Sustainable development and the limits of gender policies on corporate boards in Europe. A comparative analysis between developed and emerging markets

María del Carmen Valls Martínez[a,*], Pedro Antonio Martín-Cervantes[a], María del Mar Miralles-Quirós[b]

[a] Economics and Business Department, University of Almería, 04120 La Cañada de San Urbano, Almería, Spain
[b] Financial Economics Department, University of Extremadura, Avenida de Elvas s/n, 06006 Badajoz, Spain

A R T I C L E   I N F O

A B S T R A C T

Sustainable development is a priority to the United Nations. Moreover, investment managers consider environmental, social and governance score as an important variable in portfolios selection. The fifth goal in the 2030 Agenda is gender equality. Besides, European countries have established gender quotas on corporate boards to reduce the gender gap. Empirical studies about the influence of women directors on the company's corporate social responsibility (CSR) presented mixed results, especially in developing countries. This article compares the influence of gender diversity on corporate boards on CSR performance in developed and emerging European markets. We apply a panel data methodology with fixed effects to examine the companies listed in the MSCI Europe and MSCI EM Europe indices from 2010 to 2019. The results show that gender diversity on the board of directors influences CSR performance positively, and this influence is greater in developed countries. Consequently, legislation should promote gender policies.

1. Introduction

On 25 September 2015, the United Nations General Assembly adopted the 2030 Agenda, a set of 17 Sustainable Development Goals to achieve within the next 15 years, aiming to eradicate poverty, protect the planet and ensure prosperity for all. It is an opportunity for countries and their societies to embark on a new path to improve the lives of all citizens around the world. The goals range from eliminating poverty, education, and gender equality to the fight against climate change, environmental care, or our cities' design. To accomplish these targets, everyone must work together: Governments, the private sector and civil society.

The interest of companies in social and environmental problems has been growing since the 1990s when a series of international financial, environmental and social scandals occurred as a measure to control the reputational risk (Valls Martínez, 2019; Velte, 2017b). In this sense, it is usual that companies publish corporate social responsibility reports along with the financial statements as a way of being accountable for their environmental, social and governance (ESG) practices (Fernández-Gago et al., 2018; Sial et al., 2018).

Nowadays, CSR reporting has become a duty to meet the goals of Agenda 2030 (ElAlfy et al., 2020; Tsalis et al., 2020; Wichaisri & Sopadang, 2018) and to gain the confidence of the capital markets (Qu & Leung, 2006). In effect, the investment managers value positively high scores in ESG criteria. There are many sustainable market indices, such as the FTSE4Good index or the Dow Jones Sustainability Index (DJSI).

The board of directors is the main body of corporate governance and establishes the company's strategies (Pletzer et al., 2015). The relationship between the configuration of the firm board and the management strategies is currently an important issue of research. Especially, gender diversity is one of the main drivers or corporate policy (Amorelli & García-Sánchez, 2021; Terjesen et al., 2016). The importance of CSR is parallel in many countries with the legal regulation that states a gender quota on company boards. The percentage of women is crucial to the effectiveness of the board and the increase of sustainable strategies (Velte, 2017a).

Moreover, the fifth sustainable development goal is "Gender Equality". Target 5.5 is: "Ensure women's full and effective participation and equal leadership opportunities at all levels of decision making in political, economic and public life". In this sense, the European Commission proposed that member countries enacted laws to achieve equitable representation of both sexes on board of directors

---

* Corresponding author.
E-mail address: mcvalls@ual.es (M.d.C. Valls Martínez).

in the companies listed in the European stock exchanges (Isidro & Sobral, 2015). In effect, most countries have developed such guidelines, and the female presence has been growing during the last years (Valls Martínez & Cruz Rambaud, 2019; Valls Martínez et al., 2019). However, there is still an underestimation of women's ability to hold senior management positions (Mateos del Cabo et al., 2010), which translates into a gap in the gender composition on the board of directors since men continue to be the majority group.

Literature has analysed the relationship between the presence of women on corporate boards and the practices of CSR. Most studies found a positive influence of female directors on CSR performance (Dawar & Singh, 2016; Rao & Tilt, 2016; Velte, 2017a, 2017b). Only a reduced number of empirical works showed a negative or no relationship (Fauzi & Locke, 2012; Jhunjhunwala & Mishra, 2012; Kılıç & Kuzey, 2019; Stanwick & Stanwick, 1998). However, in the latter cases, the study was done years ago. Therefore, it is not reviewed or the sample corresponded to developing countries; so, the presence of women was deficient and, consequently, it was difficult for their influence to be significant. Furthermore, some studies determine a non-linear relationship and consider that a minimum number of women, usually three, is required to exert a positive influence on CSR performance, being the relationship between the two variables U-shaped (Bernardi & Threadgill, 2010; Fernandez-Feijoo et al., 2014; Liao et al., 2018).

However, some recent studies, which has been focused on European and American banks, from 2001 to 2016 (Birindelli et al., 2018), listed non-financial Spanish companies, from 2004 to 2014 (Pucheta-Martínez et al., 2019), and companies include in the S&P 500 and Euro Stoxx 300 indices (Valls Martínez et al., 2020), from 2015 to 2019, have concluded that the relationship is inverted U-shaped. Namely, the presence of women on corporate boards positively links to CSR performance to a limit beyond which their influence is negative. Accordingly, gender parity is the ideal situation.

On the other hand, there is a virtual absence of empirical studies on the similarities or differences between developed and developing countries regarding the impact that the recruitment of women on company boards of directors has on CSR. Namely, there is a gap in joint and comparative analysis.

The main objective of this study is to examine the effect of women on corporate boards on CSR performance in the developed and emerging European markets, considering ten years (2010-2019) and using the same methodology to obtain comparable results. Specifically, we use regression models with lagged dependent variable and panel data with fixed effects.

The present research contributes to the subsequent advances in the literature. First, it provides empirical evidence that gender diversity on the board of directors increases CSR performance in developed and emerging European markets. To do this, we consider a recent broad sample period (from 2010 to 2019), while previous studies use distant and, sometimes, shorter periods. Second, we compare the behaviour in developed and emerging markets, while previous studies consider individual or only developed countries. Since we use the same methodology, variables and period, our results show a consistent comparison. Third, we study the existence of a reasonable limit to women on company boards.

So far, previous studies have focused on demonstrating how the increased presence of women in management positions increases CSR. It is true that traditionally the number of women has been merely testimonial and, in general, reduced. Authors have thus claimed for the effective incorporation of women on boards of directors. However, as it has been made, this statement implies that companies should increase the number of women as much as possible, which would lead to a situation opposite to the traditional one, i.e. a weak presence of men. In this article, however, maximum diversity is evident, which leads to the search for parity between the two sexes. Accordingly, this article does not contrast a linear relationship but a

quadratic relationship in the form of an inverted U-shape. Moreover, this work evidenced that in developing countries, gender diversity on corporate boards achieves maximum effectiveness at lower values.

The remainder of this article is as follows. Section 2 sets out the key aspects of the relationship between gender diversity on company boards and CSR performance, does a literature review and describes the theoretical framework to establish the research hypotheses. Section 3 describes the sample, variables and methodology used. In Section 4, we present the results. Finally, in Section 5, we discuss the results and raise the main conclusions from this research.

2. Literature review and theoretical framework

The board of directors defines corporative governance strategies. Thus, the composition of the company's board is decisive in the establishment of CSR activities (Mason & Simmons, 2014). That is, the percentage of women directors can influence the social and environmental policies of companies. In effect, heterogeneous groups have broader perspectives and, therefore, are more effective in identifying problems and generating alternatives and innovative solutions, which result in competitive advantage (Bassett-Jones, 2005; Watson et al., 1993). In general, women have dissimilar ethical backgrounds to men (Fernández-Gago et al., 2018). Namely, both genders have different skills and experiences (Sial et al., 2018). In this sense, women are more risk-averse (Charness & Gneezy, 2012; Croson & Gneezy, 2009; Jianakoplos & Bernasek, 1998) and propose less aggressive investment strategies (Campbell & Mínguez-Vera, 2008).

Women exhibit higher emotional intelligence (Barrientos Báez et al., 2018), they value social aspects more and are more participatory, democratic and inclined to the welfare of others, as well as more philanthropic (Dawar & Singh, 2016; Francoeur et al., 2019; Gennari, 2018). Even previous literature states that women have upper moral scores than men and, therefore, they are more compliant with accounting, financial, social and environmentally ethical standards (Kyaw et al., 2017; Rao & Tilt, 2016; Sial et al., 2018). To sum up, women on the board of directors reduce corruption risk and promote more robust corporate governance procedures which consider a more comprehensive range of stakeholders (Bernardi & Threadgill, 2010). Accordingly, women are more oriented towards CSR (Cuadrado Ballesteros et al., 2015; Dawar & Singh, 2016).

Abundant theories have been alleged to justify the beneficial presence of women on corporate boards. All of them can be considered reasonable and realistic. It is usual to consider a multi-theoretical framework approach (Nicholson & Kiel, 2007) for comparative and integrative purposes (Valls Martínez & Cruz Rambaud, 2019).

Stakeholder agency theory (Hill & Jones, 1992) combines two traditional theories in management: agency theory and stakeholder theory. *Agency theory* (Jensen & Meckling, 1976) correlates corporate governance with transparency and accountability to prevent that managers act contrarily to the interest of shareholders. When there are more women on boards, female directors are more likely to increase audits and the company's responsibilities (Adams & Ferreira, 2009). Therefore, they can influence CSR performance (Liao et al., 2018). *Stakeholder theory* considers that the long-term survival of the companies depends on its ability to meet the expectations not only of shareholders but also of other stakeholders (customers, investors, employees, public authorities and the public in general) (Brown & Forster, 2013), both in economic and non-financial aspects (Freeman, 1984; Valls Martínez, 2019). In this sense, the women's characteristics and skills enhance CSR and the satisfaction of different stakeholders more than their male counterparts (Ibrahim & Angelidis, 1994). Therefore, since women on the board of directors are usually independent members (Francoeur et al., 2008), their presence decreases information asymmetry (Lofgren et al., 2002) and, therefore, the conflicts of interest between managers and stakeholders

(Shankman, 1999). Additionally, their presence increases CSR and sustainable strategies, leading to an improvement in the company's reputation.

According to *resource dependence theory* (Hillman et al., 2000; Pfeffer, 1972), more sundry boards expand the possibilities of having wider connexions with lenders and investors. Thus, the company's capability to obtain the necessary resources to fulfil its social and environmental responsibility is higher.

As the literature shows, if we accept that men and women have different characteristics, we can also allude to *human capital theory*, which we can identify with *upper echelons theory*. According to this scheme, diverse boards benefit companies due to each member's individual and personal human capital (Isidro & Sobral, 2015). Effectively, managers differ in their knowledge, personal characteristics, habits, culture, emotions and beliefs, differentiating their decisions (Hambrick, 2007; Hambrick & Mason, 1984). Since women are more prone to social and environmental problems, gender diversity on the company's board promotes CSR performance.

We consider that the above theories explain sufficiently the positive relationship between women on corporate boards and CSR performance. Nevertheless, we believe that the two following theories are even more suitable to understand such a connection. In compliance with *social role theory*, also called *self-schema theory* (Konrad et al., 2000) or *feminist caring theory* (Liao et al., 2019), women and men are different by their education. They are gender roles deeply rooted that lead individuals to act according to the established expectations (Eagly, 2009; Gutek & Morasch, 1982; Mateos del Cabo et al., 2010). As states above, women are more sensitive to social problems and behave more altruistically than men because of their scales values (Bernardi & Threadgill, 2010; Eagly et al., 2003). They behave more ethically and are more willing to address stakeholders issues and implement CSR measures (Francoeur et al., 2019; Gennari, 2018).

Finally, *legitimacy theory* points out that a company's CSR actions reflect its moral legitimacy and, considering such kind of actions, stakeholders accept the company as a moral entity (Scherer & Palazzo, 2007). Therefore, companies can deliberately determine the extent of gender diverse composition of their board of directors by increasing their legitimacy or acceptance in the market. A mixed board, where men and women are equally considered, determines a company offering equal gender opportunities, which legitimizes the company (Gennari, 2018).

All of the above theories make a strong case for increasing the presence of women on boards of directors to reverse the traditional situation of an overwhelming majority of men. In management positions, statistics have demonstrated a real "glass ceiling" for women (World Economic Forum, 2019). However, people should not expect the reverse situation, i.e., a composition in which men are a bare minority. In such a case, although this has not been necessary so far since the actual situation is still unfavourable for women, some of the above theories could be argued for a greater male presence. In addition, the literature has shown that heterogeneous groups bring a broader set of skills, knowledge and experience, allowing for a broader analysis of problems (Francoeur et al., 2008). Thus, by proposing a wider variety of possible alternatives, the final decisions are more efficient and innovative (Pletzer et al., 2015; Rose, 2007). More complex problems are solved more effectively. Therefore, the company, the market and all stakeholders benefit from gender-diverse boards of directors.

