



## Women leaders and female same-sex groups: The same 2030 Agenda objectives along different roads

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### ABSTRACT

Based on a sample of 4,089 multinational companies over the period 2015–2018, this study analyses the role that women leaders play in relation to the implementation of sustainability strategies to achieve the Sustainable Development Goals (SDGs), and whether this role depends on the proportion of female presence in management teams. The results show that the commitment to the 2030 Agenda is higher in companies with a woman as the Chief Executive Officer (CEO) and/or chairperson of the board of directors, as well as greater gender diversity in both, management teams and the monitoring body. However, the incongruity in the phenomenon of female leadership stereotypes hinders the existence of a complementary relationship that reinforces it. We showed that, consistent with the social role theory, prejudices act as barriers to achieve synergic effects among women in different management positions.

### 1. Introduction

The 2030 Agenda is the action plan established by the United Nations (UN) to guide different agents to achieve sustainable development. It consists of 17 Sustainable Development Goals (SDGs), structured around five axes and reflected in 169 targets. Business should play a key role in the advancement of the 2030 Agenda, which requires that the SDGs be integrated into corporate strategies, and new business models be developed (Rosati & Faria, 2019; Méndez-Picazo, Galindo-Martín, & Castaño-Martínez, 2021).

In this sense, the SDGs constitute “an ideal framework” for companies to structure their corporate social responsibility (CSR) strategies and plans, allowing for a balance between business objectives and sustainable development (Shayan, Mohabbati-Kalejahi, Alavi, & Zahed, 2022). Indeed, besides addressing the main global challenges, the SDGs encompass the three core dimensions of CSR (Gallego-Sosa, Gutiérrez-Fernández, Fernández-Torres, & Nevado-Gil, 2021). Thus, “the objectives of the 2030 Agenda represent a point of convergence of CSR strategies, in order to achieve the well-being of current and future

generations worldwide” (García-Sánchez, Amor-Esteban, & Galindo-Alvarez, 2020c).

Effective company engagement in the 2030 Agenda implies a change in the usual way of doing business (Caiado, Filho, Quelhas, Nascimento, & Avila, 2018), which, in turn, requires leadership (Grover, Kar, & Ilavarasan, 2018). Prior literature has stressed the effect of gender differences on business management and corporate decision-making (Venkatesh & Morris, 2000), such as studies related to internationalisation (Jafari-Sadeghi, Sukumar, Pagán-Castaño, & Dana, 2021), financing (Wang, Deng, & Alon, 2021), investment (Barber & Odean, 2001), innovation (Birkner, 2020), entrepreneurship (Armuña, Ramos, Juan, Feijóo, & Arenal, 2020), and CSR (Ardito, Dangelico, & Messeni Petruzzelli, 2021). Similarly, it has been posed that the leadership styles of women and men managers are dissimilar (Hoobler, Masterson, Nkomo, & Michel, 2018; Monteiro, García-Sánchez, & Aibar-Guzmán, 2021).

Given that women exhibit higher sensitivity to social and environmental concerns (Nielsen & Huse, 2010) and philanthropic interests (García-Sánchez & Noguera-Gámez, 2018), they could act as “catalysts”

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to achieve the SDGs (Medupin, 2020). However, women are often under-represented in corporate top management positions (Donthu & Gustafsson, 2020; Fernando, Jain, & Tripathy, 2020; Gallego-Sosa et al., 2021). Besides, women confront significant barriers and obstacles not only in achieving top positions, but also in exerting leadership and significantly influencing corporate management (Kim, Parboteeah, & Cullen, 2022). Women in top management positions are not immune to gender stereotypes and prejudices that moderate their actual role and influence in the business scenario (Ahl, 2006; Birkner, 2020; Monteiro et al., 2021). Therefore, women leaders' role in the field of business contribution to sustainable development is a "developing topic" (Barrios, Prowse, & Vargas, 2020).

We aim to open the "black box" of women's leadership (Hoobler et al., 2018) in the context of the 2030 Agenda by exploring whether, and under what conditions, women leaders significantly influence business commitment to the SDGs. Specifically, the objective of this paper is to analyse the role that women leaders play in relation to the implementation of sustainability strategies aimed at achieving the SDGs, and whether, or not, this role differs depending on the extent of female presence in management teams.

For a sample of 4,089 international companies, we found that the contribution to the 2030 Agenda is greater in companies with both, a woman as CEO and/or chairperson of the board of directors, and greater gender diversity in both management teams and the monitoring body. However, the incongruity in the phenomenon of female leadership stereotypes hinders the existence of a complementary relationship that reinforces it.

This research contributes to understanding the role of women leaders towards sustainable development and the 2030 Agenda. To the best of our knowledge, this is the first study to analyse the association between women in different leadership positions and firms' commitment to the SDGs. We open the "black box" of women's leadership in the business scenario by analysing the moderating effect of "organisational demography" (Pfeffer, 1983) on women leaders' influence on their firms' commitment to the 2030 Agenda. We also contribute to literature by analysing the different positions at which women leaders may play a significant role in promoting the 2030 Agenda in their firms.

The paper is structured in seven sections. Following this introduction, the second section outlines business contribution to the 2030 Agenda. The third section presents the theoretical framework and the development of the research hypotheses on the influence of women leaders on their companies' commitment to the SDGs. The fourth section sets out the empirical framework. The fifth section summarizes and discusses the main results of the study. The sixth section presents some complementary analyses, and the last section outlines the main conclusions and implications of the study, its limitations, and some avenues for future research.

## 2. Business contribution to the 2030 Agenda

The establishment of the SDGs was the result of an extensive process of global consultation and negotiation that gave rise to the 2030 Agenda in 2015, which, under the slogan "Transforming Our World", is structured on five central axes (referred to as the 5 Ps): planet, people, prosperity, peace, and partnership. The SDGs define the roadmap established by the UN to curb inequality, climate change and the lack of opportunities to achieve sustainable economic, environmental, and social development by 2030. They comprise a common agenda for all actors, aimed at distributing and using resources to protect ecology and human rights, and promoting the necessary innovation to drastically change the current management of the planet. For each objective, 169 integrated and indivisible targets were defined.

The 2030 Agenda requires that different actors—governments and public administrations, companies, and individuals—actively contribute to eradicating poverty, preventing climate change, and extending environmental protection, inclusion and social justice,

education, health, and economic growth (Opoku, Kufuor, & Manu, 2021). However, the achievement of the SDGs poses important challenges (Grover et al., 2018), especially in emerging and developing countries. Furthermore, studies conducted on the subject show that, while progress is being made towards achieving the SDGs, neither the speed nor the scale is adequate to act against the current levels of poverty, hunger, education, and health that characterise certain territories, the climate emergency, or the structural disadvantages and discrimination suffered by women (United Nations (2020), 2020).

