Received: 11 May 2023 | Revised: 29 April 2024 | Accepted: 3 June 2024

DOI: 10.1002/csr.2881

RESEARCH ARTICLE

Corporate Social Responsibility and Environmental Management

WILEY

The link of ESG performance and board gender diversity in European firms

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Abstract

This study analyses the relationship between board gender diversity and the ESG scores for Spanish, French, German, and English listed companies. Previous academic literature shows controversial results regarding the benefits of female participation in boards of directors, however many studies have only used an aggregated indicator to measure performance or they do not have compared the results among countries. The empirical section of this research uses a sample formed by 205 companies from France, Germany, Spain, and the United Kingdom for a period of 19 years (from 2002 to 2020). The results obtained through a panel data estimation confirm a positive and significant relationship between board gender diversity (BGD) and the social and the corporate governance score in all cases. However, the relationship between BGD and the environmental score is only confirmed in the case of Spain, France, and Germany. Therefore, even though in these countries, the actions to promote gender equality have been different and at different times, the results are mostly homogeneous.

KEYWORDS
corporate board, diversity, ESG performance, gender

1 | INTRODUCTION

What is the appeal of a company? The answer will possibly change depending on who answers the question. Thus, managers should be aware of this and consider that there is not a single objective but good business management will result in good social, economic, environmental, and governmental performance. Companies that carry out their businesses under purely economic objectives are increasingly discredited in the market, which makes sense if we consider stakeholder theory (Mitchell et al., 1997; Svendsen et al., 2001). That is why increasing diversity within the company's management bodies is highly recommended since it is assumed that the greater the diversity, the greater the company's ability to respond to multiple demands (Cox & Blake, 1991). The nature and concerns of the managers themselves influence the strategic decisions taken by the companies. Some characteristics are complicated to measure, especially when managers are analyzed individually. It is known in the academic literature as individual unobservable heterogeneity (Anand et al., 2011). However, when we have large firms run by boards of directors, it is possible to measure certain characteristics of those boards (gender, independent members, industry-specific background, etc.). In fact, board composition has been raised as one of the central issues in the analysis of corporate governance (de Villiers et al., 2011; García-Meca & Palacio, 2018; Kim et al., 2014; Mallin & Michelon, 2011).

Among them, gender diversity is gaining special relevance internationally (Delgado-Piña et al., 2020; Rodríguez-Fernández

et al., 2020), especially in a context where the United Nations Organization has focused one of its Sustainable Development Goals (SGD) on gender equality (objective number 5). The European Union (EU) has established an autonomous body dedicated to promoting and support gender equality and to fight against discrimination based on sex, the European Institute for Gender Equality (EIGE). Among its various functions, EIGE plays a crucial role in collecting statistical data on gender-related issues. The percentage of women serving on boards of directors is a key data that are collected annually for all member countries jointly and also individually. The data collected in the last 20 years show a notable evolution, going from 8.2% of women managers for the entire 27 EU countries in 2003 to 33.8% in 2023. But this result is still not enough, the European Commission (EC) in its strategy for gender equality 2020–2025 has established that 40% of positions in the decision-making bodies of companies should be occupied by women or 33% of all directors by 2026 (Eurostat, 2023).

Despite the fact that most of the reputation indexes (p.-e. Merco, Dow Jones, Fortune) consider it a highly valued aspect and its multiple benefits have been demonstrated (see Section 2), there is still much controversy regarding gender diversity. Some previous research has concluded that gender diversity does not present significant differences in business performance, or it has even a negative impact on financial performance (Adams & Ferreira, 2009). Nevertheless, the majority of these studies have focused on samples of companies with a single measure of performance (Velte, 2016) or from a single country, without confirming whether the results are generalizable. Carrasco et al. (2015, p. 431) determine that "gender perspective in one country can be affected by culture, i.e., the mental structure through which individuals think about their social world, generating gender stereotypes or roles associated with women that could influence the presence of women on boards."

To demonstrate the effect between Board Gender Diversity and ESG Performance (Section 3), this article reviews the actions carried out by the governments of Spain, France, Germany, and the United Kingdom to increase female participation in the labor market. These four countries, despite having the same objective, have not used the same measures, nor at the same time. Therefore, it is important to highlight that each country has had a different evolution, and as a result, the percentage of women on the boards of directors shows differences between them.

The purpose of this study is to overcome limitations derived from the country's culture by doing a comparative study between large companies listed in Spain (IBEX35), Germany (DAX30), France (CAC-40 index), and the United Kingdom (FTSE100 index) over a period from 2002 to 2020. In addition, the impact of gender diversity will be analyzed in differentiated performance indicators (environmental, social, and governmental performance). Questions are raised such as: Has Board Gender Diversity different impact on ESG performance depending on the country? Does a board of directors with greater gender diversity have similar behavior to those gender homogeneous boards (generally masculinized)?

2 | THEORETICAL FOUNDATION—THE RELATIONSHIP BETWEEN BGD AND ESG SCORES

According to Fama and Jensen (1983), the board of directors is seen as an instrument to monitor top managers, whose function is "the leading of the firm under its own responsibility" (Velte, 2016, p. 99). The composition of the board and its diversity can be analyzed from different perspectives. This governmental body could be diverse depending on the number of insiders and outsiders (nonmanager directors or independent directors) or according to the characteristics of the members (age, nationality, race, religious background, skills and education, and from a gender perspective) (Kathyayini & Tilt, 2016). Although previous studies have analyzed the relationship between BGD and financial performance (Adams & Ferreira, 2009; Campbell & Mínguez-Vera, 2008; Carter et al., 2003; Post & Byron, 2015), there is a gap in empirical studies on its relationship with ESG performance. Several theories could explain the relationship between the composition of management bodies and ESG results.

The Theory of stakeholders (Freeman, 1984) and the *Theory of the Coalition* (Cyert & March, 1963) encourage inclusive behavior, trying to satisfy the needs of a group of collaborating entities sustainably in the long term. The more heterogeneous a decision-making group can be, the more visions they can have of the impact of their decisions on different groups of interest, which may help to find solutions that satisfy all of them. The company's stakeholders influence business actions to varying degrees. Clarkson (1995) distinguishes between primary stakeholders (those without whom the firm would not be able to continue its activity and are therefore essential) and secondary stakeholders (those who are not directly involved with the firm's economic activities). Mitchell et al. (1997) classify stakeholders according to their bargaining power, their legitimacy, and their ability to demonstrate the urgency of their claims. Both authors agree that the firm's employees and managers are the primary stakeholders, and their actions directly affect the firm's performance (Svendsen et al., 2001).

The Agency Theory is fundamental to explaining the functions of corporate governance. This theory defines two types of agents in business relationships: the principal, in which the company's property resides; and the agent, in whom the principal delegates the control of the company and acts in his name. The functioning and efficiency of the chain of command will depend on the composition of the board of directors. Zárate et al. (2015; p. 248) state that "the incorporation of diversity into the theoretical framework of the agency is based on the relationship established between the diversity degree of the board of directors and its independence." In other words, when boards of directors have not been formed under gender biases, the opportunities to expand the skills and competencies derived from a more diverse group are increased. Diverse groups tend to exercise greater control over the group's decision-making and are independent of external influences, which would lead to lower agency costs, and thus higher corporate profitability.

