrying out their monitoring functions. First, the audit committee has attracted great interest since it has become a key element to control and monitor management (Ruzaidah and Takiah, 2004). This committee is expected to oversee the strategic actions of a firm and, specifically, any financial or operational issues (Rahmat *et al.*, 2009). Previous literature agrees that audit committees are needed to resolve agency conflicts (Klein, 2002) and to maintain good performance (Ainuddin and Abdullah, 2001). Therefore, the audit committee is responsible for decisions that should ensure business prosperity and mitigate the financial distress of companies (Salloum *et al*., 2014). On the other hand, although most of the attention paid by academics and professionals focuses on the audit committee, the other committees are also important vis-à-vis reducing agency

conflicts, which can result in improvements in a firm's financial situation. For instance, the appointments committee can impact the monitoring process of the strategic actions, since this committee is likely to minimize the influence of leaders on the selection process (Shivdasani and Yermack, 1999; Baklouti *et al*., 2016). In addition, the compensation committee is in charge of evaluating management performance and of designing appropriate compensation packages, and hence this committee may limit agency problems by introducing incentive structures designed to align the objectives of senior management with those of shareholders (Uzun *et al.*, 2004). Finally, the corporate governance committee focuses more specifically on the standards of directors' qualifications, and their responsibilities, and it enhances director accountability in decision making and leads to better monitoring (Mahoney and Shuman, 2003). Therefore, the configuration of these committees remains relevant to guarantee the quality of governance structures. In theory, compliance with CGC recommendations regarding the board subcommittees should enhance the effectiveness of these committees and improve their monitoring functions, which may lead to reducing the likelihood of financial distress. Therefore, the following hypothesis is formulated:

H3: Compliance with CGC recommendations regarding the board subcommittees will reduce the likelihood of financial distress.

5.1.3. Research method

5.1.3.1. Sample and data

The sample of this study is composed of the 130 firms listed on the IBEX-35 for the period 2013-2016. The sample size has been proven to have sufficient statistical power in many recent studies using similar analyses (Akkermans *et al.*, 2007; Ahmadi *et al.*, 2018; Neifar and Jarboiu, 2018). In line with previous research, the largest firms are selected because of their representativeness (Goncharov *et al.*, 2006; Albu and Girbina, 2015) and since they present greater agency costs and, therefore, corporate governance mechanisms are expected to be crucial (Karamanou and Vafeas, 2005). In particular, agency conflicts are likely to be especially significant in Spanish firms, due to their special characteristics in relation to corporate governance, such as concentrated ownership and control, widespread

ownership by outside directors, and a system based on a unitary board structure that is strongly dominated by the controlling shareholders (Acero and Alcalde, 2013; Manzaneque *et al.,* 2016a). These characteristics make the Spanish context an interesting scenario to understand the role of corporate governance structures in safeguarding the interests of all shareholders and stakeholders (La Porta *et al.*, 1999; Manzaneque *et al.,* 2016b).

The data needed to calculate the variables concerning CGC compliance were extracted from the Spencer Stuart Index report, which provides information about the compliance of every recommendation in the Spanish CGC. The financial data used to compute variables about financial distress and other control variables were obtained from the SABI database and companies' annual accounts.

5.1.3.2. Variables

The dependent variable is financial distress of firms. Consistent with the approach used by recent studies (Pindado *et al*., 2008; Manzaneque *et al.*, 2016b), the measurement for financial distress (FD) was calculated as a binary variable that takes the value 1 if the company meets the following conditions, and 0 if not: (1) its earnings before interest and taxes depreciation and amortization (EBITDA) are lower than its financial expenses for two consecutive years; (2) a fall in its market value occurs between two consecutive periods[8]. This ex-ante approach is especially advantageous since it allows problems of ex-post business failure approaches to be overcome by considering crisis situations other than bankruptcy (Grice and Dugan, 2001).

In order to increase the robustness of this empirical study, a sensitivity analysis is performed by alternatively employing a continuous variable based on the Zmijewski score (Zmscore). The Zimijeski model (Zmijewski, 1984) has been extensively used in recent studies on business failure (Tykvová and Borell, 2012; Richardson *et al.*, 2015b; Lee *et al.*, 2017) due to its high capacity to predict

[8] Other previous studies on business failure have also employed this proxy. A major review can be found in Manzaneque (2006).

financial distress in comparison with older models (Husein and Pambekti, 2014). This score is calculated as follows:

$$Zm = -4.336 - 4.513 X1 + 5.679X2 - 0.004 X3$$

where x1 = net income/total assets, x2 = total debt/total assets, and x3 = current assets/current liabilities. Firms with a value over 0.5 are classified as distressed companies.

The main explanatory variables are related to compliance with CGC recommendations. Consistent with previous research (Campbell *et al.*, 2009; Rodríguez-Fernández, 2016), these variables were calculated as the proportion of recommendations fulfilled by firms. Specifically, three variables were considered: (1) overall CGC compliance, measured by the proportion of total recommendations satisfied by a firm (Overall); (2) compliance with the recommendations concerning the board of directors, calculated as the proportion of recommendations related to the board of directors that had been fulfilled by a firm (Board); (3) compliance with the recommendations concerning board subcommittees, measured by the proportion of recommendations strictly related with these subcommittees that had been fulfilled by a firm (Subcommittees). Overall CGC compliance deals with a number of very different issues in addition to the recommendations concerning the board of directors and its committees, such as anti-takeover mechanisms, responsibilities of the general meeting and mechanics of voting. Recommendations about the board of directors also include a variety of topics related to the size and composition of the board, the characteristics of directors, the activity and meetings, among others. Finally, recommendations about board subcommittees include issues strictly related to the structure and functioning of the audit committee, the appointments committee, the compensation committee, and the corporate governance committee.

In relation to control variables, and in line with previous literature, several variables which can influence the financial distress of firms were also considered (Parker *et al.*, 2002; Wang and Deng, 2006; Shahwan, 2015; Udin *et al.*, 2017): firm size, leverage, financial performance, profit margin, industry and year. The literature generally argues that the likelihood of financial distress is positively associated with firm leverage and inversely related to firm size, financial performance and profit margin. Additionally, as the financial situation of a firm may differ across industries

and across time periods, both variables are also included. Firm size (Size) is measured as the logarithm of total assets. Leverage (Lev) is calculated as the ratio of total debt to total assets. Financial performance (Fperf) is proxied by the ratio return on equity. Profit margin (Pmargin) is computed as net income over net sales. In order to consider the industry (Ind) in which the firm operates, dichotomous variables are created based on the classification of sectors provided by the General Index of the Madrid Stock Exchange. Finally, dummy variables are also calculated to include the years (Year) in the statistical model. Table 6 provides a summary of all the variables and their definitions.

Table 6. Study 1. Definition of variables

Variables	Description	Source
FD	Dummy which takes the value 1 if: (1) its EBITDA are lower than its financial expenses for two consecutive years; (2) a fall in its market value occurs between two consecutive periods	Annual accounts
Zmscore	Zmijewski score	Annual accounts
Overall	The proportion of recommendations contained in CGC and fulfilled by firms	Spencer Stuart Index
Board	The proportion of recommendations about the board of directors contained in CGC and fulfilled by firms	Spencer Stuart Index
Subcommittees	The proportion of recommendations about the board subcommittees contained in CGC and fulfilled by firms	Spencer Stuart Index
Size	Logarithm of total assets	Annual accounts
Lev	Ratio of total debt to total assets	Annual accounts
Fperf	Ratio return on equity	Annual accounts
Pmargin	Net income over net sales	Annual accounts
Ind	Industry	Madrid Stock Exchange
Year	Year	

Source: own elaboration

5.1.3.3. Model specification

Recent research claims that the reasons which might explain the lack of conclusive findings on the association between compliance with CGC and firm outcomes can be related to methodological issues, including the use of ordinary least squares (OLS) regression and the insufficient attention paid to endogeneity concerns

(Cuomo *et al.*, 2016). Therefore, both a conditional logistic regression analysis and specific tests to control for endogeneity issues have been used in an effort to address these limitations.

As commented above, two variables were included in the empirical analysis as a proxy for financial distress. On the one hand, since the first measure (FD) is a dichotomous variable, a logistic regression model is applied to estimate financial distress likelihood. Considering this variable offers important advantages when measuring financial distress and, at the same time, the use of this methodology overcomes the handicaps of OLS to estimate the parameters when the dependent variable is dichotomous (Mangena and Chamisa, 2008), and is consistent with recent research on the determinants of firms' financial distress (Shahwan, 2015; Manzaneque *et al.*, 2016b; Udin *et al.*, 2017). The models used in this logistic analysis are represented as follows:

Model 1: $FD_{it} = \alpha + \beta_1 Overall_{it} + \beta_2 Size_{It} + \beta_3 Lev_{it} + \beta_4 Fperf_{it} + \beta_5 Pmargin_{it} + \beta_6 Ind_{it} + \beta_7 Year_{it}$ (1)

Model 2: $FD_{it} = \alpha + \beta_1 Board_{it} + \beta_2 Size_{It} + \beta_3 Lev_{it} + \beta_4 Fperf_{it} + \beta_5 Pmargin_{it} + \beta_6 Ind_{it-1} + \beta_7 Year_{it}$ (2)

Model 3: $FD_{it} = \alpha + \beta_1 Subcommittees_{it} + \beta_2 Size_{It} + \beta_3 Lev_{it} + \beta_4 Fperf_{it} + \beta_5 Pmargin_{it} + \beta_6 Ind_{it} + \beta_7 Year_{it}$ (3)

Where *i* and *t* denote the cross-sectional units and time period, respectively.

On the other hand, one possible problem when analysing linkages between corporate governance and firm outcomes is the issue of endogeneity between the dependent and independent variables (Adams and Ferreira, 2009). To control the endogeneity issue, a two-stage least squares method (2SLS) is used. This methodology requires the use of instrumental variables that should be highly related to the endogenous independent variable and unrelated to the dependent variable (Larcker and Rusticus, 2010). These instruments must be relevant and exogenous. Relevant instruments are significantly correlated with the endogenous variable conditional on the other variables (relevance condition). Exogenous instruments require them to be determined outside of the model and not correlated with the error (exclusion condition). In this empirical analysis, the instrumental variables used

are: (1) corporate reputation, and (2) CSR. Corporate reputation and CSR practices are expected to be correlated with CGC compliance since the relationship between corporate governance structures and both corporate reputation and CSR is well documented in the literature (Jamali *et al.*, 2008; Fombrun *et al.*, 2015; Li *et al.*, 2017). In addition, the validity of these instruments is confirmed taking into consideration the values obtained from the Sargan test. Consistent with previous research (Delgado-García *et al.*, 2010; Odriozola and Baraibar-Diez, 2017), the first instrument is calculated as a dummy variable, which takes the value of 1 if a company appears in the ranking of the most reputable firms provided by MERCO[9], and 0 otherwise; and the second instrument as a dummy variable which takes the value of 1 if a company appears in the ranking of the most socially responsible firms provided by MERCO, and 0 otherwise. It is worth mentioning that, in this endogeneity analysis, a continuous dependent variable is used and therefore considered the second measure of financial distress, the Zmijewski score (Zmscore). The models used in this empirical analysis are as follows:

Model 1: $\text{Zmscore}_{it} = \alpha + \beta_1 Overall_{it} + \beta_2 Size_{It} + \beta_3 Lev_{it} + \beta_4 Fperf_{it} + \beta_5 Pmargin_{\text{it}} + \beta_6\ Ind_{\ it} + \beta_7\ Year_{it}$ *(1)*

Model 2: $\text{Zmscore}_{it} = \alpha + \beta_1 Board_{dit} + \beta_2 Size_{It} + \beta_3 Lev_{it} + \beta_4 Fperf_{it} + \beta_5 Pmargin_{\text{it}} + \beta_6\ Ind_{\ it} + \beta_7\ Year_{it}$ *(2)*

Model 3: $\text{Zmscore}_{it} = \alpha + \beta_1 Subcommittees_{it} + \beta_2 Size_{It} + \beta_3 Lev_{it} + \beta_4 Fperf_{it} + \beta_5 Pmargin_{\text{it}} + \beta_6\ Ind_{\ it} + \beta_7\ Year_{it}$ *(3)*

5.1.4. Results and discussions

5.1.4.1. Descriptive statistics and correlations

Table 7 displays the descriptive statistics for the variables included in the statistical analyses. The mean value for the first variable of financial distress (FD) is 0.492, thus indicating that almost half of the companies in the sample analysed presented financial problems. This high value can be expected since this measure is based on a broad definition of business failure, including not only bankruptcy (Manzaneque

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[9] MERCO (Monitor Español de Reputación Corporativa) annually publishes a ranking of the most reputable firms in Spain. This ranking, similar to the ones released in other contexts, such as the one provided by Fortune in the United States, has become a reference in Spain in the assessment of corporate reputation (Sánchez and Sotorrío, 2007).

et al., 2016b). However, the values from the Zmijewski score (Zmscore) indicate that the likelihood of business failure is lower. In relation to CGC compliance, it can be observed that recommendations from the CGC are highly fulfilled by firms, regardless of the type of recommendation. This result is consistent with the findings reported by recent studies in the European context (Kabbach de Castro *et al.*, 2017).