On the other hand, some authors (Ali et al., 2014; Pucheta-Martínez et al., 2019) have alleged the *social identity theory* to counteract the positive effects of the increased presence of women on boards. According to this theory, male and female directors would divide the board into two categorical groups. Members of each group (in-group) would communicate with and support each other but would oppose the other group members (out-group) and would have

a breakaway position with them. In this way, there would be a decrease in communication and an increase in conflicts between the two groups, resulting in a worsening of the CSR.

Literature has shown a wide array of empirical works that positively link women directors' higher presence with CSR performance. Table 1 shows 45 journal articles corresponding to the period 2013-2021, which can be considered a representative sample of the research conducted in this field. For each article, its authors, year of publication, main result related to gender and CSR, the methodology used and the journal in which it was published are described. Although some of these studies cover an international area (Kyaw et al., 2017; Valls Martínez et al., 2020), most of the empirical analyses refer to a single country, such as the United States (Boulouta, 2013; G Giannarakis, 2014; Giannarakis et al., 2014; Lu & Herremans, 2019), the United Kingdom (Al-Qahtani & Elgharbawy, 2020; Tingbani et al., 2020), Spain (Pucheta-Martínez et al., 2019; Ramon-Llorens et al., 2021; Valls Martínez et al., 2019), Italy (Furlotti et al., 2019; Harjoto & Rossi, 2019), Australia (Aslam et al., 2018; Hollindale et al., 2019), Germany (Dienes & Velte, 2016) or China (Liao et al., 2018; Liao et al., 2019).

Indeed, a scarce number of works found a negative relationship. For example, studies performed in New Zealand (Fauzi & Locke, 2012), Malaysia (Darus et al., 2015), Turkey (Colakoglu et al., 2020) or Pakistan (Majeed et al., 2015; Naseem et al., 2017). It has to be taking into account that these cases correspond with developing countries, and we can find other studies with opposite results, i.e. where the relationship has been positive, as in Malaysia (Sundarasen et al., 2016), Turkey (Kılıç & Kuzey, 2019) and Pakistan (Khan et al., 2019). Finally, some works found no relationship (Glass et al., 2016; Manita et al., 2018; Post et al., 2011; Walls et al., 2012). Hence, since this analysis is not yet conclusive, we can affirm that it is necessary to implement more empirical analysis, especially in developing countries. Moreover, if we want to get homogeneous and comparable results with developed countries, the variables and methodology must be similar in both studies.

Based on the former arguments, we predict that higher gender diversity on the board of directors will improve the company's CSR performance. Hitherto, literature related the higher female presence on board of directors and CSR performance positively. In this case, the maximum percentage of women directors would impact the company's better responsible behaviour. However, we believe that an overwhelming majority of men is just as harmful as a large majority of women. Hence, the desirable situation would be a parity situation or, in other words, reaching a maximum gender diversity level. It is important to note that "gender diversity" on the board of directors has been interpreted in the literature as synonymous with a higher percentage of women. However, this meaning is not correct. Maximum diversity implies an equal share of men and women.

Accordingly, the relationship between the percentage of women in boardroom and CSR performance will be quadratic, with an inverted U-shape. The following research hypotheses have been constructed to contrast this theory:

Hypothesis 1 (H1). In developed countries, gender diversity on the board of directors is positively related to company CSR performance.

Hypothesis 2 (H2). In emerging markets, gender diversity on the board of directors is positively related to company CSR performance.

3. Method

3.1. The dataset

This study considers the European companies included in the MSCI Europe (MSCI) and the MSCI Emerging Markets Europe (MSCI EM) indices, during the period of 10 years, from 2010 to 2019. We aim to compare the possible differences between developed and emerging countries in the European context to establish specific

Table 1
Summary of research.

Authors	Main results related to gender and CSR	Methodology	Journal
(Ramon-Llorens et al., 2021)	Women exert a positive influence on CSR when they join the board as expert advisors, but not when they do so as a continuation of their political career.	Generalized method of moments regressions	Sustainability Accounting, Management and Policy Journal
(Al-Qahtani & Elgharbawy, 2020)	Women on boardroom positively influence disclosure and management of greenhouse gas	Logistic regression	Journal of Enterprise Information Management
(Amorelli & García-Sánchez, 2020)	Companies with al least three women on the board positively influence CSR disclosure	Panel data regression	Corporate Social Responsibility and Environmental Management
(Atif et al., 2020)	The proportion of female directors increases company sustainable investment	Two-stage least squares (Instrumental Variables)	Journal of Corporate Finance
(Beji et al., 2020)	Women on corporate boards is positively linked to human rights and corporate governance	Generalized method of moments regressions	Journal of Business Ethics
(García-Sánchez et al., 2020)	The influence of female directors on CSR is higher in companys located in stakeholder oriented countries	Logistic regression	Corporate Social Responsibility and Environmental Management
(Orazalin & Baydauletov, 2020)	Female members on corporate board influence positively social and environmental performance	Fixed effects panel regression	Corporate Social Responsibility and Environmental Management
(Pucheta-Martínez et al., 2020)	Women on board of directors improve CSR except if they represent banks or inssurance companies	Tobit regression	Sustainable Development
(Tingbani et al., 2020)	There is a positive relationship between women on boardroom and greenhouse gas voluntary disclosure	Fixed effects panel regression	Business Strategy and the Environment
(Uyar et al., 2020)	Female directors on the boardroom improve CSR	Fixed effects panel regression	Toursim Management Perspectives
(Valls Martínez et al., 2020)	Female directors positively influence CSR performance	OLS regression and fixed-effects analysis	Corporate Social Responsibility and Environmental Management
(Zahid et al., 2020)	Women directors improve corporate sustainability disclosure	Ordinary Least Square regression	Journal of Cleaner Production
(Birindelli et al., 2018)	Gender balanced corporate boards influence positively on CSR performance	Fixed effects panel regression	Sustainability
(Campopiano et al., 2019)	Women on boardroom increases CSR engagement if they are not members of the controlling family	OLS regression	Journal of Cleaner Production
(Charumathi & Rahman, 2019)	The proportion of women on board of directors is positively related to climate change disclosure concerning to the carbon disclosure project	Multiple regression model	Australasian Accounting, Business and Finance Journal
(Cruz et al., 2019)	Women directors increase corporate social performance	Random effects panel regression	Entrepreneurship. Theory and Practice
(Fernandez et al., 2019)	Women on corporate board influences more positively CSR in contexts that value their communal orientation	Two-stage least squares and random effects regression	Management Decision
(Francoeur et al., 2019)	Women on board of directors improve CSR dimensions related to less powerful stakeholders (environment, contractors and the community)	Fixed effects panel regression	Journal of Business Ethics
(Furlotti et al., 2019)	The implementation and disclosure of gender policies is improved by female chairperson but not by female CEO	Probit models	Corporate Social Responsibility and Environmental Management
(García-Sánchez et al., 2019)	Women on boardroom disclose more balanced, comparable and reliable information on CSR	Generalized method of moments regressions	International Business Review
(Gulzar et al., 2019)	Women on boards of directors strengthens company's CSR commitment	OLS regression	Sustainability
(Harjoto & Rossi, 2019)	There is a positive relationship between female directors and CSR	Two-stage least squares (Instrumental Variables)	Journal of Business Research
(Hollindale et al., 2019)	Women directors favour higher quality of greenhouse gas emission disclosure	Tobit regression	Accounting and Finance
(Liao et al., 2019)	Women directors enhance companies' environmental innovation	OLS regression	Corporate Social Responsibility and Environmental Management
(Lu & Herremans, 2019)	Female members on corporate boards enhance environmental performance scores initially in sensitive industries	Random effects panel regresion	Business Strategy and the Environment
(Pucheta-Martínez & Gallego-Álvarez, 2019)	The higher proportion of women on company boards enhance CSR disclosure	Tobit regression	Corporate Social Responsibility and Environmental Management
(Pucheta-Martínez et al., 2019)	There is a positive relationship between women on corporate boards and CSR disclosure	Fixed effects panel regression	Sustainable Development
(Pucheta-Martínez et al., 2019)	Independent and institutional female directors increases CSR reporting up to a tipping point from which influences negatively	Fixed effects panel regression	Business Ethics: A European Review
(Valls Martínez et al., 2019)	Women on company board are positively related to CSR performance	Probit models with endogeneous regressors	Corporate Social Responsibility and Environmental Management

(continued)

4

Table 1 (*Continued*)

Authors	Main results related to gender and CSR	Methodology	Journal
(Yaseen et al., 2019)	There is a positive relathionship between the presence of women on boardroom and CSR	Fixed effects panel regression	Academy of Accounting and Financial Studies Journal
(Aslam et al., 2018)	The number of female directors is positively associated with CSR disclosure	Multiple regression model	Journal of Managerial Sciences
(Liao et al., 2018)	Female members of company boards influence positively CSR assurance	Logistic regression	Journal of Business Ethics
(Ben-Amar et al., 2017)	The proportion of women on board of directors is positively linked to the voluntary climate change disclosure	Probit model with continuous endogenous regressors	Journal of Business Ethics
(Hossain et al., 2017)	There is a positive relathionship between women on boardroom and carbon disclosure information	Fixed effects panel regression	Social Responsibility Journal
(Kyaw et al., 2017)	Female members of corporate boards influence positively CSR and this influence is higher in emerging marckets	Fixed effects panel regression and instrumental variables	Corporate Governance
(Dienes & Velte, 2016)	Women on company board increases CSR reporting intensity	OLS regression	Sustainability Accounting, Management and Policy Journal
(Cuadrado Ballesteros et al., 2015)	Women directors lead to a higher social, economic and environmental responsibility	Tobit regression	Spanish Accounting Review
(Isidro & Sobral, 2015)	Women on board of directors positively influence the compliance with ethical and social rules	Simultaneous equation model	Journal of Business Ethics
(Martínez-Ferrero et al., 2015)	Women on corporate boards influence positively CSR	Tobit regression	Investigaciones Europeas de Dirección y Economía de la Empresa
(Setó-Pamies, 2015)	Women on boardroom have a positive influence on CSR	OLS regression	Corporate Social Responsibility and Environmental Management
(Fernandez-Feijoo et al., 2014)	Companies with al least three women on the board have higher levels of CSR reporting	Hofstede's model	Corporate Social Responsibility and Environmental Management
(Grigoris Giannarakis, 2014)	Women on board of directors have a positive effect on CSR disclosure	OLS regression	Social Responsibility Journal
(Giannarakis et al., 2014)	The proportion of female members on boardroom positively influence CSR disclosure	Fixed effects panel regression	Management Decision
(Boulouta, 2013)	Women on corporate board reinforce the positive practices of CSR and reduce the negatives ones	Generalized method of moments regressions and two-step system	Journal of Business Ethics
(Zhang et al., 2013)	The percentage of women on corporate board enhance CSR performance	Logistic regression	Journal of Business Ethics

characteristics or similitudes. Europe is a geographical area of interest, broad and cohesive, because of its history, tradition and present. Both indices capture large and mid-cap companies, covering around 85% of the free-float market capitalization in the considered countries. MSCI Europe index has 436 constituents, and the MSCI Emerging Markets Europe index includes 62 constituents. The dataset was collected from the Bloomberg database, excluding those firms with missing data to assure the reliability of the research (Liao et al., 2019). The final sample included 8,535 observations in the MSCI index analysis and 646 in de MSCI EM index.

Table 2 describes the sample composition on a country basis, the percentage of women on the board of directors and the score assigned to each country by the Global Gender Gap Report (World Economic Forum, 2019). It can be observed that the United Kingdom is the country with a higher weight in the MSCI sample since it has the 25.73% of companies, followed by Germany and France, with 12.14% and 11.41%, respectively. However, in the MSCI EM sample, Turkey has 29.41% of the total composition, followed by Poland and Russia, both of them with 25.88%. According to the Global Gender Gap Report 2020, developed countries are better ranked than developing countries. Effectively, the average ranking is 0.774 in developed countries and 0.694 in developing countries (it is essential to notice that the value ranges from 0 to 1). This fact is reflected in the percentage of women on company boards, since the average in developed countries is 27.93%, while in developing countries, it is only 13.47%. Thus, developed countries hire, on average, a higher percentage of women on board of directors than developing countries.