The Institutional theory also explains recent changes having parity in government boards (Yang & Konrad, 2011). According to this

theory, companies adopt forms and rules of behavior according to the society in which they are immersed to legitimize their activity, that is, to be approved by society. Society is calling for greater gender inclusion in all areas and rewards companies that advocate for it.

Resource-dependent approach (*RDA*) and *The Resource-based view* (*RBV*). According to RDA (Velte, 2016, p.101), "diversity of gender, age structure, experience and professional background of the management provide divergent resources that the Company will benefit from." The RBV theory argues that firms need to seek, maintain and exploit their organizational resources and capabilities. Nowadays, companies develop their businesses in VUCA environments (an acronym for volatility, uncertainty, complexity, and ambiguity), so the skills and resources required by their employees must be adapted to market demands (Eisenhardt and Martin, 2000). The greater the human and intellectual capital of managers, the greater the opportunities for increased performance and competitive advantage (Carmeli and Azeroula, 2009), as it is a unique, valuable, and difficult-to-imitate asset (Barney, 1991). Recent studies have concluded that gender diversity favors innovation in the business context (Sierra-Morán et al., 2022).

In the social sphere, women are characterized by having a greater social consideration (Williams, 2003) and greater disposition in the implementation of CSR practices (Kyaw et al., 2017), so they are related to a higher charitable giving (Bernardi & Threadgill, 2010). Women are particularly concerned about the environment (trying to reduce the negative impact on it, like pollution) (Bear et al., 2010). Finally, according to some studies, women are more risk-averse, making it less likely that financial or ethical rules will be broken under their management (Pierce & Sweeney, 2010; Kyaw et al., 2015). In addition, management teams with greater diversity are valued more positively by increasing their points of view in decision-making (Rogelberg & Rumery, 1996) and they represent better and motivate the participation of other stakeholders, having an inclusive leadership style (Berry & Franks, 2010) and having better and more direct communication with their subordinates (Dezsö & Ross, 2012).

In summary, equal opportunities, which foster the integration of diverse skills within the company, are underpinned by several prominent business theories. First, agency theory, stakeholder theory, and coalition theory seek to elucidate the organizational relationships among various stakeholders and strategies for managing their interests. Within the internal dynamics of an organization, where the use of resources and capabilities are key to achieve competitive advantages, gender diversity is supported from the RBV theory. Finally, from an external perspective, where organizations are shaped by the strategies of their competitors and market demands, we find support on the institutional theory and the RDA. Figure 1 provides a graphical representation of these concepts.

(Figure 1) In addition to the economic theories mentioned above, academic literature also underscores the importance of analyzing the impact of BGD on the nonfinancial performance of the company, a topic of great interest among researchers since the early 21st century. Among previous studies carried out, the majority found a positive relationship of BGD with greater support for environmental and social actions (Alazzani et al., 2017; Cucari et al., 2018), with the disclosure of social information (Cook et al., 2019), or with the creation of ESG programs (Samara et al., 2019); and few studies that do not find any relationship at all among BGD and CSR (Yang et al., 2019). Interest in the impact of gender diversity on business results continues to grow. In fact, several limitations have been identified in existing studies,

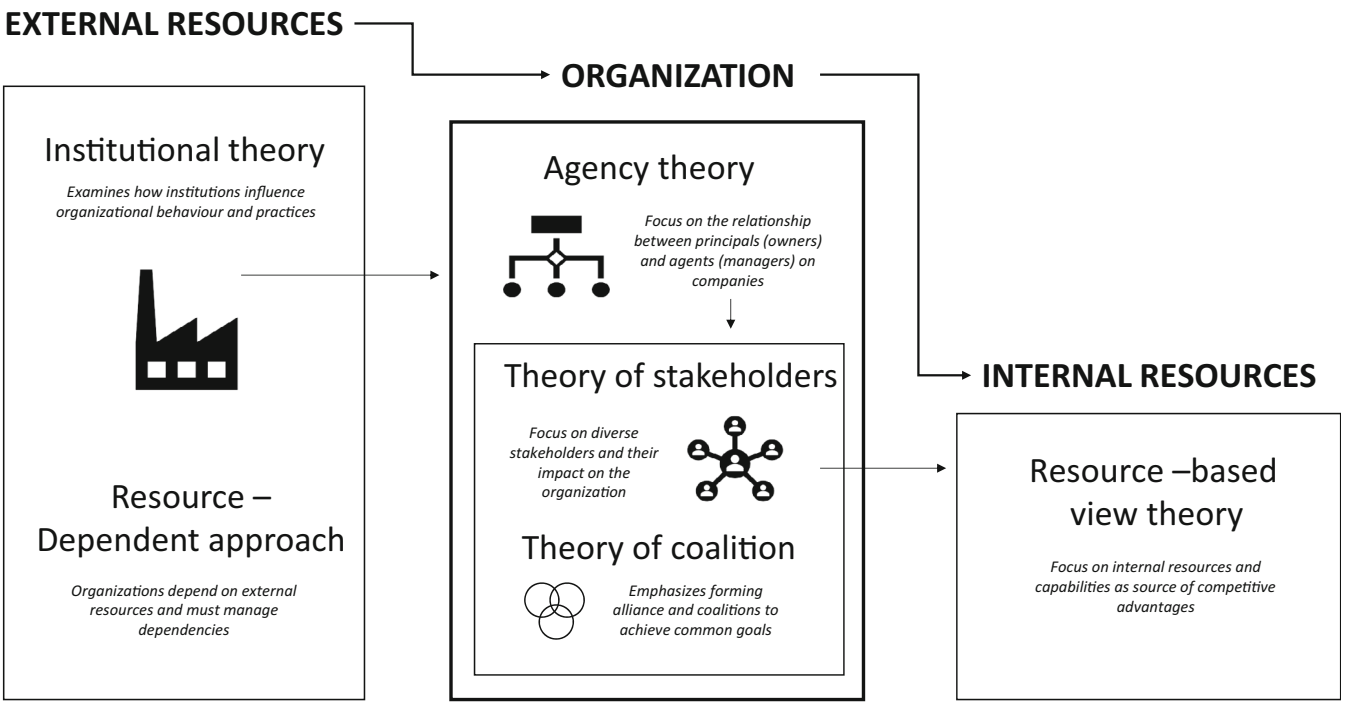

FIGURE 1 The spectrum of gender diversity: examining supporting theories. *Source*: Own elaboration.

prompting calls for further research in this area. First, many studies have analyzed the impact of BGD on combined scores, that is, using a single indicator that includes environmental, social and governmental aspects. However, the impact could be of different sign and intensity in each of the dimensions. An example in this sense is the important line of research that relates the BGD with the environmental score (Muhammad & Migliori, 2022). Therefore, it is recommended that studies compare their results across different dimensions where stakeholders can influence (Shin et al., 2023).