Table 7. Study 1. Descriptive statistics

Variables	Mean	St. dev.	Q1	Median	Q3
FD	0.49	0.50	0	0	1
Zmscore	-17.14	71.35	-37.67	-15.88	-0.37
Overall	91.18	9.09	88.00	93.54	98.24
Board	90.75	9.07	84	94.44	100
Subcommittees	90.92	9.31	85.58	94.12	100
Size	7.05	0.81	6.49	6.85	7.57
Lev	0.63	0.31	0.38	0.69	0.89
Fperf	6.36	58.43	2.69	7.6	19.07
Pmargin	0.21	3.12	0.06	0.21	0.68

FD is a dummy which takes the value 1 if: (1) its EBITDA are lower than its financial expenses for two consecutive years; (2) a fall in its market value occurs between two consecutive periods; Zmscore refers to the Zmijewski score; Overall indicates the proportion of recommendations contained in CGC and fulfilled by firms; Board applies to the proportion of recommendations about the board of directors contained in CGC and fulfilled by firms; Subcommittees relates to the proportion of recommendations about the board subcommittees contained in CGC and fulfilled by firms; Size is calculated as the Logarithm of total assets; Lev refers to the ratio of total debt to total assets; Fperf denotes ratio return on equity; and Pmargin is calculated by net income over net sales.

Source: own elaboration

The sample correlations between all the variables are reported in Table 8. First, the two measures for financial distress are significantly correlated. Despite this association, bivariate correlations between the measures of financial distress variables and CGC compliance measures provide mixed results. Furthermore, there is a strong association between the three variables on CGC compliance. Firms that present a higher overall CGC compliance also tend to amply fulfil the specific recommendations regarding the board of directors and its subcommittees. In addition, consistent with the theoretical arguments, several control variables appear to be correlated with both measures for financial distress. Finally, the correlation coefficients between independent variables are not high. A rule of thumb is that

multicollinearity may be a problem if a correlation is 0.7 or more in the correlation matrix formed by the independent variables (Cooper and Schindler, 2003). Therefore, multicollinearity issues in this sample are ruled out.

Table 8. Study 1. Pearson coefficients

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) FD	1							
(2) Zmscore	0.25***	1						
(3) Overall	-0.09	-0.29***	1					
(4) Board	-0.14	-0.17*	0.64***	1				
(5) Subcommittees	-0.04	-0.22**	0.77***	0.51***	1			
(6) Size	-0.04	0.21**	0.15*	0.11	0.13	1		
(7) Lev	0.22**	0.56***	-0.10	-0.07	-0.05	0.41***	1	
(8) Fperf	-0.22**	-0.47***	-0.04	0.03	-0.01	-0.06	-0.07	1
(9) Pmargin	-0.16*	-0.47***	0.06	-0.02	0.02	-0.02	-0.26***	0.35***

FD is a dummy which takes the value 1 if: (1) its EBITDA are lower than its financial expenses for two consecutive years; (2) a fall in its market value occurs between two consecutive periods; Zmscore refers to the Zmijewski score; Overall indicates the proportion of recommendations contained in CGC and fulfilled by firms; Board applies to the proportion of recommendations about the board of directors contained in CGC and fulfilled by firms; Subcommittees relates to the proportion of recommendations about the board subcommittees contained in CGC and fulfilled by firms; Size is calculated as the Logarithm of total assets; Lev refers to the ratio of total debt to total assets; Fperf denotes ratio return on equity; and Pmargin is calculated by net income over net sales.* p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01.

Source: own elaboration

5.1.4.2. Multivariate analysis

The results from the logistic regression analysis panel are reported in Table 9. In Model 1, the relationship between overall CGC compliance (Overall) and the likelihood of financial distress (FD) is tested. In Models 2 and 3, the main explanatory variables refer to the compliance of recommendations regarding the board of directors (Board) and its subcommittees (Subcommittees), respectively. All the models are statistically significant and include the control variables commented. The results fail to find any significant relationship between the likelihood of financial distress and either overall CGC compliance or CGC compliance about subcommittee recommendations. Nonetheless, compliance with CGC recommendations in boards of directors is significantly related to the probability of financial distress. As predicted in hypothesis H2, boards that comply with CGC recommendations seem to be in a better position to carry out their monitoring function effectively and therefore to better prevent business failures. As regards the control variables, and in line with previous studies (Shahwan, 2015; Udin *et al.*, 2017), the likelihood of financial distress is documented to increase for greater levels of leverage and to decrease for higher levels of firm performance in all the models.

Table 9. Study 1. Logistic regression analysis

Dependent variable: FD

	Model 1	Model 2	Model 3
Overall	-0.004 (-0.16)		
Board		-0.05* (-1.80)	
Subcommittees			0.003 (0.16)
Size	-0.62 (-1.32)	-0.69 (-1.48)	-0.62 (-1.32)
Lev	2.92*** (2.83)	2.96*** (2.82)	2.92*** (2.84)
Fperf	-0.023** (-2.46)	-0.03*** (-2.57)	-0.03** (-2.47)
Pmargin	-0.03 (-0.43)	-0.06 (-0.71)	-0.03 (-0.40)
Ind	included	included	included
Year	included	included	included
Wald	22.36*	24.14**	22.46*

FD is a dummy which takes the value 1 if: (1) its EBITDA are lower than its financial expenses for two consecutive years; (2) a fall in its market value occurs between two consecutive periods; Zmscore refers to the Zmijewski score; Overall indicates the proportion of recommendations contained in CGC and fulfilled by firms; Board applies to the proportion of recommendations about the board of directors contained in CGC and fulfilled by firms; Subcommittees relates to the proportion of recommendations about the board subcommittees contained in CGC and fulfilled by firms; Size is calculated as the Logarithm of total assets; Lev refers to the ratio of total debt to total assets; Fperf denotes ratio return on equity; and Pmargin is calculated by net income over net sales. In this table, results from logit regression analysis of the mode: $FD_{it} = \alpha + \beta_1 Overall_{it} + \beta_2 Board_{it} + \beta_3 Subcommittees_{it} + \beta_4 Size_{it} + \beta_5 Lev_{it} + \beta_6 Fperf_{it} + \beta_7 Pmargin_{it} + \beta_8 Ind_{it-1} + \beta_9 Year_{it-1}$ are reported. * p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01. Wald refers to a statistical significance test for the model in logistic regressions.

Source: own elaboration

In the next stage of the empirical analysis, Table 10 reports the results from the two-stage procedure (2SLS), where the analysis is performed by using the instrumental variables to predict the level of CGC compliance. The instruments comply with the theoretical requirements, and the Sargan test also confirms their validity. The literature assumes that p-values over 0.10 signal that the instruments are uncorrelated with the error term (García-Castro *et al.*, 2010). Results of the F-test show that the regression models are all statistically significant at the levels of 0.001 and 0.05. This analysis confirms that the likelihood of financial distress, measured by the Zmijewski score, is also significantly associated with compliance with CGC recommendations concerning the board of directors. In particular, the adjusted R2 for Model 2 is 0.250, suggesting that it explains an important variance in the dependent variable. Furthermore, the results again show the lack of association between financial distress and both the level of overall CGC compliance and compliance of the recommendations regarding board subcommittees. In addition to leverage and firm performance, the profit margin appears to be significantly associated with the financial distress of firms.

Table 10. Study 1. 2SLS analysis

Dependent variable: Zmscore

	Model 1	Model 2	Model 3
Global	-22.73		
	(-1.09)		
Board		-16.37*	
		(-1.73)	
Subcommittees			-17.29
			(-1.53)
Size	109.25	25.09	5.59
	(0.56)	(0.25)	(0.05)
Lev	-41.19	281.23***	123.24
	(-0.11)	(3.16)	(0.69)
Fperf	-0.38*	-0.34**	-0.55***
	(-1.67)	(-2.27)	(-3.23)
Pmargin	-8.09	-6.85*	-3.08
	(-1.17)	(-1.80)	(-1.00)
Ind	included	included	included
Year	included	included	included
Sargan test	0.85	0.83	0.76
Adjusted R2	0.22	0.25	0.06
F test	2.42**	6.15**	4.76***

FD is a dummy which takes the value 1 if: (1) its EBITDA are lower than its financial expenses for two consecutive years; (2) a fall in its market value occurs between two consecutive periods; Zmscore refers to the Zmijewski score; Overall indicates the proportion of recommendations contained in CGC and fulfilled by firms; Board applies to the proportion of recommendations about the board of directors contained in CGC and fulfilled by firms; Subcommittees relates to the proportion of recommendations about the board subcommittees contained in CGC and fulfilled by firms; Size is calculated as the Logarithm of total assets; Lev refers to the ratio of total debt to total assets; Fperf denotes ratio return on equity; and Pmargin is calculated by net income over net sales. In this table, results from logit regression analysis of the mode: $Zmscore_{it} = \alpha + \beta_1 Overall_{it} + \beta_2 Board_{it} + \beta_3 Subcommittees_{it} + \beta_4 Size_{it} + \beta_5 Lev_{it} + \beta_6 Fperf_{it} + \beta_7 Pmargin_{it} + \beta_8 Ind_{it-1} + \beta_9 Year_{it-1}$. are reported. * p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01.

Source: own elaboration

5.1.4.3. Discussion

This study provides new empirical evidence concerning the effect of CGC compliance on the likelihood of firms' financial distress. The relationship between corporate governance and financial distress is a matter of interest to different stakeholders, and yet there is no empirical evidence regarding the impact of CGC on this issue. This study focuses on the Spanish context, where the special characteristics of corporate governance are likely to raise serious agency conflicts. Examining the relationship between corporate governance and companies' financial distress thus provides relevant evidence for this type of context, where overall analysis of this issue is still lacking. Unlike previous studies, three different levels of CGC compliance were examined: overall CGC compliance, compliance with recommendations about the board of directors, and compliance with recommendations about board subcommittees. The results find that the probability of financial distress may be reduced for higher levels of compliance with recommendations regarding the board of directors. However, the other measures of CGC compliance appear unrelated with the proxies employed for financial distress.

This evidence specifically extends the literature on corporate governance and business failure. First, over the last few years, the proliferation of CGC has led to increasing research on the effects of their compliance. While many studies have focused on the impact that CGC compliance could have on investors' perceptions (Hooghiemstra and van Ees, 2011; McCahery *et al.*, 2016; Kaspereit *et al.*, 2017), some recent studies suggest that fulfillment of CGC recommendations may also have economic and financial effects and call for further research on this issue (Stiglbauer and Velte, 2014; Haji and Mubaraq, 2015; Cuomo *et al.*, 2016; Rose, 2016). These results complement those studies and help to explain the previous mixed evidence, thereby providing an important contribution to the existing literature. On the one hand, the results highlight that CGC compliance is not only an ethical issue, as it may also help to prevent financial distress, which is a crucial firm outcome (Boubaker *et al.*, 2018). On the other hand, they show that analysis of CGC compliance must take into consideration the differences between the recommendations contained in CGC. Specifically, one of the novelties of this study is the design of three measures for CGC compliance based on types of

recommendations common to all the existing CGC around the world. In particular, overall CGC compliance fails to add value in terms of mitigating the financial distress of companies. This finding leads to support the notion that not all corporate governance recommendations might have an impact on firm strategies, which may help to explain the lack of association between CGC and firm outcomes documented in several previous studies (Bassen *et al.*, 2009; Jain *et al.*, 2011; Steger and Stiglbauer, 2011). Thus, hypothesis H1 cannot be accepted. Furthermore, the results fail to find a relationship between compliance with CGC recommendations about board subcommittees and financial distress, thus rejecting hypothesis H3. Only compliance with CGC recommendations regarding the board of directors leads to a reduction in the likelihood of financial distress. As a result, hypothesis H2 can be accepted. In line with previous research, the findings suggest that despite the specific functions assigned to board subcommittees, the board of directors is in charge of monitoring major strategic decisions to detect business failure (Fich and Slezak, 2008; Manzaneque *et al.*, 2016a). Thus, these findings clarify the effects of boards. This is also an important contribution for the literature addressing boards of directors, which has traditionally highlighted the role played by boards in mitigating agency conflicts (Hillman and Dalziel, 2003).

Furthermore, the study also extends previous literature on the determinants of financial distress, with only a few studies having documented that governance structures, such as the level of independence or ownership structure can influence the likelihood of financial distress (Salloum *et al.,* 2013; Baklouti *et al.*, 2016; Manzaneque *et al.*, 2016b; Udin *et al.*, 2017). This empirical research extends this branch of literature by shedding some light on the impact of CGC compliance.