The private sector must be willing to implement sustainable business models that allow firms to create value for the different stakeholders (investors, clients, society), by integrating the SDGs into their corporate strategies. According to a worldwide survey conducted by Accenture and UN Global Compact into CEOs' attitudes toward SDGs, CEOs think that the SDGs represent an opportunity to reconsider corporate approaches to sustainable value creation and consider that the SDGs provide a good framework to structure their firms' sustainability efforts (Accenture, 2019). In this sense, the SDGs offer a valuable framework to measure the extent to which the companies' CSR activities actually contribute to sustainable development (Gallego-Sosa et al., 2021).

The actions that companies can implement in relation to the 2030 Agenda are very diverse, with direct and indirect implications. However, these practices are representative of a small number of companies. Thus, although prior studies show that approximately 72% of the 700 largest companies in the world include a mention of the SDGs in their sustainability reports, only 27% have actually integrated these into their strategies. In addition, there are significant differences between sectors (Deloitte, 2017, 2018; PwC, 2017, 2018).

According to the resource dependence theory (Pfeffer & Salancik, 1978), women in top managerial positions furnish their firms with valuable skills and knowledge and provide a different viewpoint to corporate strategies. Barrios et al. (2020) point out that women leaders in business could favour an "expansive interpretation of sustainable development" and, consequently, progress towards the SDGs. In this sense, it has been argued that women managers' distinctive values, backgrounds, and expertise make them more inclined to support the kind of "social entrepreneurship" that is required to achieve the SDGs (Lemaire, Maaloui, & Dana, 2017; Rosca, Agarwal, & Brem, 2020). Indeed, in a recent study focused on multinational enterprises, Kiefner, Mohr, and Schumacher (2022) document a positive effect of gender diversity on management teams on their companies' engagement in meeting the SDGs. Likewise, Monteiro et al. (2021) found that women managers promote the respect for labour and human rights by their companies in line with the 2030 Agenda. Gallego-Sosa et al. (2021) show that European banks with greater gender diversity on their boards are more committed to achieving the SDGs (particularly, SDG11 and SDG13).

## 3. Theoretical framework and research hypotheses

### 3.1. Theoretical framework

Social role theory (Eagly, 1987) explains the effect of gender stereotypes on people's behaviour. It posits that gender stereotypes not only describe how men and women are supposed to be—descriptive role—but also influence social expectations of gender roles, thereby determining how men and women are expected to act in each situation—normative/prescriptive role—(Coffman, 2014). Thus, gender stereotypes play "an important cognitive role" (Bordalo, Coffman, Gennaioli, & Shleifer, 2016, p. 3), so that men and woman tend to behave according to them (Guterk & Morasch, 1982; Eagly & Johnson, 1990).

Literature on gender stereotypes has stressed differences between men and women that affect their leadership styles (Reuvers, Van Engen, Vinkenburg, & Wilson-Evered, 2008; Hoobler et al., 2018; Fernando et al., 2020; Martinez-Leon, Olmedo-Cifuentes, Martinez-Victoria, & Arcas-Lario, 2020). Compared to men, women are considered more

polite, warm, compassionate, helpful, ethical, empathetic, risk averse, and socially oriented (Venkatesh & Morris, 2000; Boulouta, 2013; Gartzia & Baniandrés, 2019; Burkhardt, Nguyen, & Poincelot, 2020; Oghazi, Karlsson, Hellström, Mostaghel, & Sattari, 2021; Opoku et al., 2021; Cosentino and Paoloni, 2021; Rosca et al., 2020; Al Hakim, Bastian, Ng, & Wood, 2022). In turn, these features and the prejudices related to women managers also reflect on business management (Hoobler et al., 2018; Casprini, Pucci, & Zanni, 2022); compared to companies led by men, women-led companies are often smaller (Kim et al., 2022), and tend to obtain credit with difficulty and pay higher interest (Wang et al., 2021) and. In a recent study, Di Stefano and Fracocchi (2022) found that women-led Italian firms vary from those led by men, in terms of geographical distribution, size, and activity sector.

According to Ahl (2006), gender differences and similarities are socially and culturally constructed and affect power relationships, relegating women to subordinate positions, particularly in “male-dominated fields” (Birkner, 2020) and in less gender equalitarian societies (Hoobler et al., 2018; Jafari-Sadeghi et al., 2021; Kim et al., 2022). Similarly, the influence of gender differences in leadership styles depends on the context (Van Engen & Willemsen, 2004; Hoobler et al., 2018). For example, Byron and Post (2016) showed that firms’ predisposition to fully use women directors’ knowledge and values strengthens their influence. Likewise, the effect of social institutions at the country level (e.g., education system, gender equality, political governance) and the country’s level of economic development has been stressed by Kim et al. (2022).

According to Kanter (1977), the proportion of women in a group affects women leaders’ capacity to exert significant influence. Therefore, a “critical mass” of women is necessary for women leaders to be decisive in corporate decision-making. In this sense, from a homophily perspective, women leaders’ influence would be strengthened by the presence of women in other leading positions, as well as in middle management positions (Birindelli, Iannuzzi, & Savioli, 2019). As noted by Monteiro et al. (2021), “gender-based affinities” existing among them promote women leaders’ empowerment (McColl-Kennedy & Anderson, 2005) and, therefore, their capability to determine corporate strategies.

However, from the perspective of social role theory, women’s role stereotypes are seen as less compatible with the traits and behaviours associated with leadership positions (Eagly & Wood, 2012). In other words, there is “a dissonance” between “feminine normative frames of womanhood” and “masculine normative frames of leadership” (Birkner, 2020) and, consequently, women leaders tend to be considered less effective than their male counterparts (Heilman, Wallen, Fuchs, & Tamkins, 2004; McColl-Kennedy & Anderson, 2005). Furthermore, women leaders’ authority is less well accepted, and subordinates (both men and women) tend to resist it (Martinez-Leon et al., 2020), given that gender stereotypes associate leadership roles with masculine characteristics (Hoobler et al., 2018; Gartzia & Baniandrés, 2019). All these gender stereotyping prejudices limit women leaders’ ability to influence corporate decisions (Kanter, 1993; Liu, Lei, & Buttner, 2020; Kim et al., 2022).