Table 3 shows the percentage of companies and women on boards of directors by sectors in the considered time horizon. We observe that the percentage of women on the board of directors is similarly distributed in developed countries, ranging from 29.69% in the cyclical consumer sector to 27.84% in the energy sector. On the contrary, the dispersion is more remarkable in developing countries and, notably, its values are lower, since it ranges from 13.03% in the healthcare sector to 8.32% in the telecommunications sector.

3.2. Description of variables

Table 4 summarizes the variables used in this research and presents their definitions. The dependent variable is the ESG score index assigned by Bloomberg to each company, which ranges from 0.1 to 1 and jointly evaluates its environmental, social and governance performance. Investment managers consider this score an important indicator to decide the final composition of the portfolios, both particular and mutual funds. The Bloomberg database is used not only in real investment but also in market research. The ESG score is considered in previous literature as a proxy for measure the company's corporate social performance (Charumathi & Rahman, 2019; Giannarakis et al., 2014; Grigoris Giannarakis, 2014; Hossain et al., 2017; Manita et al., 2018; Miralles-Quirós et al., 2019; Valls Martínez et al., 2020).

The independent variable is the percentage of women on the board of directors (*PWomen*), defined as the number of women on the company board divided by the total number of board members. It reflects the gender diversity policy of each company at the level of managerial positions. Until now, most studies have been conducted on developed countries. The results show, in general, a positive and significant relationship between the female presence on the board of directors and the CSP. In this sense, we can mention some of them, in

Table 2
Sample composition by countries.

Index	Country of Headquarters	Distribution of companies	Global Gender Gap Report 2020		
			Ranking	Score	% women on boards
MSCI Europe index	Austria	1.76 %	34	0.744	19.20
	Belgium	2.80 %	27	0.750	30.70
	Denmark	3.22 %	14	0.782	30.30
	Finland	2.80 %	3	0.832	32.80
	France	11.41 %	15	0.781	43.40
	Germany	12.14 %	10	0.787	31.90
	Republic of Ireland	1.97 %	7	0.798	17.60
	Italy	5.81 %	76	0.707	34.00
	Luxembourg	1.24 %	51	0.725	12.00
	Netherlands	5.08 %	38	0.736	29.50
	Norway	3.22 %	2	0.842	42.10
	Portugal	0.83 %	35	0.744	16.20
	Spain	5.29 %	8	0.795	22.00
	Sweden	6.95 %	4	0.820	36.30
	Switzerland	8.40 %	18	0.779	21.30
	United Kingdom	25.73 %	21	0.767	27.20
	Others*	1.35 %	-	-	-
MSCI EM Europe index	Czech Republic	4.71%	78	0.706	14.50
	Greece	10.59 %	84	0.701	11.30
	Hungary	3.53 %	105	0.677	14.50
	Poland	25.88 %	40	0.736	20.10
	Russia	25.88 %	81	0.706	7.00
	Turkey	29.41 %	130	0.635	13.40

* Includes Malta, the Danish archipelago of the Faroe Islands and the British territories of Bermuda, Guernsey, Isle of Man and Jersey, all with holdings ranging from 0.10% to 0.31%.

Table 3
Percentage of companies and women on boards by sector.

	MSCI Europe index		MSCI EM Europe index	
	% companies	% women	% companies	% women
Basic materials	8.92	28.88	12.94	9.79
Consumer cyclical	15.25	29.69	11.76	9.71
Consumer non-cyclical	7.26	28.86	5.88	10.36
Energy	4.67	27.84	16.47	11.11
Financials	22.41	28.98	31.76	9.44
Healthcare	7.37	28.45	1.18	13.06
Industrials	20.75	28.49	4.71	8.96
Technology	6.22	28.82	-	-
Telecommunications	3.53	29.49	9.41	8.32
Utilities	3.63	28.91	5.88	9.76

France (Yaseen et al., 2019), Germany (Dienes & Velte, 2016), Europe (Isidro & Sobral, 2015; Kyaw et al., 2017; Valls Martínez et al., 2020), Australia (Aslam et al., 2018), Canada (Ben-Amar et al., 2017), US (Boulouta, 2013; Francoeur et al., 2019) and China (Liao et al., 2019).

However, the number of researches focusing on merging markets is scarce, and the results have not been entirely conclusive. For example, studies in India (Charumathi & Rahman, 2019), Pakistan (Khan et al., 2019) and Malaysia (Sundarasen et al., 2016) found a positive influence of women directors on CSP, but other works performed in Pakistan (Naseem et al., 2017) and Turkey (Colakoglu et al., 2020) found no relationship.

The control variables have been grouped as follows. There are three continuous financial variables: financial market performance, company size and indebtedness.

Financial performance can be identified with accounting or market measures. The first ones, ROE (return on equity) or ROA (return on assets), for instance, represent short-term financial performance since they are based on past events (Gentry & Shen, 2010). Moreover, their figures can be altered by companies, and we question their reliability in all cases. On the contrary, the second ones show the long-term value attributed by investors to the company based on their current situation and prospects (Haslam et al., 2010; Post & Byron, 2015). Specifically, we use Tobin's Q (*TobinQ*), which is the market-to-book

Table 4
Variables description.

Abbreviation	Variable	Definition
ESGScore	ESG Score	ESG score assigned in Bloomberg database
PWomen	Women on board of directors	Percentage of women on board of directors
TobinQ	Tobin's Q	Stock price/replacement value
LnAssets	Company size	Logarithm of total assets
Indebted	Indebtedness	Total debt to total equity, percent
LnCO2Emis	LnCO2Emission	Logarithm of estimated total CO_2 and CO_2 equivalents emission in tonnes
PolEnergy	Policy Energy	Dummy variable, which takes the value 1 if the company apply policy energy efficiency and 0, otherwise
CrisisSystem	Crisis Management Systems	Dummy variable, which takes the value 1 if the company reports on crisis management systems or reputation disaster recovery plans to reduce or minimize the effects of reputation disasters and 0, otherwise
CSRAwards	Corporate Social Responsibility Awards	Dummy variable, which takes the value 1 if the company has received an award for its social, ethical, community or environmental activities or performance and 0, otherwise
CSRCommit	Corporate Social Responsibility Committee	Dummy variable, which takes the value 1 if the company has a CSR committee or team and 0, otherwise
Industry profile	Industry dummies	The considered sectors are: Basic Materials, Consumer Cyclical, Consumer non-Cyclical, Energy, Financials, Healthcare, Industrials, Technology, Telecommunications Services, Utilities

Table 5
Continuous variables: Descriptive statistics and Pearson correlations.

Panel A: Descriptive statistics in the MSCI Europe index					
	Mean	Median	SD	Minimun	Maximum
ESGScore	72.92143	75.02917	13.37257	9.866771	95.86393
PWomen	28.88335	29.41176	11.68102	0	71.42857
TobinQ	4.919933	3.168921	31.49871	-1339.986	1607.868
LnAssets	22.64655	22.43964	2.027086	14.69148	28.90596
Indebted	138.9985	63.1402	1136.312	0	102025
LnCO2Emis	12.7278	12.59975	2.679942	2.890372	19.08337

Panel B: Descriptive statistics in the MSCI EM Europe index					
	Mean	Median	SD	Minimun	Maximum
ESGScore	58.96837	61.07487	15.43498	12.50594	90.45249
PWomen	9.791891	7.692308	11.46108	0	44.44444
TobinQ	0.908597	0.645068	1.008806	0.002403	8.625501
LnAssets	25.03994	24.84373	2.434566	20.12747	31.07136
Indebted	96.77562	56.29021	244.4143	0	5291.243
LnCO2Emis	13.52283	13.52835	2.995749	0.693147	18.74692

Panel C: Pearson correlations in the MSCI Europe index					
	ESGScore	PWomen	TobinQ	LnAssets	Indebted
ESGScore	1.000				
PWomen	0.1896[***]	1.0000			
	(0.0000)				
TobinQ	0.0007	0.0049	1.0000		
	(0.9450)	(0.6487)			
LnAssets	0.2137[***]	0.0576[***]	-0.1137[***]	1.0000	
	(0.0000)	(0.0000)	(0.0000)		
Indebted	0.0189[**]	0.0034	0.3358[***]	0.1967[***]	1.0000
	(0.0815)	(0.7560)	(0.0000)	(0.0000)	
LnCO2Emis	0.3522[***]	-0.0579[***]	-0.0051	0.1737[***]	0.0229[**]
	(0.0000)	(0.0000)	(0.6347)	(0.0000)	(0.0347)

Panel D: Pearson correlations in the MSCI EM Europe index					
	ESGScore	PWomen	TobinQ	LnAssets	Indebted
ESGScore	1.000				
PWomen	0.0626	1.0000			
	(0.1119)				
TobinQ	-0.0334	-0.0119	1.0000		
	(0.3966)	(0.7618)			
LnAssets	0.0605	-0.0199	-0.5683[***]	1.0000	
	(0.1248)	(0.6133)	(0.0000)		
Indebted	0.0402	-0.0042	-0.0342	0.0985[**]	1.0000
	(0.3071)	(0.9161)	(0.3861)	(0.0122)	
LnCO2Emis	0.0071	-0.2258[***]	-0.0437	0.2290[***]	-0.0221
	(0.8562)	(0.0000)	(0.2676)	(0.000)	(0.5756)

[***], [**] and [*] indicate less than 1% significance level, less than 5% and less than 10%, respectively.
Number of observations = 8,535 in the MSCI index and 646 in the MSCI EM index.

value ratio (Huselid, 1995; Valls Martínez & Cruz Rambaud, 2019; Wiggins & Ruefli, 2002). It is an external value (Pletzer et al., 2015) not subject to the influence of taxes or accounting rules (Montgomery & Wernerfelt, 1988). Some studies find a positive influence of this variable on CSP (Ben-Amar et al., 2017; Hossain et al., 2017; Valls Martínez et al., 2019), but in other cases, there is a lack of relationship between the two variables (Francoeur et al., 2019).

The natural logarithm of the total assets (*LnAssets*) at the end of each considered year represents the company size. Bigger companies influence CSP positively for two reasons. These firms are more exposed to publish scrutiny and, consequently, disclose more information about their corporate responsibility initiatives. On the other hand, they dispose of more resources to invest in CSR practices (Grigoris Giannarakis, 2014). In this sense, a good number of previous research found a positive link between size and CSP (Aslam et al.,

2018; Ben-Amar et al., 2017; Grigoris Giannarakis, 2014; Kyaw et al., 2017; Liao et al., 2019; Sial et al., 2018). Only a few research found a negative relationship (Dienes & Velte, 2016; Hou, 2019). Finally, there are even some articles where the results are mixed, depending on the considered model (Francoeur et al., 2019; Valls Martínez et al., 2020).

The total debt to total equity is the indebtedness ratio (*Indebted*). The implementation and disclosure of CSR practices require investment, i.e. funds. Theoretically, the relationship between indebtedness and CSP will be negative, such as is confirmed in previous literature, but not always significantly (Aslam et al., 2018; Ben-Amar et al., 2017; Dienes & Velte, 2016; Giannarakis et al., 2014; Grigoris Giannarakis, 2014; Hou, 2019; Sial et al., 2018). Namely, if the company has a high indebtedness, it will have few resources to invest in CSR (Andrikopoulos & Kriklani, 2013). Similarly, if the indebtedness is low, companies will be able to spend more money on social and environmental practices (Brammer & Pavelin, 2008). Nevertheless, there exist a large number of empirical researches where this kind of relationship is negative or positive, according to the model used (Boulouta, 2013; Kyaw et al., 2017; Prado-Lorenzo et al., 2012; Valls Martínez et al., 2020; Zhang et al., 2013).

Moreover, we use five variables indicative of corporate social responsibility: the CO_2 emissions, a continuous variable, and four dummy variables, which represent, respectively, the existence of policy energy, crisis management systems, corporate social responsibility awards and corporate social responsibility committee.

The logarithm of the estimated emission of carbon dioxide (CO_2), methane and nitrous oxide in tonnes (*LnCO2Emis*) has been used in previous studies (Giannarakis et al., 2014; Valls Martínez et al., 2020) as an important measure of the air pollution due to the company's activities. After the sign of the Kyoto Protocol in 2005, most developed countries committed themselves to reduce the environmental impact of their industry by taking the necessary measures and policies to ensure that companies counteract the harmful effects of their emissions. Therefore, according to legitimacy theory, when such actions are indeed implemented, it is expected a positive relationship between the CO_2 emissions and the CSP (Charumathi & Rahman, 2019; Dragomir, 2010; Gonzalez-Gonzalez & Zamora Ramírez, 2016). If this relationship were inverse, companies would not be complying with their CSR (Delmas & Blass, 2010; Freedman & Jaggi, 2011).