5.2. Corporate governance code compliance and environmental, social and governance disclosures

5.2.1. Objective

This study aims to contribute to the previous literature and to cover two important gaps related to research on CGC (Cuomo *et al.*, 2016). The first relates to the need for a more detailed analysis of compliance with these codes. The second suggests the importance of studying the effect of compliance with the recommendations contained in the CGC on new and relevant corporate strategies. To this end, this study performs an in-depth analysis of CGC compliance, focusing not only on compliance at the global level, but also on compliance with recommendations specifically related to the board of directors, and with those associated with the different board committees. The above means that this research considers three different levels of CGC compliance. Furthermore, an additional contribution of this study derives from analysing the relationship between the different levels of CGC compliance and the disclosure practices of environmental, social, and corporate governance (ESG) information. As commented in Chapter 1, ESG disclosure remains important for two reasons. The first is because information disclosure is a crucial aspect within corporate strategies, and several studies highlight that improved corporate governance mechanisms should lead to better oversight of company disclosure processes and a reduction in information asymmetries in capital markets (Cerbioni and Parbonetti, 2007). In this regard, ESG disclosure has become a critical aspect of business strategy (Lokuwaduge and Heenetigala, 2017). The second reason relates to the increasing importance that ESG reporting has received from regulators all over the world.

5.2.2. Hypothesis development

Corporate governance is the set of rules, principles, and procedures that regulate the structure and functioning of the governing bodies of a company. It establishes the relationships between the board of directors by setting the rules that will guide the decision-making process (CNMV, 2017). Thus, corporate governance mechanisms are crucial to ensure stakeholder rights and efficiency in capital markets (Shleifer and Vishny, 1997). For this reason, since the 1990s there has been

a succession of international CGC, which contain a wide range of recommendations aimed at strengthening the rights of investors and other stakeholders (Acero and Alcalde, 2010).

As commented in the previous sections, several CGC have been published in Spain: the Olivencia Report (1998), the Aldama Report (2003), the Conthe Report—distinguished as the Unified Corporate Governance Code of Listed Companies (2006)—, the Good Governance Code of Listed Companies (2015), and the Good Governance Code of Listed Companies, revised in 2020. These codes comprise a number of recommendations on corporate governance mechanisms gathered in different blocks. The structure of the diverse codes is not identical, but all of them consistently contain particular recommendations related to boards of directors, as well as other specific recommendations for certain board subcommittees (mainly the audit committee). For that reason, in order to provide more precise empirical evidence, this study analyses not only compliance with the recommendations contained in the codes at a global level, but also both compliance with the recommendations of the board and those related to board subcommittees. Table 11 shows how the recommendations are structured in Spanish CGC (2015). As can be observed, the Code is made up of 64 recommendations, 11 of which relate to general aspects and questions about the General Shareholders' Meeting, with 25 focusing exclusively on the board of directors, and 28 relating to board committees.

Table 11. Study 2. Block of recommendations

Block	Number of recommendations (64)
1. General aspects	5
2. General shareholders' meeting	6
3. Board of directors	25
4. Board subcommittees	28

Source: own elaboration

From an agency theory perspective (Jensen and Meckling, 1976), compliance with recommendations, both overall compliance and at the level of the recommendations

related to the board of directors and its committees, should help to protect stakeholders' interests as well as reduce agency costs and information asymmetries. Concerning this issue, previous literature has pointed out that disclosure of ESG information is an essential tool in reducing agency problems (Cheng *et al.*, 2014). In line with the Triple Bottom Line (Elkington, 1994), organizational performance should not be limited exclusively to financial performance but should also consider social and environmental performance (Visser *et al.*, 2007). Consequently, ESG information has acquired great relevance in recent years, becoming a research topic, since the demand for this type of information is increasing among investors and other stakeholders (Helfaya and Moussa, 2017). In particular, numerous analysts and investors include this type of information when issuing opinions or carrying out business valuation models, which is why ESG information has become a critical tool to reduce informational asymmetries in capital markets (Ioannou and Serafeim, 2017).

Previous research has investigated the association between certain corporate governance attributes and the disclosure of social information (Majumder *et al.*, 2017; Ullah *et al.*, 2019). Nonetheless, despite the significance and timeliness of ESG information for capital markets, previous literature has not yet explored the possible association between CGC compliance and ESG disclosure practices. In consequence, this research aims to contribute to our knowledge about the effects of corporate governance techniques, providing a new approach, analysing whether overall compliance with CGC recommendations as well as recommendation compliance at both the board of directors and board subcommittee levels may impact ESG disclosure.

First, overall compliance with CGC recommendations should involve strong corporate governance structures (Cortés and Martos, 2017). In particular, companies with better corporate governance structures are likely to implement more effective strategies to protect stakeholders' interests (Hillman and Dalziel, 2003). There is a consensus in previous literature on the positive effect that corporate governance mechanisms have on the quality of information disclosure practices (Carcello *et al.*, 2011). In line with the above reasons, and given the relevance of ESG information in reducing agency conflicts, better corporate

governance structures can be expected to increase the quality of the ESG information disclosed by companies. On the assumption that companies which comply with CNMV recommendations included in CGC may present better corporate governance structures, the following hypothesis is formulated:

H1: Compliance with global CGC recommendations helps to improve ESG information disclosure practices.

The board of directors is a crucial mechanism in business decision making and exercises a supervisory function over essential corporate strategies (Fama and Jensen, 1983). Accordingly, compliance with CGC recommendations concerning the board of directors would mean that directors could more effectively fulfil their function of controlling their tasks, including the supervision of the reporting process (Donnelly and Mulcahy, 2008). Specifically, recent studies have emphasized that boards of directors are responsible for ESG disclosure policies (Galbreath, 2018; Salehi *et al.*, 2018). Given that a more effective board of directors should strengthen links with stakeholders and reduce agency conflicts (Arayssi *et al.*, 2016), companies that comply with the most recommendations at board level are expected to improve their ESG disclosure practices. Consequently, the following hypothesis is formulated:

H2: Compliance with CGC recommendations at board level contributes to improving ESG information disclosure practices.

Finally, greater compliance with CGC recommendations relating to board committees should minimize agency conflicts. These committees make decisions that generally contribute to increased control over corporate strategies (Rahmat *et al.*, 2009). Specifically, the audit committee, on which most of the recommendations in this block focus, can have a direct effect on the supervision of the information preparation process (Ahmed and Anifowose, 2016). In this sense, recent research indicates that this committee should be directly involved in implementing non-financial and social disclosure strategies (Salehi and Shirazi, 2016). Although the other committees have no direct involvement in the information preparation process, they also contribute to improving the overall control capacity of corporate strategies. In line with the above, it is understood that compliance with CGC recommendations on board subcommittees can lead to

improved ESG disclosure practices, which leads us to posit the following hypothesis:

H3: Compliance with CGC recommendations at the level of board subcommittees contributes to improving ESG information disclosure practices.

5.2.3. Research method

5.2.3.1. Sample and data

The sample of this study is made up of companies listed on the IBEX-35 during the period between 2013-2016, building a panel of 130 observations. The selection of this time period is motivated by the coming into force of Directive 2014/95/EU regarding the disclosure of non-financial information in Spain in 2017. The selection of several earlier years prevents the ESG information disclosed by companies from being influenced by said regulations, which would bias the results obtained. As regards the empirical analysis, both data on compliance with the recommendations included in the CGC and ESG information disclosure practices are required. Data on compliance were obtained from the Spencer Stuart Index (Spencer Stuart Board Index 2013, 2014, 2015 and 2016). This Index compiles information on the degree of compliance with CGC of companies belonging to the IBEX-35. Similar to these codes, the recommendations are divided into different blocks. These indices identify the degree of overall compliance with the CGC and the degree of compliance with the recommendations regarding the board of directors and its committees.

Data related to ESG information disclosure practices are taken from the Informe Reporta (2014, 2015, 2016, 2017). This report, prepared by analysts of Deva Comunicación Financiera, presents data on the quality of the information published by listed Spanish companies. With regard to the Informe Reporta, the data employed focuses on the Index entitled “Commitment,” which measures information relating to environmental, social, and corporate governance (ESG) aspects.

Finally, the data required to calculate other types of financial variables included in the empirical analysis were obtained from the Sistema de Análisis de Balances Ibéricos (SABI) database or directly from the annual accounts of the companies.

5.2.3.2. Variables

First, the Commitment Index provided by the Informe Reporta was used to measure the quality of voluntary disclosure of ESG information (ESG info). This type of analyst assessment is common in studies examining the quality of company social information (Arayssi *et al.*, 2016; Ioannou and Serafeim, 2017). This index is composed of 14 indicators, which are based on the guidelines and recommendations of The Global Reporting Initiative (GRI), AA1000 Accountability, Dow Jones Sustainability Index (DJSI), FTSE4Good, and the International Integrated Reporting Council (IIRC), among others. A team of expert analysts evaluate the information supplied by the companies, following a rigorous process of preparation and supervision to guarantee independence and objectivity.

Second, the main independent or explanatory variables are those related to compliance with CGC recommendations. As already mentioned in this thesis, compliance with CGC recommendations at a global level, as well as those specific to the board of directors and the board committees, is analysed. Therefore, three different independent variables are employed:

- Compliance with CGC recommendations at a global level (C-General).
- Compliance with CGC recommendations relating to the board of directors (C-Board).
- Compliance with CGC recommendations regarding to board of director committees (C- Committees).

Finally, some control variables were considered, since the level of voluntary disclosure of ESG undoubtedly depends on other issues that are not related to corporate governance. Thus, based on previous literature (Chavent *et al.*, 2006), company size, indebtedness, profitability, financial situation, sector, and year have been included in the study. Size (SIZE) is the logarithm of total assets; indebtedness (IND) is calculated as the ratio of debt to total assets; profitability (PROF) is calculated as the ratio of EBIT/Total assets, and company financial situation is measured using the score proposed by Zmijewski (1984) (ZMIJ). Finally, the sector of activity to which the company belongs (SECT) and the year under study (YEAR) are dichotomous variables also considered in the empirical analysis.

Table 12 lists the variables analysed and explains how they have been calculated.

Table 12. Study 2. Definition of variables

Variables	Description	Source
ESG info	Quality of information on environmental, social, and corporate governance issues	Commitment Index by Informe Reporta
C-General	The proportion of recommendations contained in CGC fulfilled by firms	Spencer Stuart Index
C-Board	The proportion of recommendations about the board of directors contained in CGC fulfilled by firms	Spencer Stuart Index
C-Committees	The proportion of recommendations about board of director committees contained in CGC fulfilled by firms	Spencer Stuart Index
SIZE	Total assets logarithm	Annual accounts
IND	Other liabilities/ Total assets	Annual accounts
PROF	EBIT/ Total assets	Annual accounts
ZMIJ	Financial situation	Dichotomous variable which takes the value 1 if the company has a high probability of bankruptcy, and 0 otherwise, based on the Zmijewski score (1984)
SECT	Dichotomous variable for each sector according to the IGBM classification	Madrid Stock Exchange
YEAR	Dichotomous variable for each year	

Source: own elaboration

5.2.3.3. Model specification

A regression analysis employing a panel data is used to study whether the relationship between dependent and independent variables is statistically significant. The use of regression through panel data is particularly desirable in analyses that combine cross-sectional observations with time series, as it allows for comparisons between the behaviour of different organizations and between the same organization at different periods of time. Likewise, the panel data allows for control of unobservable heterogeneity (Arellano and Bover, 1990). For this reason, this methodology has been widely used in this type of study (García-Sánchez *et al.*, 2011; Shahwan, 2015). In relation to the research objective, three different models are proposed to observe the effect that each measure of compliance with CGC recommendations may have on ESG information disclosure practices, which is considered the dependent variable in all models.

$$ESG\ info_{it+1} = \beta_0 + \beta_1 C\text{-}General_{it} + \beta_2 SIZE_{it} + \beta_3 IND_{it} + \beta_4 PROF_{it} + \beta_5 ZMIJ_{it} + \beta_6 SECT_{it} + \beta_7 YEAR_{it} \quad (1)$$

$$ESG\ info_{it+1} = \beta_0 + \beta_1 C\text{-}Board_{it} + \beta_2 SIZE_{it} + \beta_3 IND_{it} + \beta_4 PROF_{it} + \beta_5 ZMIJ_{it} + \beta_6 SECT_{it} + \beta_7 YEAR_{it} \quad (2)$$

$$ESG\ info_{it+1} = \beta_0 + \beta_1 C\text{-}Committees_{it} + \beta_2 SIZE_{it} + \beta_3 IND_{it} + \beta_4 PROF_{it} + \beta_5 ZMIJ_{it} + \beta_6 SECT_{it} + \beta_7 YEAR_{it} \quad (3)$$

$i = 1, \ldots\ldots, N;\ t = 1, \ldots\ldots\ldots\ldots, T$

where i and t represent the transversal units and the period of time, respectively. The dependent variable refers to the ESG information published in year t+1. A common problem in this type of study is the existence of endogeneity between dependent and independent variables, related to the presence of inverse relationships to the ones expected (Adams and Ferreira, 2009). The above would imply that companies which disclose better ESG information comply more easily with specific CGC recommendations. The use of lagged independent and control variables with respect to ESG disclosure, the dependent variable, would rule out this option (Ben-Amar and McIlkenny, 2015). Moreover, the Hausman test was employed for each model to determine whether the most appropriate estimation model involved fixed effects or random effects.