### 3.2. Hypotheses development

#### 3.2.1. Women’s leadership and the 2030 Agenda

From the above discussion, it can be asserted that, in line with their “assigned gender role”, women in top management positions will promote socially and environmentally responsible policies and strategies (Furlotti, Mazza, Tibiletti, & Triani, 2019; Liao, Zhang, & Wang, 2019; Attah-Boakye, Adams, Kimani, & Ullah, 2020; Gallego-Sosa et al., 2021), acting as a driving force for achieving the SDGs. A company’s CEO is a key decision-maker (Aibar-Guzmán & Frías-Aceituno, 2021), with significant influence on corporate strategic decisions (Hambrick & Mason, 1984). The CEO’s gender has been found to be an important determinant of CSR (Borghesi, Houston, & Naranjo, 2014; Lewis, Walls, & Dowell, 2014). Gender influences CEOs’ risk-taking behaviour and

management style, and it is observed that female CEOs are often more sensitive to social and environmental concerns; consequently, they tend to promote socially responsible practices and policies (Nielsen & Huse, 2010), leading to better CSR performance (Yuan, Tian, Lu, & Yu, 2017). In this sense, prior studies show that having a female CEO is positively associated with both, better CSR performance, and quality CSR reporting (Manner, 2010; Huang & Kisgen, 2013; Borghesi et al., 2014; Birindelli et al., 2019; Furlotti et al., 2019).

Hence, it can be expected that firms with female CEOs are more likely to develop an adequate strategy to achieve the SDGs; therefore, the following hypothesis is stated:

H1: Women-led companies favour business commitment to the 2030 Agenda.

#### 3.2.2. The moderating role of gender diversity in management teams

Although, according to female gender stereotypes that attribute greater social and environmental sensitivity to women, it can be expected that the presence of women in top management positions positively affect their companies’ CSR performance, thereby favouring their commitment to the 2030 Agenda, the strength of women leaders’ influence depends on several factors.

Certain characteristics of companies moderate the influence of women in top management positions on CSR. Specifically, Burkhardt et al. (2020) showed that this influence is stronger in those companies that assign greater importance to environmental issues, whereas, it is weaker in high-growth firms, given that the pressure to realise profitable growth opportunities constrains women from exerting influence to achieve CSR initiatives. Hoobler et al. (2018) found that gender supportive climates (i.e., cultural contexts characterised by progressive attitudes toward women’s equality) are favourable for women leaders to influence their companies’ strategies and policies. Liu et al. (2020) also documented a positive moderating effect of firms’ inclinations to engage in CSR initiatives on the influence that women directors exert in this regard. Such authors also found that women directors’ power increases their ability to influence their companies’ CSR strategies. Accordingly, it can be expected that a greater presence of women in management teams will have a positive moderating effect on the influence of women CEOs on their companies’ commitment to the 2030 Agenda.

However, to the extent that women leaders’ behaviour is subject to gender stereotypes, their decisions tend to be scrutinised (Hoobler et al., 2018; Kim et al., 2022) and they tend to be penalised when they do not act as expected of them (Heilman & Okimoto, 2007; Rudman, Moss-Racusin, Phelan, & Nauts, 2012; Birkner, 2020); this tends to restrict their influence (Kanter, 1993; Liu et al., 2020). As a result, it is not clear whether, or not, a higher presence of women in management teams will have a positive moderating effect on the influence exerted by women CEOs on their companies’ commitment to the 2030 Agenda.

Therefore, we do not hypothesize any signs for such a relationship and posit two alternative hypotheses.

H2a: Business commitment to the 2030 Agenda is higher for female leaderships in work teams with a greater female presence.

H2b: Business commitment to the 2030 Agenda is lower for female leaderships in work teams with a greater female presence.

## 4. Method

### 4.1. Sample

The information used to conduct the analysis has been extracted from the Thomson Reuters EIKON database. As a result, the sample is conditioned by the information needed for the estimation of the model available in this database. The sample corresponds to an unbalanced data panel, comprising of 12,404 observations relating to 4,089 multinationals that reported on their initiatives relating to the 2030 Agenda

during the period 2015–2018. Although the choice of this study period was mainly due to the availability of information regarding the variables under study, we consider that it allows us to analyse the effect of women leadership on companies’ initial efforts for the achievement of the SDGs.

4.2. Model and variables

Equation 1 has been designed to test the proposed hypotheses regarding the impact of women leadership in relation to business commitment to the 2030 Agenda (H1) and the moderating role that gender diversity in management teams may play (H2).

$$\begin{aligned}
 \text{SDG\_Score}_{i,t} = & \varphi_0 + \varphi_1 \text{Female\_CEO}_{i,t} + \varphi_2 \text{Female\_Managers}_{i,t} \\
 & + \varphi_3 \text{Female\_CEO} * \text{Female\_Managers}_{i,t} + \varphi_4 \text{Size}_{i,t} \\
 & + \varphi_5 \text{ROA}_{i,t} + \varphi_6 \text{Leverage}_{i,t} + \varphi_7 \text{CAPEX}_{i,t} + \varphi_8 \text{R\&D}_{i,t} \\
 & + \varphi_9 \text{Adver}_{i,t} + \varphi_{10} \text{Cash}_{i,t} + \varphi_{11} \text{DLoss}_{i,t} + \varphi_{12} \text{Accruals}_{i,t} \\
 & + \varphi_{13} \text{Analyst}_{i,t} + \varphi_{14} \text{CSR\_Comm}_{i,t} + \varphi_{15} \text{Board\_Indep}_{i,t} \\
 & + \varphi_{16} \text{NCSRPI}_i + \varphi_{17} \text{ICSRPI}_i + \varphi_{18} \text{Country}_i \\
 & + \varphi_{19} \text{Industry}_i + \varphi_{20} \text{Year}_t + \varepsilon_{it} + \eta_i
 \end{aligned}
 \tag{1}$$

Furthermore, in order to examine the relationships between the variables under study, Equation 0 reflects the same model, but without the variable representing the interactions between the two independent variables (Female\_CEO and Female\_Managers).

$$\begin{aligned}
 \text{SDG\_Score}_{i,t} = & \varphi_0 + \varphi_1 \text{Female\_CEO}_{i,t} + \varphi_2 \text{Female\_Managers}_{i,t} + \\
 & \varphi_3 \text{Size}_{i,t} + \varphi_4 \text{ROA}_{i,t} + \varphi_5 \text{Leverage}_{i,t} + \varphi_6 \text{CAPEX}_{i,t} + \varphi_7 \text{R\&D}_{i,t} + \\
 & \varphi_8 \text{Adver}_{i,t} + \varphi_9 \text{Cash}_{i,t} + \varphi_{10} \text{DLoss}_{i,t} + \varphi_{11} \text{Accruals}_{i,t} + \\
 & \varphi_{12} \text{Analyst}_{i,t} + \varphi_{13} \text{CSR\_Comm}_{i,t} + \varphi_{14} \text{Board\_Indep}_{i,t} + \varphi_{15} \text{NCSRPI}_i + \\
 & + \varphi_{16} \text{ICSRPI}_i + \varphi_{17} \text{Country}_i + \varphi_{18} \text{Industry}_i + \varphi_{19} \text{Year}_t + \varepsilon_{it} + \eta_i \text{ [Equation 0]}.
 \end{aligned}$$