We also consider as a key indicator if the company has an efficient energy policy (*PolEnergy*); the company reports on crisis management systems or reputation disaster recovery plans to reduce or minimize the effects of reputation disasters (*CrisisSystem*); the company has received an award for its social, ethical, community or environmental activities or performance (*CSRAwards*); and, finally, if the company has a CSR committee or team (*CSRCommit*) (Isidro & Sobral, 2015; Valls Martínez et al., 2020).

In the end, dummies variables have been used to control the ten different industry profiles since social pressures and legal rules force industries more environmentally sensitive to carry out responsible policies to mitigate the damage caused by their activities (Galani et al., 2012; Grigoris Giannarakis & Litinas, 2011; Valls Martínez & Cruz Rambaud, 2019).

3.3. Methodology

We applied four econometric models in the two empirical studies developed: MSCI Europe index (a) and MSCI EM Europe index (b). First, Models 1a and 1b represent an ordinary least squares (OLS) regression by including the independent and control variables to explain the dependent variable, in line with previous literature (Bear et al., 2010; Bernardi & Threadgill, 2010; Martínez-Ferrero et al., 2015; Reverte, 2009).

Second, Models 2a and 2b added the quadratic term of the independent variable to investigate if the relationship between CSP and

Table 6
Dummy variables: Differences of means in the value of the explanatory variables and ANOVA test.

Panel A: MSCI Europe index					
	Difference of means test (t-test)			ANOVA test	
Variables	Mean group 0	Mean group 1	Difference[+]	F[+]	Adjust R^2
PolEnergy	52.67042	74.13479	-21.46437*** (0.0000)	1489.89*** (0.0000)	0.1371
CrisisSystem	66.68807	74.95365	-8.265577*** (0.0000)	713.67*** (0.0000)	0.0707
CSRAwards	66.43188	77.49060	-11.05872*** (0.0000)	1859.14*** (0.0000)	0.1656
CSRCommit	57.53902	75.27809	-17.73907*** (0.0000)	2379.74*** (0.0000)	0.2025

Panel B: MSCI EM Europe index					
	Difference of means test (t-test)			ANOVA test	
Variables	Mean group 0	Mean group 1	Difference[+]	F[+]	Adjust R^2
PolEnergy	32.34093	62.35729	-30.01635*** (0.0000)	475.22*** (0.0000)	0.1147
CrisisSystem	50.8835	66.65661	-15.77311*** (0.0000)	238.85*** (0.0000)	0.0285
CSRAwards	49.94138	61.39498	-11.4536*** (0.0000)	76.69*** (0.0000)	0.1568
CSRCommit	51.24941	64.76409	-13.51468*** (0.0000)	159.20*** (0.0000)	0.0887

[+] p-value in parentheses.
*** indicates less than 1% significance level.

the percentage of women on the board of directors was nonlinear. Until now, we had found several studies that affirm a U-shaped relationship, which implies that there is a critical mass, namely, a minimum percentage of women necessary to influence positively on CSP (Amorelli & García-Sánchez, 2020; Fernandez-Feijoo et al., 2014). However, we wanted to check if the existence of a majority number of women is as undesirable as a majority of male representation, in which case the curve would be inverted U-shaped (Valls Martínez et al., 2020).

Third, Models 3a and 3b added the lagged dependent variable (1 lag) as an independent variable to control possible endogeneity and reverse causality problems since CSP and the percentage of female directors might influence each other (Francoeur et al., 2019; Valls Martínez et al., 2020).

Fourth, in Models 4a and 4b, we applied panel data methodology to monitor omitted variables and overcome unobservable heterogeneity in the empirical analysis (Boulouta, 2013; Miralles-Quiros, Miralles-Quiros & Guia Arraiano, 2017, 2017b). Hausman test was implemented to check if the model of fixed effects estimation, appropriate when the unobservable heterogeneity between the individuals is correlated with the regressors, represented the most consistent estimators or, otherwise, the model of random effects estimation should be applied (Campbell & Mínguez-Vera, 2008). Moreover, the Lagrange multiplier test was used to determine if the fixed effects model provided better results than the pooled linear regression (Breusch & Pagan, 1980). The methodology used is sufficiently contrasted in empirical studies in this line of research, as shown in Table 1.

Moreover, we compared all the models with the Akaike information criterion (AIC) and the Bayesian information criterion (BIC). In both criteria, the smaller value shows the better model. Furthermore, as usual, we tested the goodness of fit for each model with the F-statistic, a measure of the joint significance of regressors, and the adjusted R^2, which indicates the proportion of variation of the dependent variable explained by the explanatory variables.

Finally, in Models 5a and 5b, and with a purely exploratory intention, since there is no previous evidence, we tested the interaction effects of both company size and CO_2 emission with gender, applying OLS regression with quadratic effect and lagged variable. Similarly, in Models 6a and 6b with panel data methodology.

4. Results

4.1. Descriptive statistics and correlations

Table 5 shows the main descriptive statistics for continuous variables in the sample period for the MSCI Europe index (Panel A) and the MSCI EM Europe index (Panel B). We can observe that the mean of the ESG Score is noticeably higher in developing countries than in emerging markets, while the standard deviation is below. That is, developed countries implement more practices of CSR than emerging markets. Besides that, the mean percentage of women on corporate boards is over three times in developing countries than in emerging markets. Likewise, the median is over four times. These figures are in line with the Global Gender Gap Report 2020 (World Economic Forum, 2019), which we reflected in Table 2 and commented on in Section 3.1 of this article. Tobin's Q value difference between the two samples is striking, indicating how developed countries value companies far above their book value while emerging markets value them below. Likewise, indebtedness is almost 44% higher in developed countries.

Panels C and D present the correlation analysis in the MSCI Europe index and MSCI EM Europe index, respectively. Both of them show a positive relationship between the dependent and independent variables, but in the developed countries is at the highest level of significance, while in emerging markets is not significant. Since we want to test not a linear but a quadratic relationship, it is plausible that the correlation is not significant, and the relationship, however, is verified. Analogously, company size, indebtedness and CO_2 emissions show a positive correlation with ESG Score, very significantly in developed countries and not significant in emerging markets. However, Tobin's Q shows a different sign in the two samples, i.e. it is positively correlated in the MSC Europe index and negatively in the emerging countries. It is not significant in both markets.

Table 6 shows the t-test of the difference of means and the analysis of variance (ANOVA) performed to test the significance of the

Table 7
Regressions in the MSCI Europe index.

Variable	OLS Regression Model 1a	OLS Regression Model 2a	OLS Regression Model 3a	FERegression Model 4a
Intercept	15.61455***	13.72603***	8.806163***	159.2251***
	(0.000)	(0.000)	(0.000)	(0.000)
ESGScore (1lag)			0.1158756***	-0.0328267***
			(0.000)	(0.001)
PWomen	0.1806813***	0.368749***	0.3814648***	0.3667906***
	(0.000)	(0.000)	(0.000)	(0.000)
PWomen^2		-0.0033429***	-0.0034478***	-0.0033369***
		(0.000)	(0.000)	(0.000)
TobinQ	0.0103232**	0.0103834**	0.0101002**	-0.0086192
	(0.0030)	(0.029)	(0.035)	(0.205)
LnAssets	0.8382105***	0.8353607***	0.7642018***	-5.195122***
	(0.000)	(0.000)	(0.000)	(0.000)
Indebted	-0.0011554**	-0.0011487**	-0.001435***	0.0002153
	(0.027)	(0.027)	(0.010)	(0.793)
PolEnergy	8.815335***	8.735851***	8.58084***	8.185782***
	(0.000)	(0.000)	(0.000)	(0.000)
LnCO2Emis	0.7642301***	0.7597481***	0.642392***	0.449099***
	(0.000)	(0.000)	(0.000)	(0.000)
CrisisSystem	2.427077***	2.2376778***	2.262122***	1.686418***
	(0.000)	(0.000)	(0.000)	(0.000)
CSRAwards	7.482084***	7.453579***	7.349961***	6.999983***
	(0.000)	(0.000)	(0.000)	(0.000)
CSRCommit	10.3471***	10.2595***	9.520561***	9.211814***
	(0.000)	(0.000)	(0.000)	(0.000)
Industry dummies	Yes	Yes	Yes	No
Adjusted R^2	0.4198	0.4218	0.4297	0.5501
F-statistic	343.97***	328.68***	287.36***	319.35***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Breusch-Pagan test				1.58***
				(0.0000)
Hausman test				3,593.66***
				(0.0000)
Number of observations	8,535	8,535	7,602	7,602
AIC	63,931.30	63,901.93	56,847.37	55,293.43
BIC	64,065.29	64,042.97	56,993.03	55,376.67

*** , ** and * indicate a significance of less than 1 %, less than 5% and less than 10%, respectively.
AIC and BIC: smaller is better.

dummy control variables on the dependent variable. All variables are significant at the highest level. From its part, Panel A indicates that in the sample of the MSCI Europe index, the existence of a CSR committee is the most influential variable, while in the sample of MSCI EM Europe index is CSR awards. In both markets, the least influential variable is the existence of crisis management systems.

4.2. Multivariate Analysis and Hypothesis Testing

Tables 7 and 8 show the results of the four applied models for the MSCI Europe index (Models a) and the MSCI EM Europe index (Models b).

Firstly, Models 1a and 1b applied OLS regression and verified a positive and significant relationship between the percentage of women on the board of directors and CSR performance in both of the samples studied. Second, Models 2a and 2b included the quadratic term of the independent variable to check if the relationship between CSR performance and the percentage of female members on the company's board was linear or non-linear. In the two samples, the coefficient of *PWomen* was positive and significant at the highest level (*p*-value lower than 0.01 in both cases), and the coefficient of *PWomen*^{2} was negative and with maximum significance (*p*-value is also lower than 0.01 in both cases). Therefore, the sign of the coefficients of *PWomen* and *PWomen*^{2} confirmed that the relationship between the independent and dependent variables was inverted U-shaped in both developed and emerging European markets.

Consequently, we included the lagged dependent variable (1 lag) as an explanatory variable in Models 3a and 3b. The results were in line with the precedent models, confirming an inverted U-shaped relationship. To conclude, we combined time-series and cross-

sectional data in panel data with fixed effects in Models 4a and 4b since the Hausman test presented a *p*-value smaller than 0.05, so the fixed effects option was preferred to random effects.

To select the best of the four models in each study, we applied, on the one hand, the Breusch-Pagan test, which indicated that panel data models were, in both indices, better than pooled models by considering the same variables. Namely, Model 4a was better than Model 3a and, analogously, Model 4b was better than Model 3b. On the other hand, the AIC and BIC criteria determined that Model 4a > 3a > 2a > 1a, where > indicates "more preferred than". Analogously, Model 4b > 3b > 2b > 1b. Finally, when we observed the adjusted R^2, the gradation of selected models was the same. The proportion of variance explained in the study of the MSCI Europe index was 55.01% and in the study of the MSCI EM Europe index was 60.77%.

In conclusion, Model 4a was the best in the sample of the MSCI Europe index and Model 4b in the sample of the MSCI EM Europe index. Accordingly, we can affirm that the percentage of women on the board of directors influenced CSR performance positively up to a specific limit. Beyond this, influence turned negative, both in developed and emerging European markets. Therefore, our hypotheses H1 and H2 were confirmed since gender diversity on the board of directors was positively related to company CSR performance, both in the sample of the MSCI Europe index and in the MSCI EM Europe index sample.

Next, we determined the turning point in the relation between gender diversity and CSR performance. We performed a regression considering only the percentage of female directors as an explanatory variable and including the quadratic term. Results revealed that the maximum for the MSCI Europe index barely exceeded 42%. For the MSCI EM Europe index, the value was

Table 8
Regressions in the MSCI EM Europe index.