On the other hand, there are multiple studies that highlight their limitations as not being able to generalize the results obtained due to the country's situation, culture or legislation, and recommend comparative studies that take into account the heterogeneity of the countries in which companies operate. While some studies have sampled listed companies from different countries, they often aggregate the results without differentiating between countries. Specifically, the recent study of Singh et al. (2024, p.7) recommends "future scholars may explore similar dynamics by taking the case of multiple countries and making comparisons between the results obtained." Considering the theories and academic studies mentioned, this paper aims to test the following hypothesis for listed companies of four European countries (Spain, Germany, France, and UK):

H1. *BGD has a positive relationship with environmental scores.*

H2. *BGD has a positive relationship with social scores.*

H3. *BGD has a positive relationship with governance scores.*

3 | BOARD GENDER DIVERSITY IN SPAIN, GERMANY, FRANCE, AND THE UK

Companies publish vast amounts of information (press releases, annual reports, CSR reports, websites, etc.) with high-impact indicators (according to their materiality matrices; Jones et al., 2016) that define their social strategy, including the BGD indicator (Eden & Wagstaff, 2020). In addition, both corporate governance codes, which encourage companies to comply with their good governance recommendations related to board composition and diversity (Musteen et al., 2010), and the EC have been working for more than a decade on the Women on Boards Directive (WBD) to listed companies. At the end of 2022, EC has established new quotas by 2026, so that at least 40% of the nonexecutive directors of listed companies' members should be of the underrepresented gender (or 33% for both nonexecutive and executive board positions). Member States will have 2 years to transpose this provision into national law, which will be added to its national legislation to get effective equality between men and women. The participation of women in companies in France, Spain, Germany, and the United Kingdom has been encouraged in different ways.

1. Spain: To improve female participation in the labor market, the Spanish government introduces the first gender equality law in 2007. The "Organic Law 3/2007" had several considerations, implementing an equality plan was compulsory only for firms with more than 250 employees and it considers a balanced presence of women and men when there is a 40% of either sex. Although there are advances in female representation in companies, the proposed objectives have not been achieved, since it did not include a penalty code, but different recommendations. "The slow progress may be blamed on the lack of midterm targets and sanctions" (European Women's Lobby, 2012). Also, the *Corporate Governance Code for listed companies* (*2015*) recommended that the quota of women on boards should be at least 30%. The Spanish labor market has been affected by economic crises but also by gender stereotypes that affect participation in different economic sectors (Gabaldón and Giménez, 2017). As a result, the Spanish government tightened the equality law with "Royal Decree-Law 6/2019, on urgent measures to guarantee equal treatment and opportunities between women and men in employment and occupation" establishing the obligation to create an equality plan for companies with more than 50 workers. The legislative pressure in this area increases with several RD: *RD 901/2020*, which regulates equality plans and their registration; and *RD 902/2020* on equal pay for women and men. Besides, the law on offenses and penalties in the social order determines that noncompliance with the 2007 law, RD 901 or 902 can lead to the automatic loss of aid, bonuses, or benefits derived from the application of employment programs from the date on which the offense was committed, as well as exclusion from these benefits for a period of 6 months to 2 years.
2. France: They consider the need for legislation to support equality and urge enterprises to increase board diversity. France adopted its equality legislation in 2011, with *the Copé-Zimmermann Law*, to achieve that women represent 40% of board positions (in firms with more than 50 million euros of assets or more than 500 employees), or at least, that larger French companies should have reached the 20% for the year 2014. To reinforce previous legislation and make an integrated approach, France published *Law N° 2014-873 for Real equality between women and men* on August 2014. From 2017, if they do not achieve the objective, the equality law invalidates those nominations of the board that do not comply with the requirements of that law. The results show a significant advance, where more than half of the companies have already reached the intermediate target (20%), and the majority of new appointments of boards have been women. The legislation on this topic has been recently revised. In 2019, the Ministry of Labour launched a *Gender Equality Index* (*Indice d'Egalite de Genre*) to avoid inequalities at work. In addition, recommendations issued by professional associations exert coercive pressures, seeking to favor gender diversity on boards.
3. The United Kingdom: The government analyzed in 2010 the situation of women on boards of directors. To improve that scenario, the UK established the "Equality Act 2010" as a guide to reduce

discrimination with recommendations to large companies (>350 employees), as participation objectives for different time horizons, as well as providing gender information in their annual reports. Nowadays, the feminine representation has improved gradually, but still, it is not balanced between both sexes. In addition to the equality law of 2010, the UK has also used other instruments to increase gender diversity in its companies. On the one hand, the recommendations of the corporate governance codes (*UK corporate governance code—2014*), on the other hand, the reports that have assessed the evolution of women's participation in the company, such as the report "women on boards Davies Review, 2015" or recommendations issued, such as those of the "FRC (Financial Reporting Council) Guidance for Boards and Boards Committees, 2011 and 2018."

4. Germany: Germany, like the UK, started by basing its support toward gender equality on the will of companies. However, the right to equal treatment of men and women is enshrined in Article 3(2) of the German Constitution. Furthermore, this right has been regulated in the labor sphere through the *General Equal Treatment Act of 2006* (*Allgemeines Gleichbehandlungsgesetz—AGG*) focusing on discrimination in employment. In 2010, to improve the situation, Germany included a recommendation in its *Corporate Governance Code*. Gender equality becomes a guiding principle integrated by the federal government in its activities and has been monitored through gender assessment reports. Since this last measure has not meant a substantial change either, in 2011, a nonbinding "flexi-quota" that allows companies to set their own targets and proposes small financial sanctions for noncompliance is proposed. In this case, with the possible arrival of legislation in this regard, the German companies of the DAX30 established moderate voluntary objectives (female representations of around 15%), but they do not have to comply with some legislatively binding quotas. In 2015, the German government published the "Federal Equality Law" 2015 (*Bundesgleichstellungsgesetz—BGleiG*) to promote equality and work-life balance as a consistent guiding principle.

France and Spain have been legislating on equality for the last decade, considering this the only possibility for progress in the matter, although these laws have been laxer in the case of Spain. Germany and the United Kingdom have trusted more in the willingness of companies to set their own goals for improvement in this regard. Considering the individual analysis of how these four countries have managed gender equality aimed at increasing female participation in the workplace, and seeing that there are differences in the last 20 years (with measures, legislation, and sanctions), there could be differences in the results among countries.

Figure 2 allows us to visualize the evolution of the average percentage of BGD in the period 2002 to 2020 of the listed companies from the four countries analyzed in this study. Although all countries are developing positively, there are differences in the levels achieved. Germany and the UK have reached similar levels, which are around 35% at the end of the period, while France reached nearly 45%, and Spain is the one with the lowest average rate of the four countries, 29.5%.