The dependent variable (SDG\_Score) determines the extent to which sample companies have implemented initiatives linked with the achievement of the SDGs. This variable corresponds to a composite indicator computed from the sum of 50 items of responsible practices linked to different SDGs (Table 1). These practices have been identified according to various studies, such as those carried out by Deloitte (2017, 2018) and PwC (2017, 2018). Through content analysis of the sample firms’ corporate reports, the authors separately checked whether every firm performs each of the practices included in Table 1, assigning the value 1 when it performs the considered practice, and 0 otherwise. Then, the values obtained by each author were compared, and differences were discussed and reconciled.

The score can take values between 0 and 50 points, being computed from the sum of the score of each item that a company receives, a procedure that does not entail significant differences in the determination of corporate responsibility with respect to more complex calculations (Amor-Esteban, Galindo-Villardón, & García-Sánchez, 2020).

The independent variable proposed to test hypothesis H1, Female\_CEO, corresponds to a dummy that takes a value of 1 if the CEO is a woman, and 0, otherwise. This variable has been used in previous studies that have analysed whether CEOs’ gender affects CSR (e.g., Manner, 2010; Huang & Kisgen, 2013). In order to test hypotheses H2a and H2b, the variable Female\_Managers is included, which represents the diversity of the management team through the percentage of female managers. This variable has been previously used by Larrieta-Rubín de Celis, Velasco-Balmaseda, Fernández de Bobadilla, Alonso-Almeida, and Intxaurburu-Clemente (2015), Burkhardt et al. (2020), Dadanlar and Abebe (2020), and Monteiro et al. (2021). Furthermore, to test the moderating effect that gender diversity in management teams may play on female CEOs’ influence, we include the interaction between both variables (Female\_CEO \* Female\_Managers) (Birindelli et al., 2019).

To avoid biased results, following previous literature (e.g., Rosati & Faria, 2019; Fernando et al., 2020; García-Sánchez et al., 2020a, 2020b; Aibar-Guzmán & Frías-Aceituno, 2021; Monteiro et al., 2021), a wide set

Table 1  
Items of SDG\_Score.

SDG1	The firm develops products or technologies that are used for water treatment, purification, or for improving water-use efficiency
SDG2	The firm reportedly develops or sells products and services that foster specific health and safety benefits for the consumers (healthy, organic, or nutritional food, safe cars, etc.)
SDG3	The firm develops environmental products (i.e., more energetically responsible, less noise pollution, etc.)
SDG4	The firm claims to provide flexible working hours or programs that promote a work–life balance
SDG5	The firm has a diversity and equal opportunity policy
SDG6	The firm has a policy for maintaining a well-balanced membership of the Board
SDG7	Presence of women on the board of directors
SDG8	The firm has a policy for performance-oriented compensation that attracts and retains senior executives and board members
SDG9	The company claims to favour promotion from within
SDG10	The firm has a policy to support the skills training or career development of its employees
SDG11	The firm has a competitive employee benefits policy or ensures good employee relations within its supply chain and has a policy for maintaining long-term employment growth and stability
SDG12	The firm has a policy to improve employee health & safety within the company and its supply chain
SDG13	The firm reports on policies or programs on HIV/AIDS for the workplace or beyond
SDG14	The firm claims to provide its employees with a pension fund, health care, or other insurance
SDG15	The firm claims to provide a bonus plan to most employees
SDG16	The firm claims to provide day-care services for its employees
SDG17	The firm uses environmental criteria (ISO 14000, energy consumption, etc.) in the selection process of its suppliers or sourcing partners
SDG18	The firm reports or show the use of human rights criteria in the selection or monitoring process of its suppliers or sourcing partners
SDG19	The firm has a policy to guarantee the freedom of association universally applied independent of local laws and the firm has a policy for the exclusion of child, forced, or compulsory labour
SDG20	The firm shows readiness to end a partnership with a sourcing partner if human rights criteria are not met
SDG21	Percentage of independent board members as reported by the company
SDG22	Percentage of non-executive board members on the nomination committee
SDG23	Percentage of non-executive board members on the audit committee as stipulated by the company
SDG24	The firm has an audit committee with at least three members and at least one “financial expert” within the meaning of Sarbanes-Oxley
SDG25	The firm has a policy for ensuring equal treatment of minority shareholders, facilitating shareholder engagement, or limiting the use of anti-takeover devices
SDG26	The firm’s statutes or by-laws require that stock options be only granted with a vote at a shareholder meeting
SDG27	The firm has a CSR committee or team
SDG28	The firm’s CSR report is published in accordance with the GRI guidelines
SDG29	The firm openly reports about the challenges or opportunities of integrating financial and extra-financial issues, and the dilemmas and trade-offs it faces
SDG30	The firm’s extra-financial reports take into account the global activities of the company
SDG31	The firm has an external auditor for its non-financial reports
SDG32	The firm reports on crisis management systems or reputation disaster recovery plans to reduce or minimize the effects of reputation disasters
SDG33	The firm has a policy to respect business ethics –ethics code, codes of conducts, compliance policies, etc. - or has signed the UN Global Compact or follows the OECD guidelines
SDG34	The firm has a policy to reduce emissions
SDG35	The firm makes use of renewable energy
SDG48	The firm has a commitment towards being a good citizen or endorses the Global Sullivan Principles
SDG49	The firm has a policy to improve stakeholder engagement
SDG50	The firm has integrated the SDGCompass

of control variables, representing the companies’ capabilities and resources, monitoring mechanisms, and institutional pressures, was included. Thus, Size identifies the size of the company, measured by the logarithm of assets; ROA, its economic profitability; and Leverage, the level of leverage with respect to total assets. CAPEX, R&D, Adver reflect



the intensity of investments in capital, R&D, and advertising with respect to sales, respectively. Cash is cash holding and short-term investments over total assets, DLoss takes the value 1 if the company has incurred losses in the exercise, its result being represented by Accruals. Analyst identifies the number of analysts who follow the firm, CSR\_Comm corresponds to a dummy variable that takes the value 1 if there is a CSR committee on the board of directors, and Board\_Indep represents the independence of the board through the percentage of independent directors on the board. Institutional pressures at the country and sector level are controlled by the indicators proposed by Amor-Esteban et al. (2018, 2019), NCSRPI and ICSRPI. Additionally, we control the country, sector and time effects through the Country, Industry and Year variables.