Variable	OLS Regression Model 1b	OLS Regression Model 2b	OLS Regression Model 3b	FERegression Model 4b
Intercept	28.40439[***]	29.17561[***]	25.18989[***]	18.96203
	(0.000)	(0.000)	(0.000)	(0.595)
ESGScore (1lag)			0.1532635[***]	0.1110352[***]
			(0.000)	(0.001)
PWomen	0.2155394[***]	0.6158479[***]	0.6655296[***]	0.736466[***]
	(0.000)	(0.000)	(0.000)	(0.000)
$PWomen^2$		-0.0117011[***]	-0.0145564[***]	-0.0146648[***]
		(0.000)	(0.000)	(0.000)
TobinQ	-0.1071906	-0.0840131	0.2798806	-0.0599791
	(0.850)	(0.881)	(0.659)	(0.960)
LnAssets	-0.1238272	-0.1920469	-0.2839977	0.1605331
	(0.617)	(0.433)	(0.291)	(0.910)
Indebted	0.0006361	0.0004355	-0.0005052	-0.0001019
	(0.703)	(0.791)	(0.764)	(0.958)
PolEnergy	22.28605[***]	21.6457[***]	20.73485[***]	22.1738[***]
	(0.000)	(0.000)	(0.000)	(0.000)
LnCO2Emis	-0.0537274	-0.0097033	-0.1583998	-0.1981179
	(0.718)	(0.947)	(0.322)	(0.263)
CrisisSystem	9.003982[***]	8.901034[***]	9.030383	9.089376[***]
	(0.000)	(0.000)	(0.000)	(0.000)
CSRAwards	3.786627[***]	4.009257[***]	3.923335[***]	3.407336[***]
	(0.000)	(0.000)	(0.001)	(0.006)
CSRCommit	5.852971[***]	4.777914[***]	4.739763[***]	3.570833[***]
	(0.000)	(0.000)	(0.000)	(0.002)
Industry dummies	Yes	Yes	Yes	No
Adjusted R^2	0.5732	0.5850	0.5981	0.6077
F-statistic	51.95[***]	51.51[***]	41.03[***]	62.65[***]
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Breusch-Pagan test				1.27[*]
				(0.0673)
Hausman test				42.54[***]
				(0.0000)
Number of observations	646	646	512	512
AIC	4,864.778	4,847.627	3,825.031	3,712.036
BIC	4,945.253	4,932.573	3,909.798	3,762.896

[***], [**] and [*] indicate a significance of less than 1 %, less than 5% and less than 10%, respectively.
AIC and BIC: smaller is better.

almost 20%. Figure 1 and 2 depicts the scatter graphics for the two indices.

We want to highlight the difference between the two samples for company size and CO_2 emissions for the remaining control variables. Company size is negatively related to CSR performance significantly in developed countries, while its coefficient is positive and no significant in emerging markets. Thus, the largest companies have less CSR performance in developed countries, but the size is not influential in social and environmental rating in developing markets. A similar situation, but with the opposite sign, occurs with CO_2 emissions. Companies in developed European countries with higher CO_2 emissions also have higher ESG scores, while companies located in emerging European markets have lower ESG scores.

In the results reported, we do not include the coefficients and their significance for the industry dummies variables in OLS regressions (obviously, in fixed effects, the industry dummies variables have not to sense). In this regard, we would like to point out that there are two significant sectors. In Model 3a, *financials* companies presented a negative and significant relationship with ESG score, while in Model 3b, the relationship was positive. However, the *healthcare* sector showed a positive and significant relationship in developed and emerging markets.

Table 9 shows the results of including the interaction effects of size and CO_2 emissions with gender. In developed and developing markets, fixed effects models (Models 6a and 6b) outperform OLS regression models (Models 5a and 5b). However, looking at the R^2 coefficient and the AIC and BIC criteria, these models do not improve validity but remain at similar levels to those shown by Models 4a and 4b.

The interaction term is not significant for firm size, except in Model 5a, where a pure moderation effect does appear. However, there is a significant interaction with CO_2 emissions, which can be called competitive due to its negative sign (Nitzl et al., 2016).

To better understand how this effect works, each sample was divided into two subsamples, depending on whether CO_2 emissions were lower or higher than the median of their distribution. Then the function relating the percentage of women on the board of directors to the ESG score was adjusted in both cases, showing striking differences as shown in Figs. 3 and 4.

For developed countries, maximum gender diversity benefits CSR when CO_2 emissions are lower, but most women are more beneficial when emissions are higher. Similarly, when companies produce higher CO_2 emissions in developing countries, greater diversity is required to achieve better CSR performance.

5. Discussion and conclusions

The fifth sustainable development goal in the United Nations' 2030 Agenda is gender equality, including equal presence at the management positions. Likewise, countries have required gender quotas on company boards, mainly in public companies and listed companies in the exchange markets. European countries are at the forefront of establishing legal quotas (Valls Martínez & Cruz Rambaud, 2019; Valls Martínez et al., 2019). However, this fact is not without its criticism. On the one hand, many people think that women should be hired by their education and experience, not because of their sex. On the other hand, private companies are not instruments of social change, especially in a free market, but entities require benefits to survive. They must have the freedom to hire directors according to

Table 9
Moderating effects.

Variable	MSCI Europe index		MSCI EM Europe index	
	OLS RegressionModel 5a	FERegressionModel 6a	OLS RegressionModel 5b	FERegressionModel 6b
Intercept	13.3264***	156.2351***	16.72922**	16.21849
	(0.001)	(0.000)	(0.030)	(0.647)
ESGScore (1lag)	0.1162109***	-0.031859***	0.1448101***	0.1055623***
	(0.000)	(0.002)	(0.000)	(0.001)
PWomen	0.2540861**	0.4307462***	1.82515***	1.329165**
	(0.041)	(0.001)	(0.000)	(0.014)
PWomen²	-0.0038168***	-0.003593***	-0.0184862**	-0.018418***
	(0.000)	(0.000)	(0.000)	(0.000)
TobinQ	0.0100955**	-0.0081729	0.165159	-0.1403601
	(0.035)	(0.229)	(0.792)	(0.905)
LnAssets	0.2612068	-5.306079***	-0.2731385	0.0116957
	(0.130)	(0.000)	(0.375)	(0.993)
PWomen x LnAssets	0.0167749***	0.0059985	-0.0042789	0.0110717
	(0.002)	(0.281)	(0.808)	(0.585)
Indebted	-0.0014618***	0.0002156	-0.0004093	-0.0001409
	(0.009)	(0.793)	(0.804)	(0.941)
PolEnergy	8.381315***	8.017078***	21.79089***	22.60909***
	(0.000)	(0.000)	(0.000)	(0.000)
LnCO2Emis	1.174638***	0.8761223***	0.3693637*	0.2236068
	(0.000)	(0.000)	(0.070)	(0.324)
PWomen x LnCO2Emis	-0.0186642***	-0.014939***	-0.0731143***	-0.059185***
	(0.000)	(0.000)	(0.000)	(0.003)
CrisisSystem	2.336798***	7.739875***	9.635431***	9.607239***
	(0.000)	(0.000)	(0.000)	(0.000)
CSRAwards	7.264523***	6.934434***	4.334775***	3.802962***
	(0.000)	(0.000)	(0.001)	(0.002)
CSRCommit	9.647796***	9.310146***	4.548951***	3.421014***
	(0.000)	(0.000)	(0.000)	(0.003)
Industry dummies	Yes	No	Yes	No
Adjusted R²	0.4319	0.4686	0.6113	0.6077
F-statistic	263.66***	302.40***	39.27***	62.65***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Hausman test		3288,54***		31.90***
		(0.0000)		(0.0025)
Number of observations	7,602	7,602	512	512
AIC	56,820.13	55,279.39	3,809.88	3,705.37
BIC	56,979.66	55,376.49	3,903.12	3,764.71

***, ** and * indicate a significance of less than 1 %, less than 5% and less than 10%, respectively.
AIC and BIC: smaller is better.

their criteria and needs. Even if women are hired based on the legal quota, they are likely to be discriminated against by their male counterparts and their opinions are not considered (Gennari, 2018). Namely, companies would implement gender diversity only if they have additional economic benefits (Bernardi & Threadgill, 2010).

2030 Agenda has strengthened the importance of CSR performance, and companies are, at this moment, more involved in the implementation of activities aimed at social and environmental issues (Williams et al., 2019). Companies have to be more accountable than ever to mitigate the adverse effects caused by economic development. From a social role perspective, women are more sensitive to the environment and empathetic to social problems. Therefore, a higher percentage of women on the board of directors will increase the CSR performance of a company (Boulouta, 2013).
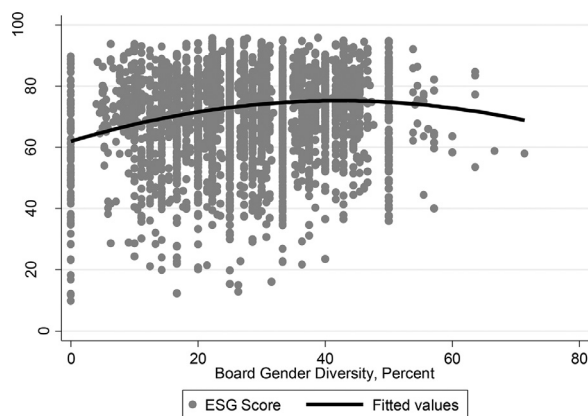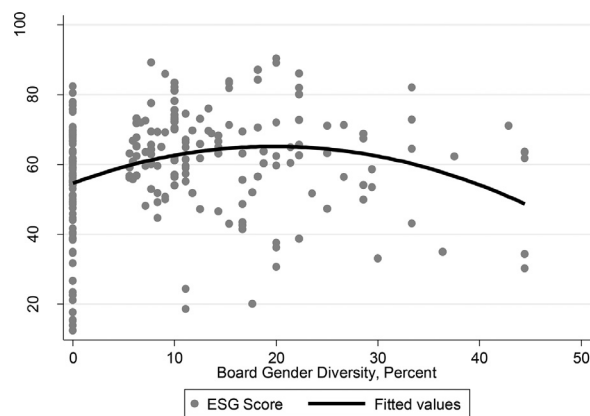

Fig. 1. MSCI Europe index.
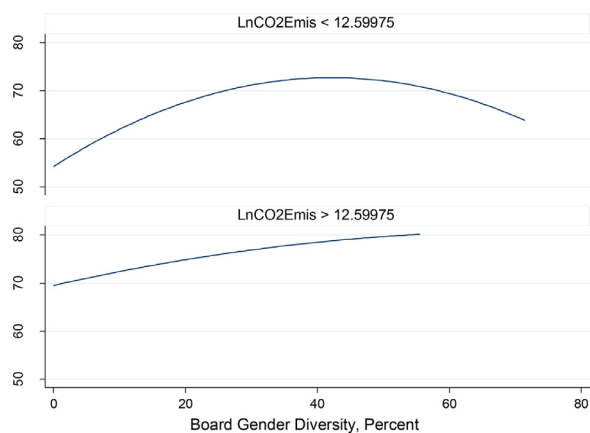

Fig. 2. MSCI Emerging Europe index.

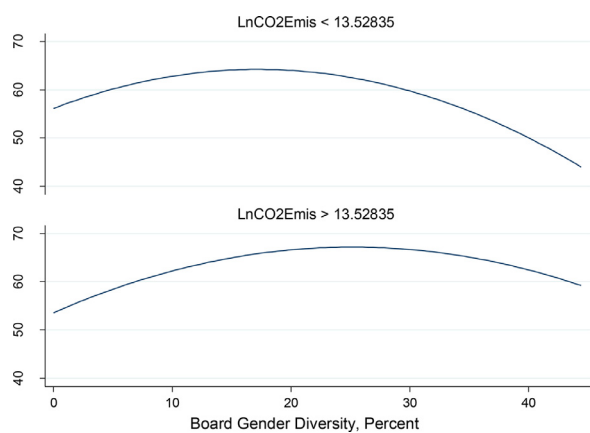**Fig. 3.** MSCI Europe index by CO2 emissions.

Fig. 4. MSCI Emerging Europe index by CO2 emissions.

Furthermore, from a legitimacy theory, gender equality in management positions will improve the company's image and increase its moral legitimacy in society (Zhang et al., 2013). Currently, investors require socially responsible investment. They search for companies with gender diversity, and the bigger demand in the market will imply a higher price (Gallego-Álvarez et al., 2010; Reguera-Alvarado et al., 2017). Diversity is a signal to markets that gives the company a greater degree of legitimacy and enhances its reputation. Thus, from a theoretical point of view, there are solid reasons to support gender diversity on the board of directors, and empirical studies are also necessary to build compelling arguments on which to base political theories.

The purpose of this article is to examine the impact of gender diversity on board of directors on CSR performance, both in developed and developing European markets. By comparing both types of countries in the same European context, using similar methodology, variables and analysis period (from 2010 to 2019), the results allow for consistent comparison, and it is possible to analyse whether the behaviour is similar or, conversely, whether there is any noticeable difference. Our results, in line with previous research, show that women in the boardroom increase CSR performance (Bear et al., 2010; Ben-Amar et al., 2017; Bernardi & Threadgill, 2010; Cuadrado Ballesteros et al., 2015; Dienes & Velte, 2016; Francoeur et al., 2019; Grigoris Giannarakis, 2014; Hossain et al., 2017; Khan et al., 2019; Kyaw et al., 2017; Manita et al., 2018; Sundarasen et al., 2016; Valls Martínez et al., 2019; Zhang et al., 2013). However, we find a quadratic relationship between the percentage of women directors and the extent of the company's CSR, a

U-shaped inverted curve. Therefore, the ideal frame is to increase gender diversity since a low percentage of women on the board of directors is not appropriate to the company's performance. Likewise, if the percentage of men is low, the company's performance will be damaged, which has been hardly acknowledged so far (Birindelli et al., 2019; Pucheta-Martínez et al., 2019; Valls Martínez et al., 2020).