4 | MATERIALS AND METHODS

4.1 | Sample

The sample is composed of 205 firms (3876 observations), listed in Spain (IBEX 35 index), France (CAC-40 index), Germany (DAX-30 index), and the UK (FTSE100 index) from 2002 to 2020. The information on these companies has been obtained from the database DataStream created by Refinitiv.

The stock market indices mentioned above comprise companies involved in different sectors of activity, including the financial sector (banks and financial institutions), energy (energy, oil, and utilities), construction and real estate, consumer (products and services, food, beverages and pharmaceuticals, automotive, retail, tourism), industry, technology, and telecommunications.

4.2 | Main variables

ESG scores measured by Datastream database are comparable between companies due to the homogeneity in the measurement over

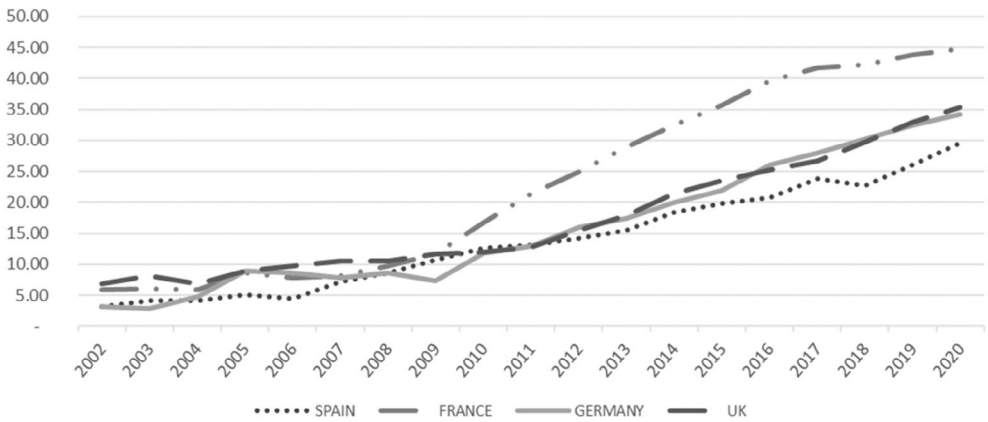

FIGURE 2 Average percentage of women on the board by year and country. *Source*: Own elaboration with DataStream data (2022).

time, for this reason, they have been used in studies related to this topic (Markarian & Parbonetti, 2007). Datastream contains corporate information from Annual Reports, Company Websites, NGO Websites, Stock Exchange Filings, CSR Reports, and News Sources.

1. Environmental Score (ES): According to Datastream's description, "the environmental pillar measures a company's impact on living and nonliving natural systems, including the air, land, and water, as well as complete ecosystems. It reflects how well a company uses best management practices to avoid environmental risks and capitalize on environmental opportunities in order to generate long-term shareholder value." The environmental indicator is made up of measures that are part of three categories Resource Use (weight 45.02%), Emissions (weight 41.92%), and Innovation (weight 13.06%). All measures value the use that the organization makes of its resources (reduce the use of materials, energy, or water to be more eco-efficient) and the protection of the environment (reducing environmental emissions). The Innovation category reflects a company's capacity to reduce the environmental costs and burdens for its customers, thereby creating new market opportunities through new environmental technologies and processes or eco-designed products.
2. Social score (SS): According to Datastream's description, "the social pillar measures a company's capacity to generate trust and loyalty with its workforce, customers, and society, through its use of best management practices. It reflects the company's reputation and the health of its license to operate, which are key factors in determining its ability to generate long-term shareholder value." This indicator is made up of measurements divided into four categories: Workforce (weight 38.41%; and there are issues related to satisfaction, training, healthy, safety, diversity, and equality), Human Rights (fundamental human rights conventions, with a weight of 26.46%), Community (social commitment, citizen, public health, business ethics, with a weight of 22.01%), and Product Responsibility (produce quality goods, services, customer's health and safety, integrity, and privacy, with a weight of 13.11%). Therefore, it responds to the demands of its workers, clients, and society in general.
3. Corporate Governance Score (CGS): As described in the database Datastream, "the corporate governance pillar measures a company's systems and processes, which ensure that its board members and executives act in the best interests of its long-term shareholders. It reflects a company's capacity, through its use of best management practices, to direct and control its rights and responsibilities through the creation of incentives, as well as checks and balances in order to generate long-term shareholder value." The corporate governance indicator is created with the categories called management (includes issues such as the commitment to follow best practices of corporate governance principles, board structure, and compensation policies), shareholders (include issues as equal treatment of shareholders and the use of antitakeover principles) and CSR strategy (include issues as company practices to communicate its day-to-day issues of the triple bottom line [economic, social, and environmental]). The corporate governance score is made up of 138 items, among which is gender diversity on the board. Therefore, the relationship between this variable and the dependent variable is expected to be positive. Due to the large number of items include in CGS, instead of not considering this analysis, we have decided to provide new evidence of this relationship and show the weight and level of significance that this variable has to explain the CGS

Gender diversity is the independent variable, as it has proven to be a great influence on board decisions regarding environmentally responsible activities (Ben-Amar et al., 2017; Glass & Cook, 2015; Haque, 2017), corporate social responsibility ratings (Bear et al., 2010), and corporate reputation (Brammer et al., 2009). According to Hillman and Dalziel (2003, p. 383), boards consist of "both human capital (experience, expertise, and reputation) and relational capital (network of ties to other firms and external contingencies)."

Previous literature whose research focuses on aspects of corporate governance and CSR (Mallin & Michelon, 2011; Velte, 2016), includes in its analysis several control variables that represent both the characteristics of the boards of directors and firm characteristics. Within these board characteristics, several variables have been shown to be important in achieving better ESG scores: board size, number of independent board members, and board experience and special skills (Mallin & Michelon, 2011).

Board size variable is controversial since empirical evidence supports that there is an inverse relationship between the board size and firm value (Yermack, 1996) and also the contrary. The reason is that larger boards tend to be inefficient and have greater conflicts in the decision-making process (Haque, 2017), being some small boards more effective. However, larger boards provide a higher number of directors who can provide advice regarding ESG issues (Haque, 2017).

Board independence increases the board's objectivity and ability to represent multiple points of view of the firm's role in the environment and among stakeholders (Haniffa & Cooke, 2005). They represent nontraditional leadership (Carter et al., 2003), raising questions that more traditional directors do not dare to ask and leading to "enhanced creativity, group flexibility, and deeper insights" (Brammer et al., 2009). Independent board members are dedicated to stakeholders' expectations, increasing "their own prestige and role in society" (Mallin & Michelon, 2011) and guaranteeing a broader sense of alignment with the objectives of stakeholders.

Markarian and Parbonetti (2007, p. 1226) determine that it is necessary to go beyond the independence attribute and consider "the board of directors as a whole is a mosaic of the individual roles of each director, so we should include their experience." Directors with experience, knowledge, and linkages relevant to the context within the firm operates become influential directors (Mallin & Michelon, 2011), so that they can "provide valuable non-business perspectives on proposed actions and strategies" (Hillman et al., 2000,

p. 242). Their background is "more important than either their absolute or relative number on the board" (García-Meca & Palacio, 2018).