Because the dependent variable has a censored nature, we use a Tobit regression for panel data in which  $\eta$  allows us to control for unobservable heterogeneity and  $\epsilon$  is the disturbance. To correct possible causality problems, the explanatory variables were lagged by one period, using centering variables in the interactions to control for multicollinearity problems (Monteiro et al., 2021).

## 5. Results and discussion

### 5.1. Descriptive statistics

Table 2 shows the descriptive statistics for the variables included in the analysis. It can be observed that only 4.1% of the sample companies have a female CEO. The figure drops to 2.9% in the case of the sample companies where this position is compatible with being the chairperson of the board of directors. As regards the CEO position, our result is in line with prior evidence (Hoobler et al., 2018; Zou, Wu, Zhu, & Yang, 2018; Tyrowicz, Terjesen, & Mazurek, 2020; Birindelli et al., 2019) and confirms the theory of hegemonic masculinity (Connell, 1990), according to which, in the higher echelons of corporate management, men are considered the standard, whereas women represent the exception to the rule (Godwin, Stevens, & Brenner, 2006). Similarly, the mean of women directors and managers are in line with previous studies (Tyrowicz et al., 2020; Monteiro et al., 2021). Furthermore, our findings indicate that, despite an increase in the share of women on the board of directors (Furlotti et al., 2019; Liu et al., 2020), a woman being the chair of the board is noted in a small percentage of firms (about a third).

In relation to business commitment to the SDGs, as can be seen in Table 2, on an average, companies obtain 20 out of 50 possible points,

**Table 2**  
Descriptive statistics.

Variable	Relative Frequency	
Female_CEO	0.041	
Chairwomen	0.037	
OnlyCEOfemale	0.012	
Onlychairwomen	0.008	
FemaleCEO_Duality	0.029	
CSR_Comm	0.475	
Variable	Mean	Std. Dev.
SDGScore	19.885	8.998
Female_Managers	26.508	14.374
Female_Directors	14.822	12.603
Size	16.717	2.936
ROA	4.165	16.800
Leverage	0.258	0.241
CAPEX	5.531	5.986
R&D	0.159	10.871
Adver	0.002	0.113
Cash	86.700	100.000
DLoss	0.088	0.283
accruals	-4.659	12.156
Analysts	12.787	8.956
Board_Indep	0.503	0.304
NCSRPI	-0.625	9.059
ICSRPI	0.047	3.060

with a standard deviation of 9 points. This mean score is indicative of a certain orientation towards specific SDGs (Gallego-Sosa et al., 2021), or the development of specific actions in relation to various initiatives being implemented at the international level.

Table 3 shows the bivariate correlations that determine the absence of collinearity problems between the different variables proposed for the analysis.

### 5.2. Main results

Table 4 shows the results obtained from the estimation of Equation 1, incorporating a model without interactions (Equation 0) in the previous column to reveal the relationships between the variables. In this regard, the impact of the Female\_CEO variable on the SDG\_Score variable is positive (coeff. = 3.306), significant for a 99% confidence level. This effect allows us to accept hypothesis H1 that women leaders reinforce business commitment to the SDGs. Congruent with the social role theory, this result suggests that women CEOs integrate conventional female stereotypes into their identity as leaders (Wetlesen, 2013), promoting a higher sensitivity to social and environmental concerns in their firms (Adams & Funk, 2012; Glass, Cook, & Ingersoll, 2016), and, thus, a greater commitment to the SDGs. In this sense, our finding confirms the impact that conventions related to social identity have on corporate policies and strategies (Benjamin, Choi, & Strickland, 2010). Furthermore, this result is in line with prior evidence obtained by Manner (2010), Huang and Kisgen (2013), Borghesi et al. (2014), Birindelli et al. (2019), and Furlotti et al. (2019) who documented a positive influence of women CEOs on their firms' CSR performance.

Additionally, we observe that the Female\_Managers variable, representing management teams with more women members, also has a positive impact (coeff. = 0.0435) for the same level of confidence (99%). Again, this finding is consistent with the social role theory, showing that management teams with gender diversity behave in line with the "assigned gender role", placing emphasis on those issues that have greater value to the prominent gender (Burkhardt et al., 2020). It also confirms the results obtained by Burkhardt et al. (2020) and Monteiro et al. (2021), who found a positive association between the proportion of women in management teams and their companies' environmental and social performance.

On the contrary, the interaction between the gender variables, Female\_CEO \* Female\_Managers, has a negative impact (coeff. = -0.0677) for a confidence level of 90%, which leads us to accept hypothesis H2b. Specifically, this result would indicate that the impact of a female CEO is lower in work teams with greater gender diversity (Impact = coeff. Female\_CEO + coeff. Female\_CEO \* Female\_Managers = 3.306 - 0.068 = 3.238). This confirms, first, the effect of the incongruity between the stereotypes of women's gender roles and the characteristics associated with leadership positions (Eagly & Wood, 2012; Koenig, Eagly, Mitchell, & Ristikari, 2011); second, the resulting prejudices against women leaders (Eagly & Karau, 2002), as suggested by the social role theory, and confirmed in previous studies that show that female leaders are less valued by their team (Heilman et al., 2004; Rifkin, 2014) and that their authority is less well accepted by subordinates (Martinez-Leon et al., 2020). This prevents women CEOs from exerting their influence with regard to business commitment to the 2030 Agenda. However, to the extent that hypothesis H2a is rejected, this result contradicts the positive effect that the presence of women in management teams would have on women leaders' influence, posited by the homophily perspective (Glass et al., 2016), given that gender stereotyping prejudices against women leaders prevail on "gender-based affinities" existing among women CEOs and their women subordinates. In this sense, although all women in top management positions promote initiatives aimed at meeting the goals of the 2030 Agenda, their actions are not complementary.