However, when distinguishing between companies with higher and lower CO_2 emission levels, it is concluded that gender diversity indeed reinforces CSR performance when companies are less polluting. However, in companies with higher emissions, the majority presence of women contributes positively to implementing sustainability measures, especially in developed countries. In emerging countries, there is also an increase in the proportion of women leading to maximum CSR. Indeed, from an empirical point of view, the theories mentioned above showing the greater corporate, social and environmental sensitivity of women are confirmed.

In our empirical dataset, the average ESG score is 23.65% higher in developed countries than in emerging markets (72.92 and 58.97, respectively), indicating greater compliance of environmental, social and governance measures in companies located in developed countries.

Analogously, the average percentage of women is 195% higher in developed countries than in emerging markets (28.88 and 9.79, respectively). These patterns are in line with the general gender gap in both clusters of countries, such as we exposed in Table 2, and with the empirical turning point of women shows in Figs. 1 and 2, which is noticeably lower in emerging markets. We could infer that in developed markets the female education is higher. However, the female/male ratio in tertiary education is greater than 1 in all countries, both developed and developing, and it presents similar values (World Economic Forum, 2019). Therefore, we can affirm that the level of education is higher in women than in men in all cases.

Nevertheless, women hold management positions at a much lower rate than men, especially in emerging markets. Why are men preferred, even though diversity is beneficial to the company? Why are women's skills undervalued? (Mateos del Cabo et al., 2010)

We consider that the low percentage of women on the company board can be resolved in the medium and long-term with measures such as the following. First, making companies aware of the economic benefits they would gain from gender diversity. Empirical studies, as the present, contribute to the knowledge and diffusion of this social need. Second, proactive policies to balance work and family life are necessary. In this sense, it is appealing that the mean age of women at the birth of the first child is below 30 years old in emerging markets and about this age in developed countries (World Economic Forum, 2019). Third, gender quota policies in the board of directors are effective since European countries with these policies have increased the female presence significantly in management positions (Valls Martínez & Cruz Rambaud, 2019; Valls Martínez et al., 2019).

We want to mention that companies located in developed countries with higher CO_2 emissions carry out activities to control the harmful environmental effects. In this way, they improve their ESG scores. Conversely, this is not the case in emerging markets, where mitigating measures for their polluting effects should be implemented. Moreover, it is remarkable that the healthcare sector is positively related to the ESG scores in both samples, the most sensitive sector in social and environmental issues.

To conclude, we can point out two reasons to enact legal measures to increase gender diversity on the board of directors. The first one, social justice. In effect, equal opportunity is a fundamental right, and women must hold management positions in the same proportion as men. Besides, companies with more female directors use to hire more women in the workforce (Bernardi & Threadgill, 2010). The second one, business enhancement. A higher female presence on board improves the company CSR performance, as was stated above.

Gender diversity legitimizes companies and increases their reputation, which leads investors to select these shares in their portfolios, increasing the stock prices (Gallego-Álvarez et al., 2010; Reguera-Alvarado et al., 2017). In effect, the McKinsey Global Institute established that global incomes would increase more than 25% in the gender parity scenario (Gennari, 2018).

Finally, we believe that the positive and robust relationship found in most studies between women and CSR performance is reinforced by the fact that women are relegated to soft management positions, as CSR areas, human resources, auditing committees or marketing, but is not usual find women as CEO or chief in the financial department. Thus, even in direction, there is discrimination against women (Furlotti et al., 2019; R. J. Williams, 2003). Suppose the most polluting companies have to make a significant effort to comply with legal regulations and legitimize themselves in the eyes of markets and society. In that case, it is logical to think that they are the ones with the most developed CSR committees. If women are assigned to this type of committee, among others, in a particular way, perhaps part of the positive relations between women on boards of directors and CSR that empirical research is finding is nothing more than a consequence of the discrimination that women still suffer today. We believe that, in the future, research along these lines should be carried out.

The findings of this empirical study have useful implications for investors and practitioners. For investors since a higher female presence on the board of directors enhances the company's performance. For policymakers since gender diversity in management positions lead to a more sustainable world. Thus, we can conclude that gender equality law is a valuable instrument to reduce the gender gap and foster the enhancement of CSR scores in companies. Therefore, legal gender quotas contribute to building a more sustainable world in the sense of the United Nations' 2030 Agenda. Nevertheless, we have not forgotten that such legal quotas must be accompanied by other rules that help to balance work and family life.

Finally, we acknowledge the limitations of our study. First, the sample of the MSCI indices could be extended to small and medium companies. Second, it would be interesting to study other markets, in addition to the European market.

Conflict of Interest

There is no conflict of interest.

Acknowledgements

References

Adams, R. B., & Ferreira, D. (2009). Women in the Boardroom and Their Impact on Governance and Performance. *Journal of Fiancial Economics*, *94*(2), 291–309. doi:10.1016/j.jfineco.2008.10.007.

Al-Qahtani, M., & Elgharbawy, A. (2020). The effect of board diversity on disclosure and management of greenhouse gas information: Evidence from the United Kingdom. *Journal of Enterprise Information Management*, *33*(6), 1557–1579. doi:10.1108/JEIM-08-2019-0247.

Ali, M., Ng, Y. L., & Kulik, C. T. (2014). Board age and gender diversity: A test of competing linear and curvilinear predictions. *Journal of Business Ethics*, *125*(3), 497–512. doi:10.1007/s10551-013-1930-9.

Amorelli, M. F., & García-Sánchez, I. M. (2020). Critical mass of female directors, human capital, and stakeholder engagement by corporate social reporting. *Corporate Social Responsibility and Environmental Management*, *27*(1), 204–221. doi:10.1002/csr.1793.

Amorelli, M. F., & García-Sánchez, I. M. (2021). Trends in the dynamic evolution of board gender diversity and corporate social responsibility. *Corporate Social Responsibility and Environmental Management*, *28*(2), 537–554. doi:10.1002/csr.2079.

Andrikopoulos, A., & Kriklani, N. (2013). Environmental disclosure and financial characteristics of the firm: The case of Denmark. *Corporate Social Responsibility and Environmental Management*, *20*(1), 55–64. doi:10.1002/csr.1281.

Aslam, S., Abdul, M., Makki, M., Mahmood, S., & Amin, S. (2018). Gender diversity and managerial ownership response to corporate social responsibility initiatives: Empirical evidence from Australia. *Journal of Managerial Sciences*, *12*(2), 131–151.

Atif, M., Hossain, M., Alam, M. S., & Goergen, M. (2020). Does board gender diversity affect renewable energy consumption? *Journal of Corporate Finance*. doi:10.1016/j.jcorpfin.2020.101665.

Barrientos Báez, A., Báez-García, A. J., Flores-Muñoz, F., & Gutiérrez-Barroso, J. (2018). Gender diversity, corporate governance and firm behavior: The challenge of emotional management. *European Research on Management and Business Economics*, *24*(3), 121–129. doi:10.1016/j.iedeen.2018.07.001.

Bassett-Jones, N. (2005). The paradox of diversity management, creativity and innovation. *Creativity and Innovation Management*, *14*(2), 169–175. doi:10.1111/j.1467-8691.00337.x.

Bear, S., Rahman, N., & Post, C. (2010). The impact of board diversity and gender composition on corporate social responsibility and firm reputation. *Journal of Business Ethics*, *97*(2), 207–221. doi:10.1007/s10551-010-0505-2.

Beji, R., Yousfi, O., Loukil, N., & Omri, A. (2020). Board diversity and corporate social responsibility: Empirical evidence from France. *Journal of Business Ethics*. doi:10.1007/s10551-020-04522-4.

Ben-Amar, W., Chang, M., & McIlkenny, P. (2017). Board gender diversity and corporate response to sustainability initiatives: Evidence from the carbon disclosure project. *Journal of Business Ethics*, *142*(2), 369–383. doi:10.1007/s10551-015-2759-1.

Bernardi, R., & Threadgill, V. (2010). Women Directors and Corporate Social Responsibility. *EJBO : Electronic Journal of Business Ethics and Organizational Studies*, *15*(2), 15–21.

Birindelli, G., Dell'Atti, S., Iannuzzi, A. P., & Savioli, M. (2018). Composition and activity of the board of directors: Impact on ESG performance in the banking system. *Sustainability*, *10*(12), 1–20. doi:10.3390/su10124699.

Birindelli, G., Iannuzzi, A. P., & Savioli, M. (2019). The impact of women leaders on environmental performance: Evidence on gender diversity in banks. *Corporate Social Responsibility and Environmental Management*, *26*(6), 1485–1499. doi:10.1002/csr.1762.

Boulouta, I. (2013). Hidden connections: The link between board gender diversity and corporate social performance. *Journal of Business Ethics*, *113*, 185–197. doi:10.1007/s10551-012-1293-7.

Brammer, S., & Pavelin, S. (2008). Factors influencing the quality of corporate environmental disclosure. *Business Strategy and the Environment*, *17*(2), 120–136. doi:10.1002/bse.506.

Breusch, T. S., & Pagan, A. R. (1980). The lagrange multiplier test and its applications to model specification in econometrics. *The Review of Economic Studies*, *47*(1), 239. doi:10.2307/2297111.

Brown, J. A., & Forster, W. R. (2013). CSR and stakeholder theory: A tale of Adam smith. *Journal of Business Ethics*, *112*, 301–312. doi:10.1007/s10551-012-1251-4.

Campbell, K., & Mínguez-Vera, A. (2008). Gender diversity in the boardroom and firm financial performance. *Journal of Business Ethics*, *83*(3), 435–451. doi:10.1007/s10551-007-9630-y.

Campopiano, G., Rinaldi, F. R., Sciascia, S., & De Massis, A. (2019). Family and non-family women on the board of directors: Effects on corporate citizenship behavior in family-controlled fashion firms. *Journal of Cleaner Production*, *214*, 41–51. doi:10.1016/j.jclepro.2018.12.319.

Charness, G., & Gneezy, U. (2012). Strong evidence for gender differences in risk taking. *Journal of Economic Behavior and Organization*, *83*(1), 50–58. doi:10.1016/j.jebo.2011.06.007.

Charumathi, B., & Rahman, H. (2019). Do women on boards influence climate change disclosures to CDP? - Evidence from large indian companies. *Australasian Accounting, Business and Finance Journal*, *13*(2), 5–31. doi:10.14453/aabfj.v13i2.2.

Colakoglu, N., Eryilmaz, M., & Martínez-Ferrero, J. (2020). Is board diversity an antecedent of corporate social responsibility performance in firms? A research on the 500 biggest Turkish companies. *Social Responsibility Journal*. doi:10.1108/SRJ-07-2019-0251 *February*.

Croson, R., & Gneezy, U. (2009). Gender differences in preferences. *Journal of Economic Literature*, *47*(2), 448–474. doi:10.1257/jel.47.2.448.

Cruz, C., Justo, R., Larraza-Kintana, M., & Garcés-Galdeano, L. (2019). When do women make a better table? Examining the influence of women directors on family firm's corporate social performance. *Entrepreneurship: Theory and Practice*, *43*(2 Special Issue), 282–301. doi:10.1177/1042258718796080.

Cuadrado Ballesteros, B., García Rubio, R., & Martínez Ferrero, J. (2015). Effect of the composition of the board of directors on corporate social responsibility. *Spanish Accounting Review*, *18*(1), 20–31. doi:10.1016/j.rcsar.2014.02.003.

Darus, F., Isa, N., Yusoff, H., & Arshad, R. (2015). Corporate governance and business capabilities: Strategic factors for corporate social responsibility reporting. *Journal of Accounting and Auditing: Research & Practice*, *2015*, 1–9. doi:10.5171/2015.315629.

Dawar, G., & Singh, S. (2016). Corporate social responsibility and gender diversity : A literature review. *Journal of IMS Group, 13*(1), 61–71.

Delmas, M., & Blass, V. D. (2010). Measuring corporate environmental performance: The trade-offs of sustainability ratings. *Business Strategy and the Environment*, *19*(4), 245–260. doi:10.1002/bse.676.

Dienes, D., & Velte, P. (2016). The impact of supervisory board composition on CSR reporting. Evidence from the German two-tier system. *Sustainability*, *8*(1), 1–20. doi:10.3390/su8010063.