Having an ESG compensation policy and a CSR committee (Baraibar-Diez & Odriozola, 2019) are also included as variables of control, as they are expected to have a positive impact on ESG performance, indicating a strategic posture concerning relationships with stakeholders (Mallin & Michelon, 2011).

Following previous studies (Carter et al., 2003; Margolis & Walsh, 2003), several firm-specific characteristics have also been included as control variables: firm size, return on assets (ROA), and the ratio debt to equity.

4.2.1 | Methodology

This study evaluates whether BGD has an impact on Environmental (Equation 1), Social (Equation 2), and Governance (Equation 3) scores. These models also include the control variables justified in the previous section. Table 1 describes the list of variables included in the equations and their measures.

$$\begin{aligned}\text{Environmental Score}_{it} = {} & \beta_0 + \beta_1 \text{BGD}_{it} + \beta_2 B_{\text{SIZEit}} + \beta_3 B_{\text{EXPit}} \\ & + \beta_4 B_{\text{INDit}} + \beta_5 B_{\text{SKILLit}} + \beta_6 \text{ESG}_{\text{CPit}} \\ & + \beta_7 \text{CSR}_{\text{COMit}} + \beta_8 \text{SIZE}_{it} + \beta_9 \text{ROA}_{it} \\ & + \beta_{10} \text{DEBT}_{it} + \varepsilon_{it} + \alpha_{it} + \delta_{it}\end{aligned} \quad (1)$$

$$\begin{aligned}\text{Social Score}_{it} = {} & \beta_0 + \beta_1 \text{BGD}_{it} + \beta_2 B_{\text{SIZEit}} + \beta_3 B_{\text{EXPit}} + \beta_4 B_{\text{INDit}} \\ & + \beta_5 B_{\text{SKILLit}} + \beta_6 \text{ESG}_{\text{CPit}} + \beta_7 \text{CSR}_{\text{COMit}} \\ & + \beta_8 \text{SIZE}_{it} + \beta_9 \text{ROA}_{it} + \beta_{10} \text{DEBT}_{it} + \varepsilon_{it} + \alpha_{it} + \delta_{it}\end{aligned} \quad (2)$$

$$\begin{aligned}\text{Corporate Governace Score}_{it} = {} & \beta_0 + \beta_1 \text{BGD}_{it} + \beta_2 \text{B}_{\text{SIZEit}} \\ & + \beta_3 \text{B}_{\text{EXPit}} + \beta_4 \text{B}_{\text{INDit}} \\ & + \beta_5 \text{B}_{\text{SKILLit}} + \beta_6 \text{ESG}_{\text{CPit}} \\ & + \beta_7 \text{CSR}_{\text{COMit}} + \beta_8 \text{SIZE}_{it} + \beta_9 \text{ROA}_{it} \\ & + \beta_{10} \text{DEBT}_{it} + \varepsilon_{it} + \alpha_{it} + \delta_{it}\end{aligned} \quad (3)$$

These equations were used to test the relationship between variables through an unbalanced panel of 205 firms (3876 observations) for which data has been collected over 19 years. To analyze companies' behavior over time, we have chosen a panel data methodology. Specifically, the explanatory models of each score have been made with fixed effects and random effects models for each of the samples of countries analyzed. Subsequently, the Hausman test was performed, based on a chi-square test that determines whether the differences are systematic and significant between the estimation of the fixed effects model ($\hat{O}_1$) and the random effects model ($\hat{O}_2$). When the *p*-value of this test is lower than 0.05, fixed effects estimation must be assumed like a consistent estimator. On the contrary, with a *p*-value higher than 0.05 random effects estimation can be chosen. All these estimations were done with the statistic software Stata.

TABLE 1 Measurement of variables.

	Variable	Measurement
Dependent variable	Regressions equations differ on the dependent variable: (1) Social Score, (2) Environmental Score, and (3) Corporate Governance Score	
Independent variable	BGD	Percentage of women on the board (variable Board Gender Diversity)
Control variables	B_{SIZE}	Total number of board members at the end of the fiscal year (variable Board Size)
	B_{EXP}	Percentage of independent board members as reported by the company (variable Independent Board Members)
	B_{IND}	Average number of years each board member has been on the board (variable Experienced Board)
	B_{SKILL}	Percentage of board members who have either an industry-specific background or a strong financial background (variable Specific Skills)
	ESG_{CP}	Dummy variable (yes = 1/no = 0) responding to the question "Does the Company have an extra-financial performance-oriented compensation policy?" (variable Policy ESG Related Compensation)
	CSR_{COM}	Dummy variable (yes = 1/no = 0) responding to the question "Does the company have a CSR committee or team?" (variable CSR Sustainability Committee)
	SIZE	Natural logarithm of total assets
	ROA	EBIT/total assets
	DEBT	Debt to equity
Others	ε_{it}	Error term
	α_{it}	Firm-effect
	δ_{it}	Year-effect

Note: All the variables have been obtained from the database Datastream.

5 | RESULTS

In this section, we provide a comprehensive overview of the empirical finding obtained from the statistical analyses. First, we present descriptive statistics that provide information on the central tendency and dispersion for each variable in the data set. Once these initial analyses have been discussed, we delve into the results obtained with the application of a panel data methodology, which allows us to analyze the time effects and the individual heterogeneity of the observations.

Tables 2 and 3 show descriptive statistics and correlations of variables used in the model. ESG scores range from 0 to 100. Board characteristics (BGD, Board Size, Board Independence, Experienced Board, and Board Skills) provide information to define the governing bodies of companies listed in Spain, Germany, France, and the United Kingdom. Size of the board varies from 2 to 29 members, reaching an average value of 12.45 members. On

TABLE 2 Descriptive statistics.

Variable	Mean	SD	Minimum	Maximum
Social Score	63.84	23.10	2.29	98.63
Environmental Score	61.90	25.91	-	99.20
Corporate Governance Score	59.95	22.22	1.12	99.33
BGD	19.45	13.91	-	64.29
B_{SIZE}	12.45	3.84	2.00	29.00
B_{EXP}	6.19	2.54	0.19	22.06
B_{IND}	57.16	19.84	-	100.00
B_{SKILL}	45.49	22.29	-	100.00
ESG_{CP}	0.41	0.49	-	1.00
CSR_{COM}	0.74	0.44	-	1.00
SIZE	1.07E+08	2.93E+08	20,811	2.48E+09
ROA	6.93	14.55	−54.44	269.11
DEBT	126.72	742.35	−25130.88	15441.38

average, 57.16% of members are independent members, 19.45% of board members are women, 6.19% of members are experienced and 45.49% have either an industry-specific background or a strong financial background. According to these data, governing bodies give greater relevance to the independence and seniority of their members. It should be noted that 74% of companies have a CSR committee, so there is a concern to meet the social demands of stakeholders.