On the other hand, in relation to the control variables, we observe that the largest and most profitable companies, as well as those that are

**Table 3**  
Correlations.

		1	2	3	4	5	6	7
1	SDG_Score	1						
2	Female_CEO	0.04***	1					
3	Chairwomen	0.02***	0.84***	1				
4	OnlyCEOfemale	0.04***	0.52***	0.16***	1			
5	Onlychairwomen	0.01	0.19***	0.45***	0.38***	1		
6	FemaleCEO_Duality	0.02**	0.84***	0.89***	-0.02**	-0.02*	1	
7	Female_Managers	-0.11***	0.08***	0.08***	0.02*	0.02**	0.08***	1
8	Female_Directors	0.15***	0.08***	0.17***	0.03***	0.21***	0.08***	0.16***
9	Size	0.25***	-0.03***	-0.02***	-0.02***	-0.01	-0.02**	-0.27***
10	ROA	0.06***	0.01	0.01	0.01	0.00	0.01	0.03***
11	Leverage	0.03***	0.00	0.00	0.01	0.01	-0.01	0.02***
12	CAPEX	-0.01	0.00	0.00	0.00	0.00	0.00	0.03***
13	R&D	-0.01	0.00	0.00	0.00	0.00	0.00	0.01
14	Adver	-0.01	0.00	0.00	0.00	0.00	0.00	0.01
15	Cash	0.02*	-0.01	-0.01	-0.01	-0.01	-0.01	-0.07***
16	DLoss	-0.05***	0.00	0.01	0.01	0.03***	-0.01	-0.02***
17	Accruals	0.01	0.00	0.00	0.00	0.00	0.00	0.00
18	Analysts	0.44***	0.02***	0.01	0.02**	0.00	0.01	-0.02**
19	CSR_Comm	0.40***	-0.01	0.00	-0.02**	0.00	0.00	-0.09***
20	Board_Indep	-0.01	0.03***	0.02***	0.04***	0.03***	0.01	0.17***
21	NCSRPI	0.19***	0.04***	0.04***	-0.01	-0.01	0.05***	-0.12***
22	ICSRPI	0.20***	-0.03***	-0.05***	0.02**	0.00	-0.05***	-0.52***
8	Female_Directors	1	9	10	11	12	13	14
9	Size	-0.13***	1					
10	ROA	0.04***	0.07***	1				
11	Leverage	0.00	0.01	-0.21***	1			
12	CAPEX	-0.01	-0.01	0.00	0.01	1		
13	R&D	0.00	-0.01	-0.02**	-0.01	0.00	1	
14	Adver	0.00	-0.01	-0.04***	-0.01	0.00	0.99***	1
15	Cash	-0.04***	0.23***	0.00	-0.02	0.00	0.00	0.00
16	DLoss	-0.02**	-0.13***	-0.29***	0.05***	0.03***	0.02*	0.02***
17	Accruals	0.01	0.00	0.00	0.00	0.00	0.00	0.00
18	Analysts	0.05***	0.32***	0.08***	-0.02**	-0.01	0.00	-0.01
19	CSR_Comm	0.13***	0.15***	0.02**	0.00	-0.01	-0.01	-0.01
20	Board_Indep	0.26***	-0.21***	0.00	0.01	-0.01	0.01	0.01
21	NCSRPI	0.08***	-0.12***	0.00	-0.11***	0.01	-0.01	-0.01
22	ICSRPI	-0.06***	-0.06***	-0.08***	0.06***	0.00	0.00	0.01
15	Cash	1	16	17	18	19	20	21
16	DLoss	-0.01	1					
17	Accruals	0.00	0.00	1				
18	Analysts	0.05***	0.01	0.01	1			
19	CSR_Comm	0.02**	-0.03***	0.00	0.12***	1		
20	Board_Indep	-0.02**	0.04***	-0.01	0.04***	-0.09***	1	
21	NCSRPI	-0.03***	-0.06***	-0.01	-0.13***	0.10***	-0.13***	1
22	ICSRPI	-0.01	0.12***	-0.01	-0.01	0.06***	-0.03***	0.03***

followed by a greater number of analysts, form specialised committees for CSR, and have a greater presence of independent directors on the board, demonstrate a greater commitment to the SDGs. Furthermore, these initiatives are favoured by institutional pressures at the sector and country levels.

### 5.3. Heterogeneity analyses

In order to confirm the robustness of the results, various variants of Equation 1 have been estimated. The items that make up the dependent variable were grouped into 5 main lines of action (environment, climate change and biodiversity; good governance and transparency; human rights; health and labour security; and diversity) due to the difficulty of assigning these items to specific SDGs because many of the business initiatives are transversal and can be attributed to different SDGs.

As can be observed in Table 5, the results obtained for the sub-scores related to good governance and transparency, health and labour security, and diversity are confirmed. However, in the case of the human rights score, the negative effect of the interaction between the gender variables disappears. For the sub-score related to environment, climate change and biodiversity, it can be observed that the effect of gender diversity does not determine these actions. This could be due to the

complexity of the initiatives that are being developed, which may be more linked to internal processes promoted by specialists belonging to environmental departments and committees (Eberhardt-Toth, 2017; García-Sánchez, Rodríguez-Ariza, Aibar-Guzmán, & Aibar-Guzmán, 2020b).

### 6. Complementary analysis

Besides top management positions, women's leadership in the corporate sphere may be exerted through the role of chairperson of the board of directors (Attah-Boakye et al., 2020; Barrios et al., 2020). The chair of the board plays a key position as a link between the board and the CEO, which increases her/his influence on corporate strategies (Bezemer, Nicholson, & Pugliese, 2018).

Being responsible for a firm's sustainability strategy, the board of directors can significantly influence SDG engagement (Gallego-Sosa et al., 2021). Board diversity is associated with a more proactive and comprehensive CSR strategy (Amorelli & García-Sánchez, 2020). Thus, a higher percentage of female directors on the board is positively related to business commitment to the SDGs (Gallego-Sosa et al., 2021) and the early adoption of SDG reporting (Rosati & Faria, 2019).