Dragomir, V. D. (2010). Environmentally sensitive disclosures and financial performance in a European setting. *Journal of Accounting & Organizational Change*, *6*(3), 359–388. doi:10.1108/18325911011075222.

Eagly, A. H. (2009). The his and hers of prosocial behavior: An examination of the social psychology of gender. *American Psychologist*, *64*(8), 644–658. doi:10.1037/0003-066X.64.8.644.

Eagly, A. H., Johannesen-Schmidt, M. C., & Van Engen, M. L. (2003). Transformational, transactional, and laissez-faire leadership styles: A meta-analysis comparing women and men. *Psychological Bulletin*, *129*(4), 569–591. doi:10.1037/0033-2909.129.4.569.

ElAlfy, A., Darwish, K. M., & Weber, O. (2020). Corporations and sustainable development goals communication on social media: Corporate social responsibility or just another buzzword? *Sustainable Development*1–13. doi:10.1002/sd.2095 May.

Fauzi, F., & Locke, S. (2012). Board structure, ownership structure and firm performance: A study of New Zealand listed-firms. *Asian Academy of Management Journal of Accounting and Finance, 8*(2), 43–67.

Fernandez-Feijoo, B., Romero, S., & Ruiz-Blanco, S. (2014). Women on boards: Do they affect sustainability reporting? *Corporate Social Responsibility and Environmental Management*, *21*(6), 351–364. doi:10.1002/csr.1329.

Fernández-Gago, R., Cabeza-García, L., & Nieto, M. (2018). Independent directors' background and CSR disclosure. *Corporate Social Responsibility and Environmental Management*, *25*(5), 991–1001. doi:10.1002/csr.1515.

Fernandez, W. D., Burnett, M. F., & Gomez, C. B. (2019). Women in the boardroom and corporate social performance: Negotiating the double bind. *Management Decision*, *57*(9), 2201–2222. doi:10.1108/MD-08-2017-0738.

Francoeur, C., Labelle, R., Balti, S., & El Bouzaidi, S. (2019). To what extent do gender diverse boards enhance corporate social performance? *Journal of Business Ethics*, *155*, 343–357. doi:10.1007/s10551-017-3529-z.

Francoeur, C., Labelle, R., & Sinclair-Desgagné, B. (2008). Gender diversity in corporate governance and top management. *Journal of Business Ethics*, *81*(1), 83–95. doi:10.1007/s10551-007-9482-5.

Freedman, M., & Jaggi, B. (2011). Global warming disclosures: Impact of Kyoto protocol across countries. *Journal of International Financial Management and Accounting*, *22*(1), 46–90. doi:10.1111/j.1467-646X.2010.01045.x.

Freeman, R. E. (1984). *Strategic management: A stakeholder approach.* Pitman.

Furlotti, K., Mazza, T., Tibiletti, V., & Triani, S. (2019). Women in top positions on boards of directors: Gender policies disclosed in Italian sustainability reporting. *Corporate Social Responsibility and Environmental Management*, *26*(1), 57–70. doi:10.1002/csr.1657.

Galani, D., Gravas, E., & Stavropoulos, A. (2012). Company characteristics and environmental policy. *Business Strategy and the Environment*, *21*(4), 236–247. doi:10.1002/bse.731.

Gallego-Álvarez, I., García-Sánchez, I. M., & Rodríguez-Dominguez, L. (2010). The influence of gender diversity on corporate performance. *Revista de Contabilidad-Spanish Accounting Review*, *13*(1), 53–88. doi:10.1016/S1138-4891(10)70012-1.

García-Sánchez, I. M., Oliveira, M. C., & Martínez-Ferrero, J. (2020). Female directors and gender issues reporting: The impact of stakeholder engagement at country level. *Corporate Social Responsibility and Environmental Management*, *27*(1), 369–382. doi:10.1002/csr.1811.

García-Sánchez, I. M., Suárez-Fernández, O., & Martínez-Ferrero, J. (2019). Female directors and impression management in sustainability reporting. *International Business Review*, *28*(2), 359–374. doi:10.1016/j.ibusrev.2018.10.007.

Gennari, F. (2018). Gender balance on boards and corporate sustainability for the 2030 Agenda. *African Journal of Business Management*, *12*(11), 343–356. doi:10.5897/ajbm2018.8553.

Gentry, R. J., & Shen, W. (2010). The relationship between accounting and market measures of firm financial performance: How Strong Is It? *Journal of Managerial Issues*, *22*(4), 514–530.

Giannarakis, G. (2014). Corporate governance and financial characteristic effects on the extent of corporate social responsibility disclosure. *Social Responsibility Journal*, *10*(4), 569–590. doi:10.1108/SRJ-02-2013-0008.

Giannarakis, G., Konteos, G., & Sariannidis, N. (2014). Financial, governance and environmental determinants of corporate social responsible disclosure. *Management Decision*, *52*(10), 1928–1951. doi:10.1108/MD-05-2014-0296.

Giannarakis, Grigoris. (2014). Corporate governance and financial characteristic effects on the extent of corporate social responsibility disclosure. *Social Responsibility Journal*, *10*(4), 569–590. doi:10.1108/SRJ-02-2013-0008.

Giannarakis, Grigoris, Konteos, G., & Sariannidis, N. (2014). Financial, governance and environmental determinants of corporate social responsible disclosure. *Management Decision*, *52*(10), 1928–1951. doi:10.1108/MD-05-2014-0296.

Giannarakis, Grigoris, & Litinas, N. (2011). Corporate Social Responsibility Performance in the Greek Telecommunication Sector. *Strategic Change*, *20*, 73–84. doi:10.1002/jsc.886.

Glass, C., Cook, A., & Ingersoll, A. R. (2016). Do Women Leaders Promote Sustainability? Analyzing the Effect of Corporate Governance Composition on Environmental Performance. *Business Strategy and the Environment*, *25*(7), 495–511. doi:10.1002/bse.1879.

Gonzalez-Gonzalez, J. M., & Zamora Ramírez, C. (2016). Voluntary carbon disclosure by Spanish companies: An empirical analysis. *International Journal of Climate Change Strategies and Management*, *8*(1), 57–79. doi:10.1108/IJCCSM-09-2014-0114.

Gulzar, M. A., Cherian, J., Hwang, J., Jiang, Y., & Sial, M. S. (2019). The impact of board gender diversity and foreign institutional investors on the corporate social responsibility (CSR) engagement of Chinese listed companies. *Sustainability (Switzerland)*, *11*(1), 1–19. doi:10.3390/su11020307.

Gutek, B. A., & Morasch, B. (1982). Sex-ratios, sex-role spillover, and sexual harassment of women at work. *Journal of Social Issues*, *38*(4), 55–74. doi:10.1111/j.1540-4560.1982.tb01910.x.

Hambrick, D. C. (2007). Upper echelons theory: An update. *Academy of Management Review*, *32*(2), 334–343. doi:10.5465/amr.2007.24345254.

Hambrick, D. C., & Mason, P. A. (1984). UpperEchelons: TheOrganization as a reflection of its top managers. *The Acadamy of Management Review*, *9*(2), 193–206. doi:10.5465/amr.1984.4277628 Issue.

Harjoto, M. A., & Rossi, F. (2019). Religiosity, female directors, and corporate social responsibility for Italian listed companies. *Journal of Business Research*, *95*(October 2017), 338–346. doi:10.1016/j.jbusres.2018.08.013.

Haslam, S. A., Ryan, M. K., Kulich, C., Trojanowski, G., & Atkins, C. (2010). Investing with prejudice: The relationship between women's presence on company boards and objective and subjective measures of company performance. *British Journal of Management*, *21*(2), 484–497. doi:10.1111/j.1467-8551.2009.00670.x.

Hill, C. W. L., & Jones, T. M. (1992). Stakeholder-Agency Theory. *Journal of Management Studies*, *29*(2), 131–154. doi:10.1111/j.1467-6486.1992.tb00657.x.

Hillman, A. J., Cannella, A. A., & Paetzold, R. L. (2000). The Resource Dependence Role of Corporate Directors: Strategic Adaptation of Board Composition in Response to Environmental Change. *Journal of Management Studies*, *37*(2), 235–256. doi:10.1111/1467-6486.00179.

Hollindale, J., Kent, P., Routledge, J., & Chapple, L. (2019). Women on boards and greenhouse gas emission disclosures. *Accounting and Finance*, *59*(1), 277–308. doi:10.1111/acfi.12258.

Hossain, M., Al Farooque, O., Momin, M. A., & Almotairy, O. (2017). Women in the boardroom and their impact on climate change related disclosure. *Social Responsibility Journal*, *13*(4), 828–855. doi:10.1108/SRJ-11-2016-0208.

Hou, T. C. T. (2019). The relationship between corporate social responsibility and sustainable financial performance: Firm-level evidence from Taiwan. *Corporate Social Responsibility and Environmental Management*, *26*(1), 19–28. doi:10.1002/csr.1647.

Huselid, M. A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal*, *38*(3), 635–672. doi:10.5465/256741.

Ibrahim, N. A., & Angelidis, J. P. (1994). Effect of board members gender on corporate social responsiveness orientation. *Journal of Applied Business Research*, *10*(1), 35–40. doi:10.19030/jabr.v10i1.5961.

Isidro, H., & Sobral, M. (2015). The effects of women on corporate boards on firm value, financial performance, and ethical and social compliance. *Journal of Business Ethics*, *132*(1), 1–19. doi:10.1007/s10551-014-2302-9.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics*, *3*(4), 305–360. doi:10.1016/0304-405X(76)90026-X.

Jhunjhunwala, S., & Mishra, R. K. (2012). Board diversity and corporate performance: The Indian evidence. *The IUP Journal of Corporate Governance, 11*(3), 71–79.

Jianakoplos, N. A., & Bernasek, A. (1998). Are women more risk averse? *Economic Inquiry*, *36*(4), 620–630. doi:10.1111/j.1465-7295.1998.tb01740.x.

Khan, I., Khan, I., & Saeed, B.bin. (2019). Does board diversity affect quality of corporate social responsibility disclosure? Evidence from Pakistan. *Corporate Social Responsibility and Environmental Management*, *26*(6), 1371–1381. doi:10.1002/csr.1753.

Kılıç, M., & Kuzey, C. (2019). The effect of corporate governance on carbon emission disclosures: Evidence from Turkey. *International Journal of Climate Change Strategies and Management*, *11*(1), 35–53. doi:10.1108/IJCCSM-07-2017-0144.

Konrad, A. M., Ritchie, J. E., Lieb, P., & Corrigall, E. (2000). Sex differences and similarities in job attribute preferences: A meta-analysis. *Psychological Bulletin*, *126*(4), 593–641. doi:10.1037/0033-2909.126.4.593.

Kyaw, K., Olugbode, M., & Petracci, B. (2017). Can board gender diversity promote corporate social performance? *Corporate Governance International Journal of Business in Society*, *17*(5), 789–802. doi:10.1108/CG-09-2016-0183.

Liao, L., Lin, T. P., & Zhang, Y. (2018). Corporate board and corporate social responsibility assurance: Evidence from China. *Journal of Business Ethics*, *150*(1), 211–225. doi:10.1007/s10551-016-3176-9.

Liao, Z., Zhang, M., & Wang, X. (2019). Do female directors influence firms' environmental innovation? The moderating role of ownership type. *Corporate Social Responsibility and Environmental Management*, *26*(1), 257–263. doi:10.1002/csr.1677.

Lofgren, K., Persson, T., & Weibull, J. W. (2002). Markets with asymmetric information: The contributions of george Akerlof, Michael Spence and Joseph Stiglitz. *The Scandinavian Journal of Economics*, *104*(2), 195–211. doi:10.1111/1467-9442.00280.

Lu, J., & Herremans, I. M. (2019). Board gender diversity and environmental performance: An industries perspective. *Business Strategy and the Environment*, *28*(7), 1449–1464. doi:10.1002/bse.2326.

Majeed, S., Aziz, T., & Saleem, S. (2015). The effect of corporate governance elements on corporate social responsibility (CSR) disclosure: An empirical evidence from listed companies at KSE Pakistan. *International Journal of Financial Studies*, *3*(4), 530–556. doi:10.3390/ijfs3040530.

Manita, R., Bruna, M. G., Dang, R., & Houanti, L. (2018). Board gender diversity and ESG disclosure: Evidence from the USA. *Journal of Applied Accounting Research*, *19*(2), 206–224. doi:10.1108/JAAR-01-2017-0024.