Table 3 gathers the Pearson bivariate correlations for the different dependent, independent, and control variables included in the model. The variable "Board Gender Diversity" (B_{DIV}) correlates positively and significantly with all ESG (SS; ES; CGS) in Spain, Germany, the UK, and France.

Tables 4–6 show the results of the panel data estimations. Each of the tables will allow us to determine which variables explain each of the ESG indicators and if there are differences between countries. Table 4 gives us the results of the environmental score. In this case, BGD is not a significant variable to explain environmental performance in Germany. However, we can confirm H1 in Spain, France, and the UK, where BGD has a positive and significant relationship with the environmental score.

Furthermore, some of the control variables show a significant relationship with the environmental score in all the countries analyzed. For example, having a CSR committee is the variable with the greatest weight in explaining environmental results in the four countries analyzed, and the positive relationship between these variables is significant at 99%. Company size also shows a positive and significant relationship with environmental performance in Spain, France, the United Kingdom, and Germany.

Table 5 shows the results of the models that explain the social score. The main independent variable, BGD, is significant to explain the social score of any of the countries analyzed. Therefore, H2 proposed in this study is accepted, and gender diversity is significant to obtain better social performance. In the case of the rest of the control variables, we find differences among countries. The fact that the company has an ESG compensation policy aimed at achieving ESG objectives has a positive impact in the case of the four countries, although for Spain, France, and the UK this relationship is significant, and in the case of Germany this variable, despite maintaining a positive relationship due to the social score, loses explanatory weight and it is not significant. It is worth noting that for the four countries, having a CSR committee and the company size have high explanatory power over the dependent variable, showing therefore a positive and significant relationship.

Model to explain the corporate governance score is in Table 6. The variable BGD shows a positive relationship in all countries. Therefore, we can confirm H3. The common points that we can find among countries for this indicator are the variables "independent members on the board (B_{IND})," "Board members who have either an industry-specific background (B_{SKILL})," and "the CSR committee (CSR_{COM})" show a positive and significant relationship in the four countries.

6 | DISCUSSION

Diversity is a differentiating element of governing bodies, understanding such diversity as the different characteristics that define a group of individuals: branch of knowledge, gender, ethnicity, independence, abilities, experience, background, and so forth. The theoretical framework justifies that a greater diversity of the board is expected to increase the efficiency to manage the organization and adapts to the changing needs of the environment (Carmeli and Azeroula, 2009; Cox & Blake, 1991; Sierra-Morán et al., 2022; Velte, 2016).

This study analyzes the impact of BGD on environmental, social, and corporate governance (ESG) performance, taking as a reference four European largest economies. Besides, to avoid that the sample of

TABLE 3 Pearson correlation matrix.

Spain											Germany									
Variables	**BGD**	B_{size}	B_{EXP}	B_{IND}	B_{SKILL}	ESG_{CP}	CSR_{COM}	**SIZE**	**ROA**	**DEBT**	**BGD**	B_{SIZE}	B_{EXP}	B_{IND}	B_{SKILL}	ESG_{CP}	CSR_{COM}	**SIZE**	**ROA**	**DEBT**
SS	0.310***	0.197***	0.126***	0.332***	0.177***	0.398***	0.584***	0.181***	0.053 -	−0.048 -	0.530***	0.220***	0.035 -	0.359***	0.193***	0.363***	0.590***	0.211***	−0.025 -	−0.03 -
ES	0.390***	0.219***	0.172***	0.398***	0.164***	0.357***	0.609***	0.263***	0.014 -	−0.057 -	0.341***	0.365***	0.099 *	0.195***	0.207***	0.356***	0.593***	0.328***	−0.102 **	0.066 -
CGS	0.289***	−0.082 **	−0.03 -	0.588***	0.343***	0.268 *	0.315***	0.382***	0.050 -	0.214***	0.354***	0.127 **	0.093 *	0.453***	0.256***	0.274***	0.339***	0.158 **	−0.088 *	−0.05 -
B_{DIV}	1	−0.152***	0.05 -	0.346***	−0.01 -	0.400***	0.406***	0.162***	0.042 -	−0.091 **	1	0.082 -	−0.01 -	0.482***	−0.20***	0.328***	0.439***	0.064 -	0.008 -	−0.01 -
B_{SIZE}		1	−0.01 -	−0.12***	−0.08 -	−0.13 **	0.043 -	0.275***	−0.11 **	−0.031 -		1	0.017 -	−0.08 -	−0.11 **	0.342***	0.197***	0.519***	−0.138 **	0.241***
B_{EXP}			1	−0.06 -	0.095 *	−0.05 -	0.004 -	0.250***	−0.073 -	0.070 -			1	0.102 *	−0.06 -	0.152 **	0.096 *	−0.050 -	0.181***	−0.04 -
B_{IND}				1	0.016 -	0.283***	0.312***	0.178***	0.077 -	0.036 -				1	−0.22***	0.203***	0.115 **	−0.019 -	−0.040 -	0.024 -
B_{SKILL}					1	0.074 -	0.201***	0.215***	0.028 -	0.135 **					1	−0.06 -	0.122 **	−0.124 **	0.112 **	−0.08 -
ESG_{CP}						1	0.391***	0.134***	−0.015 -	−0.137 **						1	0.354***	0.329***	−0.089 *	0.162 **
CSR_{COM}							1	0.146***	−0.074 -	−0.09 **							1	0.145 **	−0.017 -	−0.11 **
SIZE								1	−0.16***	0.281***								1	−0.256***	0.406***
ROA									1	−0.277***									1	−0.17***
DEBT										1										1

France											UK									
Variables	**BGD**	B_{SIZE}	B_{EXP}	B_{IND}	B_{SKILL}	ESG_{CP}	CSR_{COM}	**SIZE**	**ROA**	**DEBT**	**BGD**	B_{SIZE}	B_{EXP}	B_{IND}	B_{SKILL}	ESG_{CP}	CSR_{COM}	**SIZE**	**ROA**	**DEBT**
SS	0.533***	0.076 **	0.196***	0.103 **	−0.02 -	0.537***	0.556***	0.119***	−0.079 **	−0.079 **	0.421***	0.387***	−0.21***	0.376***	−0.15***	0.396***	0.502***	0.226***	−0.174***	0.001 -
ES	0.380***	0.206***	0.102 **	0.092 -	0.009 -	0.343***	0.621***	0.260***	−0.105 **	−0.062 *	0.330***	0.422***	−0.14***	0.302***	−0.09***	0.328***	0.501***	0.292***	−0.168***	0.018 -
CGS	0.285***	−0.168****	−0.02 -	0.489***	0.152***	0.253***	0.161***	0.232***	−0.105 **	0.029 -	0.375***	0.225***	−0.17***	0.445***	0.019 -	0.309***	0.339***	0.224***	−0.069 **	−0.01 -
B_{DIV}	1	0.099 **	0.226***	0.088 **	−0.27***	0.645***	0.472***	0.125***	0.064 *	−0.057 -	1	0.036 -	−0.17***	0.453***	−0.15***	0.276***	0.309***	0.079 **	0.077 **	−0.03 -
B_{SIZE}		1	0.015 -	−0.38***	−0.04 -	0.127***	0.215***	0.307***	−0.141***	0.022 -		1	−0.11***	0.060 **	−0.03 -	0.102***	0.195***	0.406***	−0.154***	0.057 **
B_{EXP}			1	−0.02 -	−0.05 -	0.104 **	0.080 **	−0.11 **	0.236***	−0.106 **			1	−0.25***	0.041 -	−0.07 **	−0.07 **	−0.170***	0.039 -	−0.016 -
B_{IND}				1	0.108 **	0.065 *	0.036 -	−0.03 -	−0.067 *	−0.023 -				1	−0.22***	0.253***	0.272***	0.164***	−0.077 **	0.004 -