Therefore, it can be expected that a woman occupying the position of

**Table 4**  
Effect of female leadership on commitment to the 2030 Agenda.

	Equ. 0	Equ. 1
	<i>Coeff.</i>	<i>Coeff.</i>
	<i>(Std.Dv.)</i>	<i>(Std.Dv.)</i>
Female_CEO	1.258** (0.631)	3.306*** (1.269)
Female_Managers	0.0408*** (0.00809)	0.0435*** (0.00822)
Female_CEO*Female_Managers		-0.068* (0.0364)
Size	0.729*** (0.0478)	0.732*** (0.0478)
ROA	0.00796** (0.00376)	0.00794** (0.00376)
Leverage	0.00469* (0.00263)	0.00471* (0.00263)
CAPEX	2.85e-08 (3.69e-08)	2.86e-08 (3.69e-08)
R&D	3.03e-05 (3.38e-05)	3.04e-05 (3.38e-05)
Adver	-0.00319 (0.00327)	-0.00321 (0.00327)
Cash	-9.18e-11 (1.53e-10)	-9.26e-11 (1.53e-10)
DLoss	-0.318* (0.176)	-0.325* (0.176)
Accruals	3.01e-05 (1.85e-05)	3.01e-05 (1.85e-05)
Analysts	0.256*** (0.0121)	0.256*** (0.0121)
CSR_Comm	1.352*** (0.111)	1.352*** (0.112)
Board_Indep	0.00422** (0.00205)	0.00424** (0.00205)
NCSRPI	0.209*** (0.0112)	0.209*** (0.0112)
ICSRPI	0.733*** (0.0584)	0.731*** (0.0583)
Constant	1.678* (0.918)	1.571* (0.919)
Country, Industry and Year controlled		
Rho	0.927	0.927
Log likelihood	-19094.07	-19092.344
p-value	0.000	0.000

$$\begin{aligned}
 \text{SDG\_Score}_{i,t} = & \varphi_0 + \varphi_1 \text{Female\_CEO}_{i,t} + \varphi_2 \text{Female\_Managers}_{i,t} + \varphi_3 \text{Female\_CEO*Female\_Managers}_{i,t} \\
 & + \varphi_4 \text{Female\_Directors}_{i,t} + \varphi_5 \text{Female\_CEO*Female\_Directors}_{i,t} + \varphi_6 \text{OnlyChairwomen}_{i,t} + \varphi_7 \text{Size}_{i,t} \\
 & + \varphi_8 \text{ROA}_{i,t} + \varphi_9 \text{Leverage}_{i,t} + \varphi_{10} \text{CAPEX}_{i,t} + \varphi_{11} \text{R\&D}_{i,t} + \varphi_{12} \text{Adver}_{i,t} + \varphi_{13} \text{Cash}_{i,t} + \varphi_{14} \text{DLoss}_{i,t} + \varphi_{15} \text{Accruals}_{i,t} \\
 & + \varphi_{16} \text{Analyst}_{i,t} + \varphi_{17} \text{CSR\_Comm}_{i,t} + \varphi_{18} \text{Board\_Indep}_{i,t} + \varphi_{19} \text{NCSRPI}_i + \varphi_{20} \text{ICSRPI}_i + \varphi_{21} \text{Country}_i + \varphi_{22} \text{Industry}_i + \varphi_{23} \text{Year}_i + \varepsilon_{it} + \eta_i
 \end{aligned}
 \tag{3}$$

chairperson of the board of directors strengthens this effect. Furthermore, from the homophily perspective, a woman chairperson could enable a female CEO to promote socially and environmentally responsible initiatives, given that, as women, both business leaders share female gender stereotypes, attributed with greater social and environmental sensitivity (Birindelli et al., 2019).

In order to confirm the previous arguments, we propose Equation 2, in which female leadership as the CEO and the diversity of the management team are exchanged for similar roles on the board of directors. In this sense, the chairwomen variable corresponds to a dummy that takes the value of 1 if the chairperson of the board of directors is a woman, and 0, otherwise (Eberhardt-Toth, 2017). The variable

Female\_Directors represents the diversity of this body through the percentage of female directors (Birindelli et al., 2019; García-Sánchez et al., 2020b; Monteiro et al., 2021).

$$\begin{aligned}
 \text{SDG\_Score}_{i,t} = & \varphi_0 + \varphi_1 \text{Chairwomen}_{i,t} + \varphi_2 \text{Female\_Directors}_{i,t} \\
 & + \varphi_3 \text{Chairwomen*Female\_Directors}_{i,t} + \varphi_4 \text{Size}_{i,t} + \varphi_5 \text{ROA}_{i,t} \\
 & + \varphi_6 \text{Leverage}_{i,t} + \varphi_7 \text{CAPEX}_{i,t} + \varphi_8 \text{R\&D}_{i,t} + \varphi_9 \text{Adver}_{i,t} \\
 & + \varphi_{10} \text{Cash}_{i,t} + \varphi_{11} \text{DLoss}_{i,t} + \varphi_{12} \text{Accruals}_{i,t} \\
 & + \varphi_{13} \text{Analyst}_{i,t} + \varphi_{14} \text{CSR\_Comm}_{i,t} + \varphi_{15} \text{Board\_Indep}_{i,t} \\
 & + \varphi_{16} \text{NCSRPI}_i + \varphi_{17} \text{ICSRPI}_i + \varphi_{18} \text{Country}_i \\
 & + \varphi_{19} \text{Industry}_i + \varphi_{20} \text{Year}_i + \varepsilon_{it} + \eta_i
 \end{aligned}
 \tag{2}$$

The results obtained (Table 6) show that women in the role of chairperson of the board of directors have no power that allows them to promote initiatives aligned with the SDGs, with a higher presence of women directors on the board being necessary to promote actions in favour of the 2030 Agenda (Female\_Directors coeff. = 0.0228). These findings suggest that, at the board level, gender diversity is the key factor that boosts business commitment to the SDGs (Gallego-Sosa et al., 2021), regardless of the gender of the chairperson. In this sense, as posited by the social role theory, women directors behave in line with stereotypes associated to women’s gender role (Liu et al., 2020). Nevertheless, to the extent that this effect is not strengthened by the fact that a woman occupies the position of chair of the board, our results do not provide support to the homophily perspective given that, despite their greater CSR focus, women directors do not affect the board chairwoman’s ability to promote the 2030 Agenda, instead prejudices against women leaders prevail on gender-based affinities even at the board level.

Additionally, to contrast the possible existence of a moderating relationship between the fact that a woman is the chairperson of the board of directors and that the CEO is also a woman, Equation 3 is estimated. This equation is a variant of Equation 1 that incorporates the interaction of the variables Female\_CEO \* Female\_Directors. To avoid problems of collinearity due to the high coincidence of the duality of functions, a control variable is included that identifies only the women who act as chairperson of the board, not combining this activity with that of CEO.

In the last column of Table 6, it can be seen that the results obtained for Equation 1 and Equation 2 are confirmed, not identifying any moderating role of the diversity of the board of directors on the impact of the variable Female\_CEO. Again, these results do not support the homophily perspective, as the role of women CEOs regarding business commitment to the SDGs is not reinforced by the board’s gender diversity; therefore, the findings contradict those obtained by Cook and Glass (2018) and Birindelli et al. (2019).