5.2.4. Results and discussions

5.2.4.1. Descriptive statistics and correlations

Table 13 presents the main descriptive statistics. First, the descriptive results show that there is a high variability in the values referring to the disclosure of ESG information. Even though the companies studied are large and visible, and subject to high social pressure, ESG disclosure practices are diverse. Second, as regards the main independent variables, the companies analysed tend to comply with most of the recommendations from the CNMV included in the CGC. Despite this, there are companies with a low level of compliance, which could affect the effectiveness of corporate governance mechanisms. Moreover, the degree of follow-up is similar in the three levels of recommendations studied, rejecting the notion that the differences found in the results may be due to divergences in the degree of compliance of each level. Finally, a detailed analysis of the descriptions of each variable demonstrates that there are no extreme values which could condition the empirical analysis.

Table 13. Study 2. Descriptive statistics

Variable	Mean	Median	Standard Dev.	Min	Max
ESG info	23.48	24.20	4.88	3.10	32.3
C-General	91.18	93.54	9.09	50.25	100
C-Board	90.75	94.44	9.07	61.90	100
C-Committees	90.91	94.12	9.31	53.57	100
SIZE	7.05	6.85	0.81	5.67	8.70
IND	0.63	0.69	0.30	0.05	2.00
PROF	4.55	2.53	14.19	-97.05	63.10
ZMIJ	0.15	0	0.36	0	1

ESG info refers to quality of information on environmental, social, and corporate governance issues; C-General applies to the proportion of recommendations contained in CGC fulfilled by firms; C-Board indicates the proportion of recommendations about the board of directors contained in CGC fulfilled by firms; C- Committees relates the proportion of recommendations about board of director committees contained in CGC fulfilled by firms; SIZE is calculated by the total assets logarithm; IND is determined as other liabilities/ Total assets; PROF is proxied by the ratio EBIT/ Total assets; and ZMIJ refers to firm financial situation and is measured by a dichotomous variable which takes the value 1 if the company has a high probability of bankruptcy, and 0 otherwise, based on the Zmijewski score (1984). * p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01.

Source: own elaboration

Table 14 presents the correlations between each of the variables that make up the statistical models. This table aims to show individual relationships between the variables in the study and to rule out the existence of multicollinearity problems derived from particularly highly significant relationships. First, there is a positive association between the disclosure of ESG information and CGC compliance, although it is only significant in terms of fulfilling the specific recommendations of the board of directors (significant at 10%). Consequently, compliance with the recommendations concerning the board of directors and companies' social commitment is associated in terms of ESG information disclosure. In addition, a positive and significant association is observed between the disclosure of ESG

information and company size. Companies with the best disclosure practices are therefore those which may have greater visibility and come under greater social pressure because of their size. As expected, the relationship between the degrees of compliance with the different levels of recommendations is positive and significant, indicating that companies which tend to comply with more recommendations at a general level also do so with the specific recommendations regarding the board of directors and its committees.

In general, none of the correlations between the independent variables exceeds 0.700 (except the association between the variables C-Committees–C-General, which would not enter jointly in any model), confirming that there are no multicollinearity problems in the econometric models used in the empirical analysis (Cooper and Schindler, 2003).

Table 14. Study 2. Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) ESG info	1.00						
(2) C-General	0.01	1.00					
(3) C-Board	0.16*	0.64**	1.00				
(4) C-Committees	0.04	0.77***	0.51***	1.00			
(5) SIZE	0.33***	0.15*	0.11	0.13	1.00		
(6) IND	0.04	-0.10	-0.07	-0.05	0.44***	1.00	
(7) PROF	0.01	0.32***	0.22**	0.25***	-0.19**	-0.43***	1.00
(8) ZMIJ	-0.13	-0.09	0.01	-0.06	-0.10	0.28***	-0.42***

ESG info refers to quality of information on environmental, social, and corporate governance issues; C-General applies to the proportion of recommendations contained in CGC fulfilled by firms; C-Board indicates the proportion of recommendations about the board of directors contained in CGC fulfilled by firms; C- Committees relates the proportion of recommendations about the board of directors committees contained in CGC fulfilled by firms; SIZE is calculated by the total assets logarithm; IND is determined as other liabilities/ Total assets; PROF is proxied by the ratio EBIT/ Total assets; and ZMIJ refers to firm financial situation and is measured by a dichotomous variable which takes the value 1 if the company has a high probability of bankruptcy, and 0 otherwise, based on the Zmijewski score (1984). * p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01.

Source: own elaboration

5.2.4.2. Regression analysis

Table 15 displays the results of regression analysis using panel data and includes information for each of the models presented in the previous section. It shows the associations between the disclosure of ESG information and the independent and control variables. Model 1 includes compliance with the recommendations at the global level contained in the CGC as the main explanatory variable, while in models 2 and 3, the explanatory variables are compliance with the recommendations relating to the board of directors and its committees, respectively.

First, all the models studied are statistically significant and have an adequate explanatory capacity. Column 1 offers the results of model 1, which analyses the effect of compliance with the global recommendations contained in the CGC on the voluntary disclosure of ESG information, showing that there is no relationship between the analysed variables. Therefore, compliance with the recommendations contained in the CBC at a global level does not lead to an improvement in the disclosure of this information, such that hypothesis H1 is rejected. These results are in line with other studies which indicate that CGC compliance does not have a direct impact on corporate decisions (Stiglbauer and Velte, 2014), and that compliance with CGC recommendations could be more related to moral and reputational issues (Rhode and Packel, 2014). Nevertheless, the results do not support the theoretical arguments and suggest that while compliance with CGC recommendations at the global level should ensure that the interests of different stakeholders are protected, this has no bearing on specific ESG disclosure policies.

Column 2 presents the results concerning model 2. The findings show that compliance with the recommendations relating to the board of directors has a positive impact on ESG disclosure practices, which means that companies who comply with a higher percentage of recommendations related to the board of directors tend to be more committed to society and sustainable development, as far as ESG information disclosure is concerned, thereby supporting hypothesis H2. These results reinforce the evidence found by other studies on the vital role that boards of directors play in voluntary disclosure practices of this type (Helfaya and Moussa, 2017; Galbreath, 2018). Consequently, the results demonstrate that the effectiveness of CGC may depend on the type of recommendations being evaluated,

thereby contributing to the debate concerning the effect of CGC compliance (Cuomo *et al.*, 2016). In line with the theoretical arguments, compliance with the recommendations regarding the board of directors does contribute to reducing agency problems by improving ESG information disclosure practices, which is probably due to the responsibility that boards have in establishing such strategies.

Finally, column 3 displays the association between the fulfilment of CGC recommendations related to board subcommittees and ESG disclosure practices. The results of model 3 indicate there is no significant association between the studied variables; therefore, hypothesis H3 is rejected. Although this result is contrary to the theoretical arguments, it reinforces the idea presented above on the role played by boards of directors. This evidence makes it possible to resolve a relevant question in the literature concerning the mechanisms that can improve ESG information practices. Although board committees, specifically the audit committee, can be useful mechanisms for reducing agency conflicts and supervising the implementation of certain corporate strategies, the results show that it is the board of directors which influences policies on ESG disclosure.

Regarding the effect of the control variables, it is noteworthy that only compliance with the recommendations of the board of directors and the probability of bankruptcy present a significant and negative relationship, which implies that as the risk of bankruptcy increases, the quality of ESG disclosure decreases. The absence of other relationships may be due to the specificity of the measures used. Previous studies have indicated that when specific information attributes are measured business characteristics may not be determinant of the disclosure of such information (Bravo *et al.,* 2010).

Table 15. Study 2. Regression models

	Model 1	Model 2	Model 3
Constant	25.57***	10.15	24.53***
	(2.81)	(1.05)	(2.74)
C-General	-0.04		
	(-0.74)		
C-Board		0.13**	
		(2.35)	
C-Committees			-0.03
			(-0.53)
SIZE	0.94	0.90	0.93
	(0.83)	(0.80)	(0.82)
IND	-0.48	-0.36	-0.48
	(-0.22)	(-0.17)	(-0.21)
PROF	0.01	-0.01	0.00
	(0.23)	(-0.48)	(0.11)
ZMIJ	-1.39	-1.79*	-1.41
	(-1.30)	(-1.71)	(-1.32)
SECT	included	included	included
YEAR	included	included	included
Adjusted R2	0.30	0.33	0.30
F test	27.53**	32.91***	27.08**

ESG info refers to quality of information on environmental, social, and corporate governance issues; C-General applies to the proportion of recommendations contained in CGC fulfilled by firms; C-Board indicates the proportion of recommendations about the board of directors contained in CGC fulfilled by firms; C- Committees relates the proportion of recommendations about the board of directors committees contained in CGC fulfilled by firms; SIZE is calculated by the total assets logarithm; IND is determined as other liabilities/ Total assets; PROF is proxied by the ratio EBIT/ Total assets; and ZMIJ refers to firm financial situation and is measured by a dichotomous variable which takes the value 1 if the company has a high probability of bankruptcy, and 0 otherwise, based on the Zmijewski score (1984). * p-value < 0.1; ** p-value < 0.05; *** p-value < 0.01.

Source: own elaboration

5.2.4.3. Discussion

According to the agency theory (Jensen and Meckling, 1976), CGC compliance should contribute to protecting stakeholder interests, as well as reducing agency costs and information asymmetries. This study seeks to explore the relationship between compliance with CGC recommendations by Spanish listed companies and the practices of voluntary disclosure of ESG information. These results represent a step forward in the literature on corporate governance, sustainability and CSR. The literature on corporate governance indicates that CGC compliance has an effect on investor perceptions, which can translate into positive market reactions to share values (Goncharov *et al.*, 2006; Chavez and Silva, 2009; Kaspereit *et al.*, 2015; Kaspereit *et al.*, 2017) and an increase in corporate reputation (Hooghiemstra and van Ees, 2011; Rhode and Packel, 2014; McCahery *et al.*, 2016). These studies assume that corporate reputation is the "increase of perception of the different participants of the degree to which the responses of the organization will satisfy the demands and expectations of stakeholders" (Pucheta, 2010), and they consider that CGC compliance improves that perception. Moreover, another branch of studies argues that CGC compliance affects the strategic decisions of companies, impacting business performance. Several studies thus reveal that a greater degree of CGC compliance positively influences different measures of financial performance, such as the market-to-book ratio, Tobin's q or the financial profitability of companies (Fernández-Rodríguez *et al.*, 2004; Bassen *et al.*, 2006; Stiglbauer, 2010; Luo and Salterio, 2014; Rodríguez- Fernández, 2016). These findings therefore contribute to the literature on the role of CGC by further exploring the consequences that compliance with these codes may have on strategies related to the disclosure of ESG information.

In addition, recent studies in CSR and sustainability literature indicate that the disclosure of social information, in particular ESG, may be conditioned by certain business and corporate governance factors. Lee *et al.* (2016) state that there is a significant negative relationship between the indebtedness of a company and ESG disclosure. They also indicate that firm size and R&D expenditure negatively impact ESG disclosure. Additionally, Arayssi *et al.* (2016) highlight a negative association between ESG disclosure and financial performance when there are low

levels of gender diversity on the board of directors. Yu *et al.* (2018) suggest that companies with higher levels of assets, greater investment in R&D, and good past financial results tend to be more transparent in ESG disclosure. Helfaya and Moussa (2017) find that the most independent and gender- diverse boards of directors tend to disclose higher quality ESG information. Jizi *et al.* (2014) highlight the existence of a positive association between board member independence and board size with CSR disclosure. Therefore, this study contributes to the literature regarding the determinants of disclosure of this type of information.

To conclude, it should be highlighted that these findings provide new empirical evidence on the relationship between CGC compliance and voluntary ESG disclosure practices. The results show that only compliance with the recommendations relating to the board of directors is associated with voluntary disclosure of ESG information practices.

5.3. A critical approach to the true influence of female directors on environmental innovation: when are women greener?

5.3.1. Research objective

Due to the environmental excesses of the last few decades, there is increasing pressure on boards of directors to drive sustainable business strategies. Environmental innovation has thus received a great deal of attention as a strategy driven by boards. Analysing the effects of board gender diversity on environmental innovation may be especially pertinent since female representation on boards has been at the core of political, professional and academic discussions worldwide (Cucari *et al.*, 2018; Amorelli and García-Sánchez, 2020). The objective of this study is to examine the influence of board gender diversity on environmental innovation. This particular objective is twofold.