TABLE 3 (Continued)

France											UK									
Variables	BGD	B_{SIZE}	B_{EXP}	B_{IND}	B_{SKILL}	ESG_{CP}	CSR_{COM}	SIZE	ROA	DEBT	BGD	B_{SIZE}	B_{EXP}	B_{IND}	B_{SKILL}	ESG_{CP}	CSR_{COM}	SIZE	ROA	DEBT
B_{SKILL}					1	−0.12 **	−0.04 -	0.108 **	−0.026 -	0.131 **					1	−0.12 ***	−0.07 **	0.142 ***	0.019 -	0.038 -
ESG_{CP}						1	0.380 ***	0.169 ***	−0.009 -	−0.025 -						1	0.325 ***	0.188 ***	−0.159 ***	−0.002 -
CSR_{COM}							1	0.099 **	0.033 -	−0.078 **							1	0.123 ***	−0.207 ***	−0.009 -
SIZE								1	−0.278 ***	0.149 ***								1	−0.123 ***	0.097 ***
ROA									1	−0.169 ***									1	−0.009 -
DEBT										1										1

Note: There are three dependent variables, SS (Social Score), ES (Environmental Score), and CGS (Corporate Governance Score). The significance of each variable is represented by ***, **, *; being 99%, 95%, and 90% levels, respectively.
Source: Authors.

selected companies can show relationships based on specific years affected by the economic or social situation of the country of origin, the data of the companies have been collected in a long-term period, since it covers the years 2002–2020. The period analyzed is one of the most dynamic in terms of changes in gender equality. In 2002, the average women on board rate was 5.79%. In subsequent years, European countries have implemented equality laws, recommendations in government codes, analysis of results at the country level, or decree laws that modify and strengthen previous equality laws. These actions and greater social awareness of the importance of equal opportunities place the average percentage of women on boards of directors at 36.03%. Although the evolution has been very gradual throughout the past 19 years, this percentage begins to approach the level desired by the EC by the year 2025 and favors greater compliance with SGD 5.

At this point, it is interesting to highlight that there are differences among the models carried out according to the dependent variable used, which supports the use of several performance indicators and the comparisons between countries (Singh et al., 2024). Specifically, in France, gender diversity has little weight in explaining the environmental score, and in Germany, this variable is not significant, nor is its relationship with the dependent variable positive. One aspect to highlight would be that BGD has a little less weight for the environmental score shows a positive and significant relationship between BGD and the environmental score. Although previous studies (Ben-Amar et al., 2017; Glass & Cook, 2015; Haque, 2017) indicate that the board has a great influence on decisions regarding environmentally responsible activities, it is possible that the impact of greater gender diversity will not be so clear in the short term on the use of resources, emissions or innovation in the environmental context; because not all countries have followed the same evolution. García Martín and Herrero (2020) made a detailed analysis using a sample of listed companies in Europe on the impact of gender diversity on environmental performance (dividing it into three pillars, emissions (waste and CO2), resource consumption (water and energy), and the implementation of environmental initiatives) and could not confirm a positive impact for all of them. Due to the coercive pressures and regulatory framework of each country can vary its prioritary pillars on environmental goals. Another possible explanation provided in the literature is that sometimes the number of women on the boards is still insufficient to show their responsible behavior (Fernandez-Feijoo et al., 2014), when the professional teams are dominated by men (Bear & Woolley, 2011).

Social score responds to the demands of workers, customers, and society in general; and corporate governance score represent the interests of the shareholders. Both scores have a more direct relationship with stakeholders and the fulfillment of their expectations, as argued by stakeholder theory. The results of this study are in line with other previous studies that indicate that gender diversity has much more impact on social aspects, due to greater participation in training in the areas of social sciences and humanities (Williams, 2003). More specifically, Alazzani et al. (2017) analyzed the impact of board gender diversity on social and environmental performance in the same sample

TABLE 4 Results of the panel data models to explain environmental score by country.

DV: Environmental Score	Spain		France		UK		Germany	
Variables	(β)	t	(β)	t	(β)	t	(β)	t
B_{DIV}	**0.349**	**4.54*****	**0.086**	**1.74***	**0.201**	**5.33*****	−0.051	−0.50
B_{SIZE}	**1.00**	**3.14*****	−0.018	−0.06	**1.12**	**4.48** ***	−0.269	−0.47
B_{IND}	−0.060	−1.09	0.009	0.22	**0.119**	**2.83*****	**0.069**	**1.74***
B_{EXP}	**1.26**	**3.96*****	**1.842**	**5.45*****	−0.034	−0.13	**0.826**	**1.80***
B_{SKILL}	0.030	0.60	0.006	0.22	0.022	1.02	**0.126**	**3.10*****
ESG_{CP}	**3.87**	**2.33****	1.865	1.28	**3.752**	**3.73*****	−0.559	−0.25
CSR_{COM}	**15.89**	**8.63*****	**18.052**	**11.09*****	**9.650**	**7.79*****	**15.102**	**4.84*****
SIZE	**4.40**	**4.38*****	**9.223**	**4.05*****	**2.339**	**3.29*****	**11.217**	**4.45*****
ROA	0.188	1.37	−0.002	−0.02	**0.069**	**2.16****	−0.214	−1.29
DEBT	**−0.004**	**−2.09****	−0.006	−0.78	−0.000	−0.19	−0.002	−0.40
Constant	−44.460	−2.88***	−117.81	−3.06***	−13.371	−1.20	−139.35	−3.35***
R^2	0.5248		0.2878		0.4505		0.3264	
Hausman test	6.03		45.25***		31.59***		88.97***	
Type of panel data	Random		Fixed		Fixed		Fixed	

Note: Bold indicates the weight of variables.
Abbreviation: DV, dependent variable.
*(β) represents the standardized coefficients of the variables. Correlation is significant at the 0.1 level (2-tailed).
**Correlation is significant at the 0.05 level (2-tailed).
***Correlation is significant at the 0.01 level (2-tailed). Firm-effect and year-effect are included in every model.

TABLE 5 Results of the panel data models to explain social score by country.