Martínez-Ferrero, J., Vaquero-Cacho, L. A., Cuadrado-Ballesteros, B., & García-Sánchez, I. M. (2015). Corporate governance and corporate social responsibility in banking: The role of the board of directors. *Investigaciones Europeas de Dirección y Economía de La Empresa*, *21*(3), 129–138. doi:10.1016/j.iedee.2015.01.001.

Mason, C., & Simmons, J. (2014). Embedding corporate social responsibility in corporate governance: A stakeholder systems approach. *Journal of Business Ethics*, *119*(1), 77–86. doi:10.1007/s10551-012-1615-9.

Mateos del Cabo, R., Gimeno, R., & Escot, L. (2010). Disentangling discrimination on Spanish boards of directors. *Corporate Governance: An International Review*, *19*(1), 77–95. doi:10.1111/j.1467-8683.2010.00837.x.

Miralles-Quiros, M. M., Miralles-Quiros, J. L., & Guia Arraiano, I. (2017). Are firms that contribute to sustainable development valued by investors? *Corporate Social Responsibility and Environmental Management*, 24(1), 71–84. doi:10.1002/csr.1392.

Miralles-Quiros, M. M., Miralles-Quiros, J. L., & Guia Arraiano, I. (2017b). Sustainable development, sustainability leadership and firm valuation: Differences across Europe. *Business Strategy and the Environment*, 26(7), 1014–1028. doi:10.1002/bse.1964.

Miralles-Quirós, M. M., Miralles-Quirós, J. L., & Redondo-Hernández, J. (2019). The impact of environmental, social, and governance performance on stock prices: Evidence from the banking industry. *Corporate Social Responsibility and Environmental Management*, 26(6), 1446–1456. doi:10.1002/csr.1759.

Montgomery, C. A., & Wernerfelt, B. (1988). Tobin's Q and the importance of focus in firm. *Performance*, 78(1), 246–250.

Naseem, M. A., Riaz, S., Rehman, R. U., Ikram, A., & Malik, F. (2017). Impact of board characteristics on corporate social responsibility disclosure. *The Journal of Applied Business Research*, 33(4), 801–810.

Nicholson, G. J., & Kiel, G. C. (2007). Can directors impact performance? A case-based test of three theories of corporate governance. *Corporate Governance: An International Review*, 15(4), 585–608. doi:10.1111/j.1467-8683.2007.00590.x.

Nitzl, C., Roldan, J. L., & Cepeda, G. (2016). Mediation analysis in partial least squares path modelling, helping researchers discuss more sophisticated models. *Industrial Management and Data Systems*, 116(9), 1849–1864. doi:10.1108/IMDS-07-2015-0302.

Orazalin, N., & Baydauletov, M. (2020). Corporate social responsibility strategy and corporate environmental and social performance: the moderating role of board gender diversity. *Corporate Social Responsibility and Environmental Management*, 27(4), 1664–1676. doi:10.1002/csr.1915.

Pfeffer, J. (1972). Size and composition of corporate boards of directors : the organization and its environment author (s): Jeffrey Pfeffer published by : sage publications, Inc . on behalf of the Johnson Graduate School of Stable URL : http://www.jstor.org/stable/239395. *Administrative Science Quarterly*, 17(2), 218–228. doi:10.2307/2393956.

Pletzer, J. L., Nikolova, R., Kedzior, K. K., & Voelpel, S. C. (2015). Does gender matter? female representation on corporate boards and firm financial performance - a meta-analysis. *PLoS ONE*, 10(6), 1–20. doi:10.1371/journal.pone.0130005.

Post, C., & Byron, K. (2015). Women on boards and firm financial performance: A meta-analysis. *Academy of Management Journal*, 58(5), 1546–1571. doi:10.5465/amj.2013.0319.

Post, C., Rahman, N., & Rubow, E. (2011). Green governance: Boards of directors' composition and environmental corporate social responsibility. *In* Business and Society, 50(1). doi:10.1177/0007650310394642 Issue.

Prado-Lorenzo, J. M., García-Sánchez, I. M., & Gallego-Álvarez, I. (2012). Effects of activist shareholding on corporate social responsibility reporting practices: An empirical study in Spain. *Journal of Economics, Finance and Administrative Science, 17*(32), 7–16.

Pucheta-Martínez, M. C., Bel-Oms, I., & Nekhili, M. (2019). The contribution of financial entities to the sustainable development through the reporting of corporate social responsibility information. *Sustainable Development*, 27(3), 388–400. doi:10.1002/sd.1911.

Pucheta-Martínez, M. C., Bel-Oms, I., & Olcina-Sempere, G. (2019). Commitment of independent and institutional women directors to corporate social responsibility reporting. *Business Ethics*, 28(3), 290–304. doi:10.1111/beer.12218.

Pucheta-Martínez, M. C., & Gallego-Álvarez, I. (2019). An international approach of the relationship between board attributes and the disclosure of corporate social responsibility issues. *Corporate Social Responsibility and Environmental Management*, 26(3), 612–627. doi:10.1002/csr.1707.

Pucheta-Martínez, M. C., Olcina-Sempere, G., & López-Zamora, B. (2020). Female directorship on boards and corporate sustainability policies: Their effect on sustainable development. *Sustainable Development*, 28(1), 56–72. doi:10.1002/sd.1965.

Qu, W., & Leung, P. (2006). Cultural impact on Chinese corporate disclosure – a corporate governance perspective. *Managerial Auditing Journal*, 21(3), 241–264. doi:10.1108/02686900610652991.

Ramon-Llorens, M. C., Garcia-Meca, E., & Pucheta-Martínez, M. C. (2021). Female directors on boards. The impact of faultlines on CSR reporting. *Sustainability Accounting, Management and Policy Journal*, 12(1), 156–183. doi:10.1108/SAMPJ-07-2019-0273.

Rao, K., & Tilt, C. (2016). Board composition and corporate social responsibility: The role of diversity, gender, strategy and decision making. *Journal of Business Ethics*, 138(2), 327–347. doi:10.1007/s10551-015-2613-5.

Reguera-Alvarado, N., de Fuentes, P., & Laffarga, J. (2017). Does board gender diversity influence financial performance? Evidence from Spain. *Journal of Business Ethics*, 141(2), 337–350. doi:10.1007/s10551-015-2735-9.

Reverte, C. (2009). Determinants of corporate social responsibility disclosure ratings by Spanish listed firms. *Journal of Business Ethics*, 88(2), 351–366. doi:10.1007/s10551-008-9968-9.

Rose, C. (2007). Does female board representation influence firm performance? The Danish evidence. *Corporate Governance: An International Review*, 15(2), 404–413. doi:10.1111/j.1467-8683.2007.00570.x.

Scherer, A. G., & Palazzo, G. (2007). Towards a political conception of corporate responsibility. *Academy of Management Review*, 32(4), 1096–1120. doi:10.5465/amr.2007.26585837.

Setó-Pamies, D. (2015). The relationship between women directors and corporate social responsibility. *Corporate Social Responsibility and Environmental Management*, 22(6), 334–345. doi:10.1002/csr.1349.

Shankman, N. A. (1999). Reframing the debate between agency and stakeholder theories of the firm. *Journal of Business Ethics*, 19(4), 319–334. doi:10.1023/A:1005880031427.

Sial, M. S., Zheng, C., Cherian, J., Gulzar, M. A., Thu, P. A., Khan, T., & Khuong, N. V. (2018). Does corporate social responsibility mediate the relation between boardroom gender diversity and firm performance of Chinese listed companies? *Sustainability*, 10(10), 1–18. doi:10.3390/su10103591.

Stanwick, P. A., & Stanwick, S. D. (1998). The determinants of corporate social performance: an empirical examination. *American Business Review, 16*(1), 86–93.

Sundarasen, S. D., Je-Yen, T., & Rajangam, N. (2016). Board composition and corporate social responsibility in an emerging market. *Corporate Governance*, 16(1), 35–53. doi:10.1108/CG-05-2015-0059.

Terjesen, S., Barbosa Couto, E., & Morais Francisco, P. (2016). Does the presence of independent and female directors impact firm performance? A multi-country study of board diversity. *Journal of Management and Governance*, 20(3), 447–483. doi:10.1007/s10997-014-9307-8.

Tingbani, I., Chithambo, L., Tauringana, V., & Papanikolaou, N. (2020). Board gender diversity, environmental committee and greenhouse gas voluntary disclosures. *Business Strategy and the Environment*, 29(6), 2194–2210. doi:10.1002/bse.2495.

Tsalis, T. A., Malamateniou, K. E., Koulouriotis, D., & Nikolaou, I. E. (2020). New challenges for corporate sustainability reporting: United Nations' 2030 Agenda for sustainable development and the sustainable development goals. *Corporate Social Responsibility and Environmental Management*, 27(4), 1617–1629. doi:10.1002/csr.1910.

Uyar, A., Kilic, M., Koseoglu, M. A., Kuzey, C., & Karaman, A. S. (2020). The link among board characteristics, corporate social responsibility performance, and financial performance: Evidence from the hospitality and tourism industry. *Tourism Management Perspectives*, 35, 100714. doi:10.1016/j.tmp.2020.100714.

Valls Martínez, M. C. (2019). Profitability, corporate social responsibility and gender in private healthcare in Spain. *Revista Española de Investigaciones Sociológicas*, 168 (December), 111–128. doi:10.5477/cis/reis.168.111.

Valls Martínez, M. C., & Cruz Rambaud, S. (2019). Women on corporate boards and firm's financial performance. *Women's Studies International Forum*, 76(102251), 1–11. doi:10.1016/j.wsif.2019.102251.

Valls Martínez, M. C., Cruz Rambaud, S., & Parra Oller, I. M. (2019). Gender policies on board of directors and sustainable development. *Corporate Social Responsibility and Environmental Management*, 26(6), 1539–1553. doi:10.1002/csr.1825.

Valls Martínez, M. C., Martín Cervantes, P. A., & Cruz Rambaud, S. (2020). Women on corporate boards and sustainable development in the American and European markets: Is there a limit to gender policies? *Corporate Social Responsibility and Environmental Management*, 27(6), 2642–2656. doi:10.1002/csr.1989.

Velte, P. (2017a). Do women on board of directors have an impact on corporate governance quality and firm performance? A literature review. *International Journal of Sustainable Strategic Management*, 5(4), 302. doi:10.1504/ijssm.2017.10010121.

Velte, P. (2017b). Does board composition have an impact on CSR reporting? *Problems and Perspectives in Management*, 15(2), 19–35. doi:10.21511/ppm.15(2).2017.02.

Walls, J. L., Berrone, P., & Phan, P. H. (2012). Corporate governance and environmental performance: Is there really a link? *Strategic Management Journal*, 33, 885–913. doi:10.1002/smj.1952.

Watson, W. E., Kumar, K., & Michaelsen, L. K. (1993). Cultural diversity's impact on interaction process and performance: Comparing. *Academy of Management Journal*, 36(3), 590–602. doi:10.2307/256593.

Wichaisri, S., & Sopadang, A. (2018). Trends and future directions in sustainable development. *Sustainable Development*, 26(1), 1–17. doi:10.1002/sd.1687.

Wiggins, R. R., & Ruefli, T. W. (2002). Sustained competitive advantage: Temporal dynamics and the incidence and persistence of superior economic performance. *Organization Science*, 13(1), 82–105. doi:10.1287/orsc.13.1.81.542.

Williams, A., Whiteman, G., & Parker, J. N. (2019). Backstage interorganizational collaboration: Corporate endorsement of the sustainable development goals. *Academy of Management Discoveries*, 5(4), 367–395. doi:10.5465/amd.2018.0154.

Williams, R. J. (2003). Women on corporate boards of directors and their influence on corporate philanthropy. *Journal of Business Ethics*, 42, 1–10. doi:10.1023/A:1021626024014.

World Economic Forum. (2019). *Global Gender Gap Report 2020: Insight Report.* . doi:10.1002/9781119085621.wbefs350.

Yaseen, H., Iskandrani, M., Ajina, A., & Hamad, A. (2019). Investigating the relationship between board diversity & corporate social responsibility (CSR) performance: Evidence from France. *Academy of Accounting and Financial Studies Journal, 23*(4), 1–11.

Zahid, M., Rahman, H. U., Ali, W., Khan, M., Alharthi, M., Imran Qureshi, M., & Jan, A. (2020). Boardroom gender diversity: Implications for corporate sustainability disclosures in Malaysia. *Journal of Cleaner Production*, 244, 118683. doi:10.1016/j.jclepro.2019.118683.

Zhang, J. Q., Zhu, H., & Ding, H.-B. (2013). Board Composition and Corporate Social Responsibility: An Empirical Investigation in the Post Sarbanes-Oxley Era. *Journal of Business Ethics*, 114(3), 381–392. doi:10.1007/s10551-012-1352-0.