First, we explore whether the effect of board gender diversity is uniform across different levels of both female representation and environmental innovation. First, we examine whether the association between gender diversity and environmental innovation is dependent on the existence of a critical mass of women in the boardroom. This is vital to understand the dynamics of women directors given that, beyond their mere proportion, the number of women may need to reach a specific size if they are to become influential and prevail on boards in terms of fostering environmental decisions (Liu *et al.*, 2014; Manita *et al.*, 2018). Second, a quantile regression is performed to explore whether the effects of gender diversity are contingent upon the level of environmental innovation. This remains timely and relevant since, while linear regression analysis only estimates the conditional mean effects of a response variable, quantile regression has emerged as a key tool to determine whether the influence of directors is different across levels of organizational outcomes (Conyon and He, 2017; Chi *et al.*, 2020).

In addition, we examine how certain board characteristics moderate the influence of female directors. Specifically, since environmental innovation requires strong monitoring, this study considers that the impact of women in boards on this type of innovation depends on board characteristics that are likely to affect the monitoring ability: the existence of a CSR committee, board size, board independence, board tenure, and board meetings. Despite being theoretically evident, there is minimal

empirical evidence concerning whether, and how, certain board attributes might interact with one another in their links to CSR (Endrikat *et al.*, 2020). In particular, recent research calls for a contextual approach to expand current understanding of how board gender diversity affects environmental decisions (Byron and Post, 2016; Bolourian *et al.*, 2020).

5.3.2. Hypothesis development

Environmental innovation refers to the process of creating and transforming product design, minimizing resource consumption and reducing the negative effect on the environment (Nadeem *et al.*, 2020). The deterioration of the environment has led to worldwide attention focusing on firms' environmental innovations (Barbi *et al.*, 2016; Liao *et al.*, 2019). Concurrently, board gender diversity has received a great deal of interest as a driver of environmental decisions (Bravo and Reguera-Alvarado, 2019; Naciti, 2019). The association between board gender diversity and environmental innovation has so far been examined in France (Galia *et al.*, 2015), the United States (Nadeem *et al.*, 2020) and the Chinese manufacturing industry (He and Jiang, 2019; Liao *et al.*, 2019). These studies tend to argue that female directors may display both a strategic orientation towards environmental decisions and the adequate oversight to effectively develop environmental innovation. Women are likely to be more oriented to stakeholders' interests and, particularly, more sensitive to their social and environmental concerns (Arayssi *et al.*, 2016). Female directors also tend to be more participative than men, which would probably encourage even greater levels of debate regarding a firm's stakeholders and the attention paid to environmental decisions (Galbreath, 2018). Moreover, women directors may improve the necessary oversight of environmental decisions since they are expected to enhance board independence and activism (Adams *et al.*, 2011), to be generally better prepared for meetings and improved board deliberations of complex issues (Huse and Solberg, 2006), and to be more diligent as well as approach their responsibilities as directors with greater commitment (Fondas and Sassalos, 2000).

Unlike previous studies, this thesis extends prior research by questioning the one-size fits all approach and by examining the specific conditions that determine the actual influence of female directors on environmental innovation. The first

hypothesis posits that the association between board gender diversity and environmental innovation may be dependent on the levels of both female board representation and environmental innovation. In this regard, critical mass and quantile regression approaches are employed, respectively. The second hypothesis considers that female directors do not work in isolation, and that their influence in the boardroom is likely to be moderated by board characteristics. Accordingly, a contextual analysis is performed.

Critical mass and quantile regression

According to the critical mass theory, when women represent a minority group, they are likely to encounter barriers to expressing their opinions and exerting influence on board decisions (Torchia *et al.*, 2011). A solo female director will be subject to a higher degree of scrutiny and pressure, and would tend to assimilate and imitate the behaviour of the majority directors, with the former's views being token representation only (Yarram and Adapa, 2021). Therefore, the dominant group may exhibit non-conciliatory behaviour towards women, who may have difficulty sharing their experiences and views when they are a minority. This perspective suggests that women are seen as unequal board members when they are underrepresented, thus limiting their effective participation in decision-making and so neutralising their impact on environmental strategic discussions (Cook and Glass, 2018). Therefore, in addition to the presence of female directors, several studies have given relevance to the numerical representation of women on boards. In this regard, only above a certain threshold of representation are female directors expected to be valued for their individual contributions and to elicit board involvement in undertaking tasks geared towards aspects that are considered to be "soft" by men, such as those related to social and environmental issues (Fernandez-Feijoo *et al.*, 2014; Amorelli and García-Sánchez, 2020). Environmentalism is risky, costly and requires huge resources and long-term commitment (Nadeem *et al.*, 2020). As a result, female orientation towards environmental innovation may prevail on boards and have an effective influence only if there is a critical mass of female directors. In line with previous research, women are considered to constitute a critical mass and to move from being a symbol to being a consistent minority

when there are at least three women on the board. Consequently, the following hypothesis is formulated:

H1a: Board gender diversity positively influences environmental innovation when female directors reach a critical mass.

Furthermore, environmental innovation is generally characterized by a higher degree of novelty as compared to other innovations, and represents a technological frontier in which firms are often inexperienced (Cainelli *et al.*, 2015). Previous research highlights that the development of environmental innovation requires having an adequate internal base of knowledge and skills and a structured organization working on innovation (De Marchi, 2012; Del Río *et al.*, 2015). Therefore, boards of directors are more likely to have an effect on environmental innovation in firms with higher levels of this innovation and which already have the necessary structures and resources. Specifically, despite the aforementioned expectation of female directors having a positive impact on environmental innovation, this influence may be greater in high environmentally innovative firms which have the required resources and are more familiarized with this kind of innovation. Nonetheless, previous literature concerning the association between board gender diversity and environmental innovation has employed traditional linear regressions using the conditional means method based on the assumption that the effect of female directors is uniform, regardless of firms' level of environmental innovation (Galia *et al.*, 2015; He and Jiang, 2019; Liao *et al.*, 2019; Nadeem *et al.*, 2020). In particular, quantile regression analysis has been proven an advanced estimation method of what effect boards of directors have on organizational outcomes, and can be key in reconciling and complementing previous findings in this area (Ramdani and Witteloostuijn, 2010; Conyon and He; 2017; Chi *et al.*, 2020). For the purpose of this study, this method allows the whole distribution of environmental innovation to be examined, rather than focusing on a single measure of the central distribution tendency. This then reveals differences in the response of female directors to environmental innovation across its different quantiles (Dang *et al.*, 2018). In line with the above arguments, it is assumed that the effect of board gender diversity on environmental innovation is likely to be more significant in

firms with higher levels of this kind of innovation. The following hypothesis is therefore formulated:

H1b: The relationship between board gender diversity and environmental innovation is stronger for high environmentally innovative firms vis-à-vis low environmentally innovative firms.

Contextual approach

Since innovative decisions are risky, costly, and uncertain, they are usually accompanied by agency problems, and therefore require adequate board monitoring abilities (Bravo and Reguera-Alvarado, 2017; Chen *et al.*, 2018; He and Jiang, 2019). In this regard, in addition to the specific capabilities of women, the impact of gender diversity on environmental innovation may depend to a great extent on certain board characteristics that have proven to be decisive in shaping board monitoring.

CSR committee. The CSR/sustainability committee supervises risks and opportunities with regard to sustainability policies and oversees sustainable decisions to align with stakeholders' expectations and maximize the economic and social impact of environmental policies (Peters and Romi, 2015). Therefore, the creation of a specialised CSR committee helps to mitigate environmental concerns by placing emphasis on environmental issues at the board level (Walls *et al.*, 2012). Members of the CSR committee will display greater interest, dedication, and commitment towards environmental decisions, and will improve the board's capacity to monitor these decisions (García-Sánchez *et al.*, 2019). As a result, boards with a specific CSR committee can be in a better position to implement environmental initiatives (Cucari *et al.*, 2018) such as environmental innovation (Arena *et al.*, 2018).

Nevertheless, in some cases environmental governance mechanisms may play a merely symbolic role and have no significant influence on environmental decisions (Mallin and Michelon, 2011). In these cases, CSR committees may prove to be inoperative in terms of important business strategies, such as environmental innovation, which can be delegated to the board as a whole (García-Sánchez *et al.*, 2019). Therefore, the following hypothesis is formulated:

H2a: The presence of a CSR committee moderates the association between board gender diversity and environmental innovation.

Board size. On the one hand, larger boards are able to pay sufficient attention to environmental challenges that require greater organization and involvement (Barakat *et al.*, 2015). Larger boards also bring a broader range of resources and links with the external environment, which can lead to more active discussions and orientation towards environmental actions (Haji, 2013; Giannarakis, 2014). As a result, board size might facilitate the identification and monitoring of innovative environmental opportunities (Miller and Triana, 2009).

However, larger boards are also likely to hinder environmental innovation for several reasons. First, a large number of directors can form factions and coalitions, which handicap reaching a consensus, especially regarding complex and risky decisions (Zona *et al.*, 2013). Second, larger boards generally face coordination and communication problems (Cheng, 2008). As a result, smaller boards are more likely to exhibit a more cohesive framework, leading to greater engagement and accountability towards social and environmental issues (Arayssi *et al.*, 2016). In this regard, when the board reaches a certain number of members, this can reduce the effectiveness of monitoring (Boone and Mulherin, 2017) and hamper the ability to initiate strategic innovative actions (Galia and Zenou, 2012). Taking into consideration the arguments above, the following hypothesis is formulated:

H2b: Board size moderates the association between board gender diversity and environmental innovation.

Board independence. Independent directors exhibit relevant connections with the firm's environment and tend to be more oriented towards stakeholders' expectations and are thus likely to encourage the company to undertake environmental activities (Walls *et al.*, 2012). These directors are also expected to maintain high ethical standards and to serve as accountability mechanisms for the various stakeholders in terms of environmental actions (Nadeem *et al.*, 2020). Independent directors are also less attached to economic performance and may be more likely to advocate the investments required for long-term sustainability (He and Jiang, 2019).

However, in some cases, independent directors may be reluctant to oversee environmental decisions due to their lack of in-depth knowledge of the specific environmental measures taken by a firm (Guerrero-Villegas *et al.*, 2018). In addition, under certain circumstances, large shareholders can take control over independent directors, which may hinder the latter's ability to oversee environmental decisions (Gallego-Álvarez and Pucheta-Martínez, 2020). Both possibilities are considered and, hence, the following hypothesis is formulated:

H2c: Board independence moderates the association between board gender diversity and environmental innovation.

Board tenure. The effect of board tenure on innovative strategies has become controversial in the literature. On the one hand, board tenure helps to enhance awareness of a firm's emerging opportunities and can better evaluate decisions on innovation (Kor and Misangyi, 2008). Directors with tenure also possess specific knowledge and experience of the firm's capabilities and processes, which proves necessary when developing and controlling innovative projects (Bravo and Reguera-Alvarado, 2017). Tenure provides directors with a better understanding of a firm's internal and external structures, thus improving their ability to assess and reduce risks about innovation (Chen, 2013).

Nevertheless, excessive tenure makes boards less effective in identifying and controlling new innovative opportunities (Hambrick, 1995). Boards with long-tenured members are more rigid, have an increased commitment to established practices and procedures, and tend to be reluctant to carry out strategic changes and new ideas (Golden and Zajac, 2001). As a result, they become stagnant, even more disconnected with external environments (Miller, 1991), and less willing to innovative investments that do not deliver short-term returns and that may increase agency costs (Khan *et al.*, 2021). Hence, the following hypothesis is formulated:

H2d: Board tenure moderates the association between board gender diversity and environmental innovation.