DV: Social Score	Spain		France		UK		Germany	
Variables	(β)	(β)	(β)	t	(β)	t	(β)	t
B_{DIV}	**0. 175**	**2.18****	**0.280**	**6.54*****	**0.376**	**10.82*****	**0.244**	**3.01*****
B_{SIZE}	0.411	1.27	**−0.711**	**−2.74*****	**0.701**	**3.03*****	−0.080	−0.18
B_{IND}	**0. 126**	**2.24****	**−0.191**	**−5.04*****	**0.163**	**4.22*****	**0.082**	**2.63*****
B_{EXP}	**0. 706**	**2.01****	**1.013**	**3.41*****	0.012	0.05	0.320	0.89
B_{SKILL}	−0.051	−1.04	**0.054**	**2.16****	0.027	1.35	0.012	0.39
ESG_{CP}	**6.466**	**3.87*****	**9.325**	**7.29*****	**5.016**	**5.42*****	0.664	0.38
CSR_{COM}	**10.90**	**5.97*****	**9.753**	**6.82*****	**4.791**	**4.21*****	**16.59**	**6.75*****
SIZE	**5.981**	**3.27*****	**10.742**	**5.38*****	**4.623**	**7.06*****	**3.59**	**1.81***
ROA	**0.334**	**2.43****	0.066	0.52	−0.003	−0.01	**0.257**	**1.97***
DEBT	**0.004**	**2.11****	**−0.025**	**−3.56*****	−0.002	−0.80	−0.004	−0.86
Constant	−57.55	−1.93**	−120.61	−3.57***	−47.815	−4.67***	−11.010	−0.34
R^2	0.2950		0.2716		0.4781		0.306	
Hausman test	21.88**		24.67**		36.591***		20.70**	
Type of panel data	Fixed		Fixed		Fixed		Fixed	

Note: Bold indicates the weight of variables.
Abbreviation: DV, dependent variable.
*(β) represents the standardized coefficients of the variables. Correlation is significant at the 0.1 level (2-tailed).
**Correlation is significant at the 0.05 level (2-tailed).
***Correlation is significant at the 0.01 level (2-tailed). Firm-effect and year-effect are included in every model.

of companies, and found a significant impact only on the social dimension, indicating that women pay more attention to these aspects. Therefore, the impact on the ESG indicators may vary depending on the previous situation in which firms find themselves. On the other hand, BGD growth does not have an equal impact on all indicators, and it is appropriate to carry out a more detailed analysis.

TABLE 6 Results of the panel data models to explain corporate governance score by country.

DV: Corporate Governance Score	Spain		France		UK		Germany	
Variables	(β)	(β)	(β)	t	(β)	t	(β)	t
B_{DIV}	**0.389**	**3.06*****	**0.192**	**2.31****	**0.398**	**6.66*****	**0.468**	**4.14*****
B_{SIZE}	**0.863**	**2.35****	**−0.941**	**−3.09*****	0.343	1.23	**−0.873**	**−2.17****
B_{IND}	**0.332**	**4.98*****	**0.327**	**7.51*****	**0.461**	**9.75*****	**0.081**	**2.24****
B_{EXP}	**1.002**	**2.30****	0.083	0.25	0.395	1.36	**2.116**	**4.89*****
B_{SKILL}	**0.168**	**2.93*****	**0.090**	**2.87*****	**0.234**	**8.95*****	**0.202**	**5.25*****
ESG_{CP}	**4.821**	**2.27****	**4.423**	**2.77*****	**2.832**	**2.42****	−1.270	−0.61
CSR_{COM}	**5.556**	**2.18****	**8.392**	**4.07*****	**3.537**	**2.42****	**6.240**	**2.06****
SIZE	0.883	0.42	**4.361**	**3.12*****	**2.028**	**3.31*****	**3.980**	**2.64*****
ROA	0.240	1.49	0.014	0.09	0.038	1.13	**−0.374**	**−2.47****
DEBT	**0.005**	**2.20****	0.009	1.16	−0.003	−0.84	0.001	0.23
Constant	−16.64	−0.46	−38.970	−1.61	−29.313	−2.85***	−18.332	−0.78
R^2	0.4487		0.3746		0.3566		0.3566	
Hausman test	46.67**		9.18		24.47		33.75	
Type of panel data	Fixed		Random		Random		Random	

Note: Bold indicates the weight of variables.
Abbreviation: DV, dependent variable.
*(β) represents the standardized coefficients of the variables. Correlation is significant at the 0.1 level (2-tailed).
**Correlation is significant at the 0.05 level (2-tailed).
***Correlation is significant at the 0.01 level (2-tailed). Firm-effect and year-effect are included in every model.

7 | CONCLUSION

Due to the coercive pressures to promote gender diversity and the legitimacy granted by stakeholders through the assessment of companies, it is interesting to analyze whether a higher BGD explains better environmental, social and government performance. According to the result obtained, this study shows that H1 is partially confirmed, and H2 and H3 are accepted.

This study draws three main conclusions. First, gender diversity on the boards is not always significant to explain better results of the ESG scores. In the case of Germany, gender diversity does not have a positive and significant impact in explaining the environmental score. Therefore, it is convenient to differentiate each of the indicators, for which there may be a differentiated approach.

The second conclusion is that there are differences to explain each of the scores among countries. Therefore, no pattern is found to allow generalization. Results (Tables 4–6) show different levels of significance in the control variables (in some models, board size, the independence of its members, or their background, among others, are significant). There are, however, two variables that show strong explanatory weight in the four countries and are significant in most models: "ESG compensation policies" and "Firm size." Thus, as in previous studies, we find that the scale of the organization and the use of managerial incentives favor the achievement of ESG goals.

The third conclusion of this study is that the dichotomous variable that indicates whether companies have a CSR committee (CSR_{COM}) maintains a positive and significant relationship with all scores, being one of the variables with the greatest weight. Showing itself as the fundamental tool that allows responding to the demands of the stakeholders, and obtaining better results in the valued indicators. This is a remarkable result congruent with the assumptions defended by the agency theory and the stakeholder theory, and it could be congruent with the study by Martínez-Ferrero et al. (2020), which concludes that the CSR committee mediates the relationship between gender diversity and social performance. In other words, according to this study, female participation has an impact on the CSR committee.

This study is not without its limitations. Many countries have not reached the goal of 30%–40% of women on the board of directors, which is why they are still implementing measures to put pressure on companies, so it is convenient to indicate the possibilities to develop future studies. This kind of analysis and results obtained are interesting for academics and professionals because, beyond coercive measures (by government codes or legal decrees), the finding of positive effects of BGD on ESG performance will allow more and more companies to converge toward equal opportunity objectives. Even companies that are not listed or to which these requirements do not apply due to their size.

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How to cite this article: Odriozola, M. D., Blanco-González, A., & Baraibar-Diez, E. (2024). The link of ESG performance and board gender diversity in European firms. *Corporate Social Responsibility and Environmental Management*, *31*(6), 5656–5669. https://doi.org/10.1002/csr.2881