Board meetings. Directors can acquire a better monitoring ability of environmental innovation through board meetings since board meetings allow directors to devote more time to analysing and addressing corporate strategy (Wincent *et al.*, 2010). At

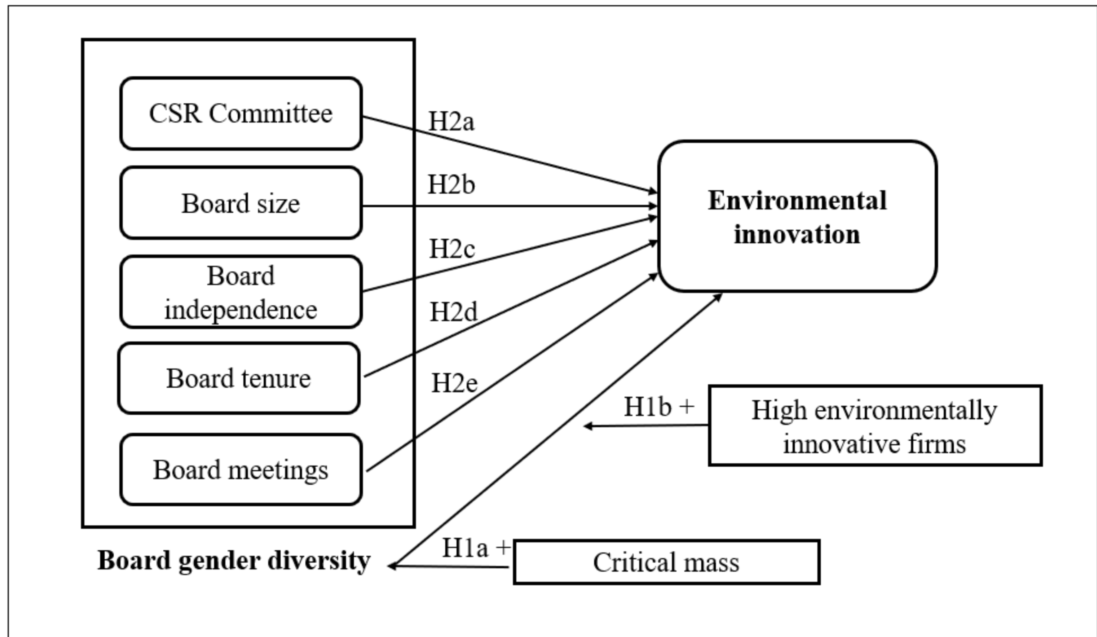
the same time, directors in board meetings share their experiences and knowledge and provide critical information and valuable resources that help reduce uncertainty (Chen, 2012) and improve director commitment (Yin *et al.*, 2012). In this regard, environmental policies can be better identified, and defined and discussed more in-depth and effectively when the number of meetings increases (Naseem *et al.*, 2017).

However, the opposite effect could also be expected because greater meeting frequency might make boards more averse to risk-taking (Alhares *et al.*, 2018). In addition, the ability of boards that hold a large number of meetings to discuss environmental decisions can also be questioned. In this sense, an excessive number of meetings may reduce board attendance and be time-consuming for directors, thus affecting their supervisory function efficiency (Lin *et al.*, 2014). In addition, frequency of meetings might not add value to shareholders due to the amount of routine involved in board meetings (Vafeas, 1999). Therefore, the following hypothesis is formulated:

H2e: Board meetings moderate the association between board gender diversity and environmental innovation.

Figure 6 sums up the theoretical approach used to analyse the relationship between board gender diversity and environmental innovation.

Figure 6. Theoretical approach



Source: own elaboration

5.3.3. Research method

5.3.3.1. Sample and data

The study sample is made up of the firms listed on the FTSE 250 for the period 2013-2018. Selecting a single country minimizes bias in the results, since implementing environmental innovation is strongly conditioned by a country's regulatory and institutional context (Arena *et al.*, 2018). In this regard, the UK offers a particularly interesting setting for the specific analysis of board gender diversity because firms are subject to high environmental pressures, since the UK is one of the countries with the most environmental policies and accountability in the world (Environmental Performance Index, 2020).

To guarantee the comparability and reliability of the results, the design of the variables included in the empirical analysis focuses on three recognised databases. Specifically, the data needed to calculate the dependent variable, environmental innovation, as well as the variables addressing corporate governance, are obtained from Thomson Reuters ASSET4 and Sustainalytics databases. Moreover, financial

data has been extracted from the Datastream database. These databases contain key information for a variety of securities markets worldwide, providing auditing data. All the necessary data from these databases are merged and the final sample is composed of an unbalanced setting of 932 firm-observations. This sample is representative, since these firms represent most of the capitalization of the UK stock exchange.

5.3.3.2 Variables

Dependent variable: Environmental Innovation

Similar to recent research (Arena *et al.*, 2018; Nadeem *et al.*, 2020), this study relies on the measure provided by Thomson Reuters ASSET4 database, which offers auditable information and minimizes the inherent subjectivity associated to other measures, thus enabling further replication and generalization of the results. Specifically, we consider the variable environmental innovation score, which reflects a company's capacity to reduce environmental costs and burdens for its customers, and thereby create new market opportunities through new environmental technologies and processes or eco-designed products. The environmental innovation score takes values from 0 to 100; the closer to 100, the greater the firm's environmental innovation.

Independent variables and control variables

The main explanatory variable, board gender diversity (BGender), is calculated as the proportion of female board members (Galia *et al.*, 2015; Liao *et al.*, 2018). In order to capture female critical mass, several dummy variables are designed (Liu *et al.*, 2014; Manita *et al.*, 2018). Specifically, FEMALE1 equals 1 when a board has at least one female director, and 0 otherwise, FEMALE2 equals 1 when a board has at least two female directors, and 0 otherwise, and FEMALE3 equals 1 when a board has at least three or more female directors, and 0 otherwise.

In addition, a set of control variables, considering both board-related and firm-level variables, is also included (Lee and Min, 2015, Arena *et al.*, 2018; Nadeem *et al.*, 2020). As regards board-related variables, which are also the moderating variables in the empirical analysis, the variable regarding CSR Committee (CSR_Committee) is a dummy that equals 1 if the company has this committee, and 0 otherwise; board

size (BSize) refers to the number of directors in the boardroom; board independence (BIndep) considers the proportion of independent directors within a board; board tenure (BTenure) indicates the average number of years that directors have been on the board; board meetings (BMeetings) measures how many times the board meets a year. Furthermore, as regards firm-level characteristics, firm size (Asset) is computed as the logarithm of total assets; firm leverage (Leverage) is calculated as the ratio of total debt to total assets; firm financial performance is proxied by the ratio return on assets (ROA). Industry (Sector_CSR) is a dichotomous variable that takes the value of one if the company belongs to a sector intensive in CSR activities following the SIC CODES classification, and 0 otherwise (Alon and Vidovic, 2015; Miras-Rodríguez *et al.*, 2020). Finally, a set of year dummies is used to control for time (Dum_Year). Table 16 summarizes the above information.

Table 16. Study 3. Definition of variables

Variables	Description
Environmental Innovation	Environmental innovation score.
BGender	The proportion of female directors on the board.
Female1	Dummy variable that takes value 1 if the number of female directors is equal to 1, and 0 otherwise.
Female2	Dummy variable that takes value 1 if the number of female directors is equal to 2, and 0 otherwise.
Female3	Dummy variable that takes value 1 if the number of female directors is equal to 3 or more, and 0 otherwise.
CSR_Committee	Dummy variable that takes value 1 if the company has a specific CSR committee, and 0 otherwise.
BSize	Number of directors in the boardroom.
BIndep	Proportion of independent board members
BTenure	Average numbers of years that directors have been on the board
BMeetings	Number of board meetings per year.
Asset	Neperian logarithm of total assets
Leverage	Ratio of total debt to total assets
ROA	Ratio return on assets
Sector_CSR	CSR intensive sector

Source: own elaboration

5.3.3.3. Model specification

The database combines time-series and cross-sectional data to form panel data. Thus, to test the hypotheses formulated, a panel data estimation model is used for

the regression analysis where environmental innovation is regressed on independent and control variables. A panel data approach allows us to effectively control for possible unobserved heterogeneity, and within-firm changes are used to explain variations in the dependent variable. The Hausman test is applied to define which estimation model suits our study better: fixed effects (FE) or random effects (RE).

The general model used is presented as follows:

$$EnvironmentalInnovation_{it} = \beta_0 + \beta_1 BGender_{it} + \beta_2 CSRCommittee_{it} + \beta_3 BSize_{it} + \beta_4 BIndep_{it} + \beta_5 BTenure_{it} + \beta_6 BMeetings_{it} + \beta_7 Asset_{it} + \beta_8 Leverage_{it} + \beta_9 ROA_{it} + \beta_{10} Sector_CSR_{it} + \beta_{11} Dum_Year_{it}$$

Specifically, as regards hypothesis H1b, a quantile regression modelling is adopted. This method is a more robust technique to non-normal errors and outliers than traditional regression approaches (Gallego-Álvarez and Ortas, 2017) and permits the results of a regressor to vary from the distinct phases of the distribution (Dang *et al.*, 2018; Chi *et al.*, 2020). It thus enables the main relationship to be analysed depending on the degree of environmental innovation that companies undertake. This study differs from high environmentally innovative firms (those that are from quantile 50 onwards) and low environmentally innovative firms (up to the median).

5.3.4. Results and discussion

5.3.4.1. Descriptive statistics and correlations

Table 17 provides the main descriptive statistics. The mean value for environmental innovation is 55.708, with a standard deviation of 26.34. Female directors average almost 22% of total board members, which shows an underrepresentation of women in boards. Although the majority of boards have at least one woman, only 27% of boards have three or more female directors. As regards the control variables, most of the firms in the sample analysed (78%) have a CSR committee. The average board of directors is composed of almost 10 directors, with around 61% of them being independent directors. With regard to tenure, directors have been part of a board for five and a half years on average. Boards meet about eight times a year.

Table 17. Study 3. Descriptive statistics

Variable	Mean	Std. Dev.	Q1	Median	Q3
Environmental Innovation	55.71	26.34	32.85	54.90	78.76
BGender	21.78	10.09	14.29	21.43	28.57
Female 1	0.89	0.31	1	1	1
Female 2	0.53	0.49	0	1	1
Female 3	0.27	0.44	0	0	1
CSR_Committee	0.78	0.42	1	1	1
BSize	9.77	2.53	8	9	11
BIndep	61.29	11.83	53.33	61.54	70
BTenure	5.68	1.93	4.38	5.39	6.52
BMeetings	8.57	2.74	7	8	10
Asset	15.59	2.15	14.09	15.07	16.32
Leverage	0.17	0.15	0.05	0.17	0.26
ROA	0.41	0.26	0.21	0.42	0.62
Sector_CSR	0.36	0.48	0	0	1

Environmental innovation refers to the environmental innovation score; BGender represents the proportion of female directors on the board; Female 1, 2 and 3 refer to dummy variables which take value 1 if the number of female directors is equal to 1/2/3 or more, and 0 otherwise; CSR_Committee is indicated as a dummy which takes value 1 if the company has a specific CSR committee, and 0 otherwise; BSize refers to the number of directors in the boardroom; BIndep shows the proportion of independent board members; BTenure is calculated as the average numbers of years that directors have been on the board; BMeetings considers the number of board meetings a year; Asset is proxied by the neperian logarithm of total assets; Leverage is determined as the ratio of total debt to total assets; ROA is estimated as the ratio return on assets; and Sector_CSR applies to CSR intensive sectors.

Source: own elaboration

Table 18 reports the correlations and variance inflation factor (VIF) coefficients. Although the correlations only show univariate relations and do not allow any

conclusive findings to be drawn, the correlation coefficients are, in general, below 0.7, and the VIF values are all found to be below 5. Multicollinearity can thus be ruled out in this sample (Studenmund, 1997).

Table 18. Study 3. Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1)Environmental Innovation	1.00												
(2) BGender	0.06*	1.00											
(3) Female1	0.11***	0.53***	1.00										
(4) Female2	0.11***	0.60***	0.38***	1.00									
(5) Female3	0.17***	0.56***	0.21***	0.57***	1.00								
(6) CSR_ Committee	0.17***	0.10***	0.12***	0.13***	0.14***	1.00							
(7) BSize	0.26***	0.04	0.12***	0.47***	0.47***	0.23***	1.00						
(8) BIndep	0.12***	0.19***	0.14***	0.21***	0.24***	0.09***	0.18***	1.00					
(9) BTenure	-0.06*	-0.18***	-0.18***	-0.16***	-0.15***	-0.06*	-0.14**	-0.27***	1.00				
(10) BMeetings	-0.01	-0.05	0.04	0.00	-0.00	0.02	0.06*	0.14***	-0.16***	1.00			
(11) Asset	0.30***	0.12***	0.15***	0.38***	0.46***	0.35***	0.70***	0.39***	-0.23***	0.24***	1.00		
(12) Leverage	-0.01	0.00	0.00	0.01	-0.05	0.15***	-0.01	-0.04	-0.02	0.02	-0.05	1.00	
(13) ROA	-0.15***	-0.04	-0.07**	-0.19***	-0.22***	-0.27***	-0.39***	-0.12***	0.22***	-0.33***	-0.54***	-0.36***	1.00
(14) Sector_CSR	0.04	-0.09***	-0.05	-0.16***	-0.16***	0.11***	-0.15***	-0.14***	0.14***	-0.12***	-0.23***	0.01	0.29***
VIF			1.21	1.82	1.69	1.26	2.35	1.15	1.31	1.20	3.30	1.32	2.13

See Table 16 for the definition of the dependent, explanatory and control variables. * p-value< 0.1; ** p-value < 0.05; *** p-value < 0.01.

Source: own elaboration

5.3.4.2. Multivariate analysis

Main analysis

With regard to hypothesis H1a, the results of the influence of a critical mass of women in boards are reported in Table 19. To that end, in addition to the proportion of female directors, the variables Female1, Female 2, and Female 3 are included in the general model as measures for gender diversity. The findings including the measure for board gender diversity (BGender) confirm that female board representation is positively associated to environmental innovation (column 1). However, female directors have a positive and significant association with environmental innovation only when they reach a critical mass of at least three women. The presence of only one or two women in the board, which is the common case for the majority of the firms, is proven to be insufficient to enhance environmental innovation. Therefore, hypothesis H1a is accepted.

Table 19. Study 3. Analysis of a critical mass

Variables	(1)	(2)	(3)	(4)
BGender	0.27***			
	(0.07)			
Female1		-2.79		
		(1.72)		
Female2			1.08	
			(1.33)	
Female3				2.11*
				(1.29)
CSR Committee	6.94***	8.51***	8.52***	8.31***
	(1.96)	(1.94)	(1.94)	(1.94)
BSize	-0.53	-0.62*	-0.56	-0.69*
	(0.37)	(0.37)	(0.37)	(0.38)
BIndep	0.12*	0.13**	0.14**	0.14**
	(0.06)	(0.06)	(0.06)	(0.06)
BTenure	1.53***	1.06**	1.14**	1.29**
	(0.52)	(0.52)	(0.52)	(0.52)
BMeetings	0.17	0.17	0.16	0.19
	(0.24)	(0.25)	(0.24)	(0.24)
Asset	13.01***	12.71***	13.01***	12.69***
	(2.07)	(2.09)	(2.09)	(2.10)
Leverage	-41.44***	-40.79***	-41.19***	-42.55***
	(15.15)	(15.32)	(15.38)	(15.28)
ROA	-22.87**	-20.49*	-21.23**	-22.59**
	(10.57)	(10.71)	(10.73)	(10.66)
Sector_CSR	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Observations	923	923	923	923
R-squared	0.20	0.19	0.19	0.19
F-test	12.13***	11.07***	10.89***	11.07***
FE/RE	FE	FE	FE	FE

See Table 16 for the definition of the dependent, explanatory and control variables. *** p<0.01, ** p<0.05, * p<0.1.

Source: own elaboration

As regards hypothesis H1b, the results from the quantile regression analysis are presented in Table 20. The coefficients are estimated at the 1st, 5th, 10th, 15th, 25th, 50th, 75th, 85th, 90th, 95th and 99th quantiles in order to have more specific information about how the level of environmental innovation determines the influence of women directors. Quantile regression proves to be relevant for understanding the effects of board gender diversity, since the results demonstrate that the estimated coefficient differs across the quantiles. It has been found that the sign of board gender diversity is positive and significant upwards of the 50th quantile, which means that enhanced board gender diversity increases environmental innovation in high environmentally innovative firms. Nevertheless, the study fails to find a significant association between women directors and environmental innovation in low environmentally innovative firms. Therefore, the results confirm Hypothesis H1b.

Table 20. Study 3. Quantile regression analysis

Quantile	q0.01	q0.05	q0.10	q0.15	q0.25	q0.50	q0.75	q0.85	q0.90	q0.95	q0.99
BGender	-0.29	0.59	0.09	0.12	0.15	0.24**	0.32**	0.34**	0.37***	0.45***	1.23**
	(0.52)	(0.15)	(0.13)	(0.12)	(0.12)	(0.12)	(0.13)	(0.14)	(0.14)	(0.14)	(0.58)
CRS_Committee	11.07	7.66**	7.33***	7.08***	6.75**	5.89**	5.14	4.90	4.67	3.88	-3.74
	(9.17)	(3.08)	(2.71)	(2.54)	(2.69)	(2.98)	(3.26)	(3.59)	(3.65)	(3.52)	(10.46)
BSize	1.99	0.25	0.09	-0.04	-0.21	-0.65*	-1.04**	-1.16***	-1.28***	-1.68***	-5.57*
	(2.42)	(0.58)	(0.48)	(0.46)	(0.43)	(0.37)	(0.41)	(0.39)	(0.41)	(0.47)	(2.99)
BIndep	0.53	0.28***	0.25***	0.23***	0.21***	0.15*	0.09	0.07	0.06	-0.00	-0.57
	(0.38)	(0.96)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.07)	(0.08)	(0.09)	(0.42)
BTenure	1.49	1.19	1.17	1.15	1.12	1.05	0.98	0.96	0.94	0.87	0.21
	(3.16)	(0.83)	(0.75)	(0.78)	(0.79)	(0.77)	(0.84)	(0.91)	(0.95)	(1.11)	(2.51)
BMeetings	0.04	0.12	0.13	0.13	0.14	0.16	0.18	0.18	0.19	0.20	0.37
	(1.77)	(0.52)	(0.39)	(0.42)	(0.36)	(0.31)	(0.32)	(0.34)	(0.33)	(0.38)	(1.78)
Asset	19.06*	14.17***	13.69***	13.33***	12.86***	11.63***	10.55***	10.21***	9.88***	8.74**	-2.18
	(11.49)	(3.02)	(2.60)	(2.74)	(2.61)	(2.73)	(3.49)	(3.34)	(3.66)	(4.03)	(12.82)
Leverage	-162.65	-77.72***	-69.64***	-63.25***	-55.02***	-33.76*	-14.94	-9.13	-3.29	16.44	206.02
	(108.32)	(25.16)	(21.53)	(20.54)	(20.01)	(19.70)	(18.68)	(20.04)	(19.12)	(24.07)	(127.47)
ROA	-115.91	-51.59***	-45.47***	-40.64***	-34.39**	-18.29	-4.04	0.36	4.78	19.72	163.29*
	(82.61)	(17.36)	(14.97)	(15.36)	(14.15)	(15.26)	(14.85)	(16.96)	(16.15)	(19.29)	(92.36)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

See Table 16 for the definition of the dependent, explanatory and control variables. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Source: own elaboration

Finally, with regard to hypotheses H2a to H2e, the results from the moderation analysis are reported in Table 21. Columns 1, 2, 3, 4, and 5 present the interaction between board gender diversity and CSR committee, board size, board independence, board tenure, and board meetings, respectively. The findings highlight that the influence of female directors is contingent on certain board characteristics. Specifically, the positive effect of board gender diversity on environmental innovation is boosted when there is a CSR committee. However, board size and board tenure negatively moderate the relation between board gender diversity and environmental innovation. In addition, board independence and board meetings do not appear as a moderator of the previous relationship. To sum up, hypotheses H2a, H2b, and H2d can be supported.

Table 21. Study 3. Moderation analysis

Variables	(1)	(2)	(3)	(4)	(5)
BGender	0.09	0.59***	0.59**	0.52***	0.36**
	(0.12)	(0.21)	(0.28)	(0.16)	(0.17)
BGender*CSR Committee	0.22*				
	(0.13)				
BGender*BSize		-0.04*			
		(0.02)			
BGender*BIndep			-0.01		
			(0.00)		
BGender*BTenure				-0.05*	
				(0.03)	
BGender*BMeetings					-0.01
					(0.02)
CSR_Committee	2.51	6.31***	7.02***	6.73***	6.92***
	(3.19)	(1.99)	(1.96)	(1.96)	(1.96)
BSize	-0.49	0.20	-0.58	-0.52	-0.53
	(0.37)	(0.58)	(0.37)	(0.37)	(0.37)
BIndep	0.12*	0.12*	0.23**	0.13**	0.12*
	(0.06)	(0.06)	(0.11)	(0.06)	(0.06)
BTenure	1.58***	1.44***	1.57***	2.44***	1.49***
	(0.52)	(0.52)	(0.52)	(0.73)	(0.52)
BMeetings	0.19	0.18	0.15	0.18	0.40
	(0.24)	(0.24)	(0.24)	(0.24)	(0.45)
Asset	(2.07)	(2.07)	(2.07)	(2.07)	(2.07)
				-	-
	-43.38***	-39.22**	-41.74***	41.49***	42.11***
Leverage	(15.17)	(15.19)	(15.15)	(15.12)	(15.19)
	-22.59**	-21.62**	-23.45**	-20.98**	-23.22**
ROA	10.55	10.58	10.57	10.60	10.59
	(2.07)	(2.07)	(2.07)	(2.07)	(2.07)
Year dummies	Yes	Yes	Yes	Yes	Yes
Observations	923	923	923	923	923
R-squared	0.21	0.21	0.21	0.21	0.20
F-Test	11.56***	11.52***	11.42***	11.57***	11.34***
FE/RE	FE	FE	FE	FE	FE

See Table 16 for the definition of the dependent, explanatory and control variables. *** p<0.01, ** p<0.05, * p<0.1.

Source: own elaboration

Robustness analysis

In order to ensure that the previous findings on the relationship between board gender diversity and environmental innovation are not biased by the empirical design, several additional analyses were performed, which are shown in Table 22.

First, the main analysis was replicated for an alternative measure regarding board gender diversity, the BLAU index, which is regularly used in the literature (Campbell and Mínguez-Vera, 2008; He and Jiang, 2019). It was calculated as $1-\sum Pi2$, where P is the proportion of individuals in a category (fraction of females and male directors), and i is the number of categories (two in this case) (Blau, 1977). Therefore, this index takes into account both the number of gender categories and the evenness of the distribution of board members among them.

Second, two endogeneity tests were conducted to rule out the existence of unobserved variables or inverse causality relations. The two-step dynamic panel data model Generalized Method of Moments (GMM), which overcomes the latent endogeneity problem by adopting the lagged variables as instruments (Blundell and Bond, 1998), was applied. In addition, a two-stage least squares method (2SLS) was performed. This method is based on the use of instrumental variables, which could explain the independent variable (BGender), but which must be unrelated to the explanatory one (Environmental Innovation) (Larcker and Rusticus, 2010). In this empirical study, the instrumental variable used was "Programme to increase workforce diversity". The instrument obeys the above-mentioned conditions, whose validity is confirmed by the Sargan test. Results from these tests confirm the lack of endogeneity issues in this sample.

Table 22. Study 3. Robustness analysis

Variables		2SLS	GMM
	Environmental Innovation	Environmental Innovation	Environmental Innovation
BGender		0.66**	0.19*
		(0.30)	(0.09)
Blau	17.11***		
	(6.32)		
CSR_Committee	6.48***	6.47**	3.73*
	(1.97)	(2.65)	(2.26)
BSize	-0.66*	-0.72*	0.80***
	(0.36)	(0.41)	(0.29)
BIndep	0.15**	0.02	0.16*
	(0.06)	(0.08)	(0.09)
BTenure	0.98*	0.61	3.97
	(0.51)	(0.69)	(2.98)
BMeetings	0.16	0.49*	0.18
	(0.24)	(0.26)	(0.39)
Asset	11.78***	5.10	0.67
	(2.02)	(3.24)	(0.96)
Leverage	-34.84**	-4.79	1.70
	(14.79)	(19.39)	(6.87)
ROA	-19.49*	1.93	-4.13
	(10.24)	(14.49)	(5.76)
CSR SECTOR			1.19
			(2.07)
Year dummies	Yes	Yes	Yes
Observations	903	614	637
R-squared	0.197	0.088	n.a.
F-Test/Wald chi2	11.33***	4.50***	281.96***
FE/RE	FE	n.a.	n.a.
m2			0.81
Sargan test		0.112	8.88

See Table 16 for the definition of the dependent, explanatory and control variables. *** p<0.01, ** p<0.05, * p<0.1.

Source: own elaboration

5.3.4.3. Discussion

The strategic importance of women in the boardroom has been widely discussed by academics. This study reinforces the idea that female directors have a positive global effect on environmental innovation (Galia *et al.*, 2015; Liao *et al.*, 2018; He and Jiang, 2019; Nadeem *et al.*, 2020). However, the results bring into question the one-size fits all approach and we adopt a critical standpoint to unravel the true influence of female directors, thus contributing to the literature on CSR in several additional ways.

First, in line with recent studies (Kirsch, 2018; Owen and Temesvary, 2018), there is the need to go beyond the surface and to consider non-traditional regression approaches and the board context in order to really understand whether and how women directors make a difference in environmental decisions. The results emphasize that considering these methodological issues can be crucial in empirical studies in order to attain more conclusive evidence. In light of the findings, gender studies must be aware that the effect of female directors on organizational outcomes may differ depending on certain conditions.

Second, this study aligns with the literature concerning critical mass (Torchia *et al.*, 2011; Cook and Glass, 2018; Yarram and Adapa, 2021). Environmental innovation is costly and risky, and requires long-term commitment. Therefore, when women represent an important minority, they find it difficult to encourage boards to implement environmentally innovative actions. However, when boards include at least three female directors, these women are not considered as tokens, and are more likely to raise their voice towards environmental concerns and push boards to decisions related to environmental innovation.

Third, consistent with a new stream of research on the impact of corporate governance mechanisms (Chi *et al.*, 2020), this study supports the idea that the impact of boards on organizational outcomes may depend precisely on the level of the latter. In particular, environmental innovation requires significant resources and can pose a barrier for many firms (Cainelli *et al.*, 2015). In this regard, it was found that female directors exert an influence on environmental innovation only in high environmentally innovative firms, which have the right conditions to favour this kind of innovation. However, firms with lower levels of this environmental

innovation do not benefit from board gender diversity. Therefore, this evidence sheds important light on this new approach in gender studies, since the distribution of the values of organizational outcomes proves to be decisive in terms of understanding the actual influence of female directors.

Fourth, recent studies advocate a contextual approach in order to expand current understanding of how board gender diversity affects environmental decisions (Byron and Post, 2016; Bravo and Reguera-Alvarado, 2019), in particular by taking into account how board characteristics might interact with each other and in their connections with CSR (Endrikat *et al.*, 2020). In this regard, the findings show that the positive effect of gender diversity on environmental innovation is intensified by the presence of a CSR committee. This committee helps to overcome uncertainty concerning environmental decisions and to implement environmental initiatives (Arena *et al.*, 2018; Cucari *et al.*, 2018), which can strengthen the influence of female directors. The expected orientation of women towards environmental innovation is thus supported in the presence of CSR committees. However, board size and board tenure negatively moderate the relation between board gender diversity and environmental innovation. On the one hand, larger boards may face coordination and communications problems, and have difficulty reaching a consensus about complex decisions (Zona *et al.*, 2013; Arayssi *et al.*, 2016), which may be a greater handicap in more diverse boards that are more heterogeneous and more likely to present factions and coalitions. In this scenario, the findings suggest that women are unable to assert their environmental inclination. On the other hand, regardless of gender, board tenure seems to be a key factor, since longer tenures make boards more reluctant to engage in strategic changes and new ideas concerning environmental decisions in order to avoid risk (Golden and Zajac, 2001; Khan *et al.*, 2021).

CHAPTER 6

Final considerations

CHAPTER 6: FINAL CONSIDERATIONS

6.1. Key findings and main contributions of the thesis

The general objective of this thesis is to explore what effects corporate governance mechanisms have on certain business strategies. In particular, this thesis pursues a threefold objective. First, it examines how firms that present good corporate governance structures can benefit in terms of performance, and thereby decrease the likelihood of suffering financial problems and move away from insolvency. Second, it studies how corporate governance mechanisms may influence the disclosure of non-financial information, in particular, ESG disclosure, which is crucial in financial markets. Third, it focuses on a specific corporate governance mechanism which has grown in visibility and relevance in recent years and which has even become law in some European countries (the so-called quotas law); namely, board gender diversity, and which seeks to both guarantee equal opportunities for female directors and to benefit from the positive effects they might bring to business strategies.

In particular, these three objectives have led to the development of individual empirical studies:

1. Does compliance with corporate governance codes help to mitigate financial distress?
2. Corporate governance code compliance and environmental, social and governance disclosures.
3. A critical approach to the true influence of female directors on environmental innovation: when are women greener?

All of these studies adopt specific econometric approaches in order to test the proposed relationships. In addition, the empirical analyses also include robustness tests in an effort to ensure that the results obtained are not biased by the design of the chosen variables or the econometric techniques employed.

As regards the first objective, the findings reveal that compliance with CGC recommendations related to the board of directors may help companies to reduce financial distress. This evidence emphasizes the potential value added by boards,

linking this corporate governance mechanism to a crucial outcome for firms and national economies. Specifically, due to the economic crisis caused by the global pandemic triggered by Covid-19, many companies today find themselves in financial difficulties and are even close to bankruptcy. Given the importance of the board of directors as a company's main governing body, this empirical evidence highlights the need to be properly managed and the extensive business benefits this can offer.

Regarding the second objective, the main findings show that compliance with CGC recommendations related to the board of directors may have a positive impact on ESG disclosure. Therefore, companies which follow board of director recommendations are more committed to ESG practices. This proves vital in the literature concerning CSR, which has recently addressed the potential determinants of ESG reporting, given its increasing importance for all stakeholders in financial markets.

Finally, in relation to the third objective, the results obtained reinforce previous findings obtained in the literature confirming that female directors positively impact environmental innovation. Unlike previous studies, the results found here show how the influence of female directors on sustainable initiatives, such as environmental innovation, is not uniform but depends on two factors. The first is related to the number of women on the board. In particular, it is necessary for female directors to reach a critical mass if they are to be truly represented and hence influence decisions concerning environmental innovation. The second is related to firm level of environmental innovation. The results show that only companies which display a high level of innovation can benefit from board gender diversity in terms of enhancing their environmental innovation policies. Furthermore, the empirical analysis also reveals that board gender diversity can only prove positive in certain settings, whilst in others it is less effective. In particular, the impact of women directors on green innovation may be positively moderated by the presence of a CSR Committee, and can diminish as board size and board tenure increase.

To conclude, this thesis points to several of the many advantages of corporate governance. In my opinion, thousands of companies might benefit from the advantages that corporate governance could bring, not only in terms of having a

direct impact on firms as regards their economic and financial situation, as the empirical study carried out in the first objective has shown, but also with regard to specific business strategies, as evidenced by both the second and third empirical studies. My view is that the environment is currently in desperate need of our help. We have been taking advantage of it for thousands of years and now it is our turn to try to save it and guarantee its preservation for future generations. In my opinion, it is not only vital for companies to act responsibly, for instance, by undertaking sustainable action such as environmental innovation, but also to disclose the activities they carry out in this regard. This is particularly true in the case of large companies who can set an example for SMEs, which constitute the bulk of organizations in national economies. It is true that in several countries, such as Spain, listed companies are required to disclose non-financial information. Yet it is not merely a question of disclosing information in order to comply with standards; it is about the quality of this information and what it entails.

6.2. Implications

In addition to contributing to different branches of literature, the studies carried out in this thesis are expected to have important implications at the academic and socio-economic level. Corporate governance reforms have increasingly been promoted worldwide to strengthen the performance of capital markets and the protection of shareholders' rights. In this regard, introducing and implementing CGC has become essential for policymakers and practitioners around the world. Indeed, over the last few years good company management has become a key objective in capital markets, and all developed countries have introduced or revised their national CGC. Acceptance of these codes differs from country to country, and the level of compliance with the recommendations contained therein, which may have an effect on different firm outcomes, also varies across companies. The common approach of these codes is consistent with the idea that CGC recommendations must improve firm outcomes. However, more empirical research on this issue is required.

Given the relevance of financial distress, ESG reporting and environmental innovation, this evidence presents a strong business case about the effect of CGC compliance, particularly with regard to board gender diversity. This thesis underlines the important role played by the board of directors and specifically

highlights the value added by female board members. Therefore, the evidence provided is likely to have direct implications for academics, regulators and firms alike.

From an academic viewpoint, these findings provide guidance for studies on CGC compliance and emphasize the need to distinguish between the different types of recommendations in terms of examining the effects of CGC. Specifically, the three measures for CGC compliance are applicable to all countries and therefore provide encouraging research opportunities to further explore the impact of CGC. In addition, the evidence provided here contributes to the debates concerning the methodological approaches for gauging the effects of board gender diversity and calls into question the validity of the one-size-fits-all perspective for unravelling the role of female directors. Firstly, specific measures of female critical mass and quantile regression have proven effective in offering a comprehensive view of the circumstances in which women directors actually have an impact on environmental innovation. Moreover, these findings emphasize the importance of moderation analyses that specifically take into account the context in which directors make decisions.

In addition, this evidence has direct implications for regulators, which can guide their actions regarding the development of future CGC. Furthermore, board gender diversity has lain at the centre of the corporate governance reforms and recommendations issued by international professional bodies and policy-makers. In this regard, this study provides important evidence to inform these bodies regarding the value added by female directors in terms of environmental innovation. In the aftermath of the succession of environmental excesses in recent years, these findings provide key insights in terms of refining legislation and recommendations concerning board gender diversity from regulators and practitioners.

Both professionals and firms can benefit from this evidence and better understand the effects of CGC compliance. These findings also allow firms to understand how female directors impact environmental innovation. The study provides guidance to comprehend the specific conditions in which female directors can have an effect on this type of innovation. Since one major concern for firms relates to whether or not women who serve on boards contribute effectively to decision-making processes,

these results present a strong business case regarding the role of gender diversity as a driver for environmental innovation. As firms pay ever-increasing attention to board structure, this would be helpful for them when designing boards and selecting female directors, as well as when developing certain organizational strategies, such as the creation of CSR committees.

6.3. Limitations and future lines of research

This research is subject to a number of limitations, with some of these being presented below jointly for the three empirical studies undertaken:

a) These studies are limited to a single country (Spain or United Kingdom) in specific periods of time, and although the results can be extrapolated to countries that display similar characteristics, future research could focus on different legal and/or institutional contexts or periods.
b) Both the first and the second study provide specific measures of the level of CGC compliance, which may be extended and taken into consideration for further exploring the effects of CGC on other firm outcomes. Moreover, future studies may analyse other measures for compliance and might employ a different view, focusing on particular characteristics of women.
c) These findings are based on specific firm outcomes, as illustrated by financial distress, ESG information, and environmental innovation. However, they offer interesting lines for future studies that may seek to analyse the influence of corporate governance mechanisms on different business strategies relating to CSR.
d) In addition, the samples studied are limited to large listed firms, and future research on these topics might also investigate small and medium enterprises, which are pivotal in many economies.
e) These results have emphasized the relevance of moderation analysis. Future research might analyse contextual approaches, carrying out further moderation analysis in order to obtain more conclusive evidence.

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Appendices

Appendix A. List of Spanish CGC recommendations (Good Governance Code of Listed Companies, 2015)

	Overall recommendations (64)
	No voting limitation
	Information related to the parent and subsidiary company
	Information to General Meeting of Shareholders on compliance with corporate governance
	Communications with shareholders and investors
	Limit issue of shares without preferential subscription rights
	Mandatory reports on webs
	General Meeting of Shareholders webcast
	Annual Accounts presentation by audit committee without qualifications
	Web publication attendance and voting requirements
	Possibility of including topics on the agenda at the proposal of the shareholders
	Attendance premium policies
Board of directors (25)	Performance of functions on boards
	Board size between 5 and 15 directors
	Board selection policy
	Majority of external directors and minority of executive directors
	Proportion of proprietary/external directors

	Percentage of independent directors > 50 % (exceptionality > 33 %)
	Information on directors published on the corporate website
	Appointment of proprietary directors
	Proprietary directors' resignation
	Non-removal of independent directors during term
	Directors' resignation policy
	Opposition of directors to proposals against interests of the company
	Explanation for removal of directors
	Sufficient availability of non-executive directors
	Board meeting frequency
	Excused absences and instructions
	Unresolved concerns in meeting minutes
	Possibility of external advice from directors
	Training and updating program
	Information about decisions to make
	Information on shareholder changes
	President Functions
	Coordinating Director functions
	Responsibility of the Board Secretary
	Annual evaluation of board
Board subcommittees (28)	Executive committee structure equal to board structure

Minutes from executive committee to board of directors

Chair and members of audit committee have special knowledge

Internal audit supervised by audit committee

Internal audit informs external auditors

Audit committee functions

Audit committee can summon executives

Information on audit committee of corporative operations

Risk control and management policy

Risk control and management committee

Majority of independent directors in appointment and remuneration committees

Separation between appointment and remuneration committees

Appointment committee consultation on executive committee

Remuneration committee functions

Executive committee consultation on executive directors

Supervisory and control committee functions

Corporate governance and Corporative Social Responsibility committee

Corporative Social Responsibility policy

Corporative Social Responsibility Report

Remuneration does not compromise independence

Variable remuneration only for executive directors

Variable remuneration based on performance

	Deferred remuneration
	If remuneration is established based on corporative results, see audit report
	% remuneration executive directors in shares
	Retention of shares of executive directors
	Variable remuneration claim clause
	Maximum resolution clause of 2 years

Appendix B. List of publications

Bravo-Urquiza, F., & Moreno-Ureba, E. (2021). Does compliance with corporate governance codes help to mitigate financial distress?. *Research in International Business and Finance*, 55, 101344. https://doi.org/10.1016/j.ribaf.2020.101344

Research in International Business and Finance is indexed in Thomson Reuters Journal Citation Report (JCR) (2020), category: Business, Finance (17/110), Q1, impact factor: 4.091. This Journal is also indexed in Scopus (SJR) (2020), category: Business, Management and Accounting (miscellaneous), Q1 SJR index: 0.767, category; Finance: Q2.

Moreno-Ureba, E., & Bravo-Urquiza, F. (2019). El cumplimiento de los códigos de buen gobierno y la divulgación de información ambiental, social y sobre gobierno corporativo. *Contaduría y Administración*, 64(4), 12. http://dx.doi.org/10.22201/fca.24488410e.2020.2388

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