As stated earlier, Liu et al. (2020) showed that power strengthens women leaders’ influence on corporate strategies. Therefore, it seems appropriate to analyse whether there are differences based on the power

**Table 5**  
Robust results.

	<i>Env</i>	<i>GC_T</i>	<i>HR</i>	<i>H_LS</i>	<i>Div</i>
	<i>Coeff.</i> ( <i>Std.Dv.</i> )	<i>Coeff.</i> ( <i>Std.Dv.</i> )	<i>Coeff.</i> ( <i>Std.Dv.</i> )	<i>Coeff.</i> ( <i>Std.Dv.</i> )	<i>Coeff.</i> ( <i>Std.Dv.</i> )
Female_CEO	0.615 (0.505)	1.239*** (0.349)	0.574* (0.294)	2.805*** (0.477)	3.267*** (0.688)
Female_Managers	-0.00257 (0.00282)	0.0261*** (0.00240)	0.00728*** (0.00224)	0.0189*** (0.00307)	0.0327*** (0.00484)
Female_CEO*Female_Managers	-0.00682 (0.0135)	-0.0334*** (0.0102)	-0.0130 (0.00877)	-0.0395*** (0.0136)	-0.0514** (0.0202)

**Table 6**  
Complementary analysis (I).

	Mod_Equ. 0	Equ. 2	Equ. 3
	<i>Coeff.</i> ( <i>Std.Dv.</i> )	<i>Coeff.</i> ( <i>Std.Dv.</i> )	<i>Coeff.</i> ( <i>Std.Dv.</i> )
Female_CEO			3.171** (1.331)
Female_Managers			0.0434*** (0.00820)
Female_CEO*Female_Managers			-0.0667* (0.0364)
Chairwomen	0.610 (0.453)	0.562 (0.708)	
Female_Directors	0.0229*** (0.00480)	0.0228*** (0.00497)	0.0240*** (0.00491)
Chairwomen*Female_Directors		0.00159 (0.0181)	
Female_CEO*Female_Directors			0.00223 (0.0225)
OnlyChairwomen			-0.143 (0.687)
Size	0.668*** (0.0463)	0.668*** (0.0463)	0.737*** (0.0477)
ROA	0.00831** (0.00375)	0.00830** (0.00375)	0.00809** (0.00375)
Leverage	0.00509* (0.00263)	0.00510* (0.00263)	0.00474* (0.00263)
CAPEX	3.45e-08 (3.68e-08)	3.45e-08 (3.68e-08)	3.50e-08 (3.69e-08)
R&D	2.78e-05 (3.38e-05)	2.78e-05 (3.38e-05)	2.97e-05 (3.37e-05)
Adver	-0.00293 (0.00327)	-0.00293 (0.00327)	-0.00314 (0.00327)
Cash	-8.30e-11 (1.53e-10)	-8.30e-11 (1.53e-10)	-1.05e-10 (1.53e-10)
DLoss	-0.304* (0.176)	-0.305* (0.176)	-0.317* (0.176)
Accruals	2.87e-05 (1.84e-05)	2.87e-05 (1.84e-05)	2.86e-05 (1.84e-05)
Analysts	0.258*** (0.0122)	0.258*** (0.0122)	0.257*** (0.0121)
CSR_Comm	1.277*** (0.112)	1.278*** (0.112)	1.277*** (0.112)
Board_Indep	0.00167 (0.00212)	0.00168 (0.00212)	0.00153 (0.00212)
NCSRPI	0.203*** (0.0111)	0.203*** (0.0111)	0.207*** (0.0112)
ICSRPI	0.648*** (0.0557)	0.648*** (0.0557)	0.735*** (0.0582)
Constant	3.510*** (0.832)	3.512*** (0.832)	1.338 (0.918)
Country, Industry and Year controlled			
Rho	0.928	0.928	0.927
Log likelihood	-19095.233	-19095.229	-19079.494
p-value	0.000	0.000	0.000

**Table 7**  
Complementary analysis (II).

	Equ. 4
	<i>Coeff.</i> ( <i>Std.Dv.</i> )
FemaleCEO_Duality	1.245* (0.662)
OnlyFemaleCEO	2.150 (1.718)
OnlyChairwomen	-3.398 (2.576)
Female_Managers	0.0410*** (0.00808)
Female_Directors	0.0230*** (0.00489)
OnlyFemaleCEO*Female_Managers	-0.0281 (0.0356)
OnlyChairwomen*Female_Directors	0.0676 (0.0478)
OnlyFemaleCEO*Female_Directors	-0.00628 (0.0600)
Size	0.733*** (0.0477)
ROA	0.00807** (0.00375)
Leverage	0.00472* (0.00263)
CAPEX	3.47e-08 (3.69e-08)
R&D	2.96e-05 (3.37e-05)
Adver	-0.00314 (0.00327)
Cash	-1.03e-10 (1.53e-10)
DLoss	-0.316* (0.176)
Accruals	2.87e-05 (1.84e-05)
Analysts	0.257*** (0.0121)
CSR_Comm	1.288*** (0.113)
Board_Indep	0.00161 (0.00212)
NCSRPI	0.207*** (0.0112)
ICSRPI	0.738*** (0.0582)
Constant	1.453 (0.917)
Country, Industry and Year controlled	
Rho	0.927
Log likelihood	-19079.724
p-value	0.000



held by the female CEO, including the distinction of whether there is a duality of functions (CEO and chair of the board) in the analysis (Equation 4).

$$\begin{aligned} \text{SDG\_Score}_{i,t} = & \varphi_0 + \varphi_1 \text{FemaleCEO\_Duality}_{i,t} + \varphi_2 \text{OnlyFemaleCEO}_{i,t} + \varphi_3 \text{OnlyChairwomen}_{i,t} + \varphi_4 \text{Female\_Managers}_{i,t} \\ & + \varphi_5 \text{Female\_Directors}_{i,t} + \varphi_6 \text{OnlyFemaleCEO*Female\_Managers}_{i,t} \\ & + \varphi_7 \text{OnlyChairwomen*Female\_Directors}_{i,t} + \varphi_8 \text{OnlyFemaleCEO*Female\_Directors}_{i,t} + \varphi_9 \text{Size}_{i,t} + \varphi_{10} \text{ROA}_{i,t} + \varphi_{11} \text{Leverage}_{i,t} \\ & + \varphi_{12} \text{CAPEX}_{i,t} + \varphi_{13} \text{R\&D}_{i,t} + \varphi_{14} \text{Adver}_{i,t} + \varphi_{15} \text{Cash}_{i,t} + \varphi_{16} \text{DLoss}_{i,t} + \varphi_{17} \text{Accruals}_{i,t} + \varphi_{18} \text{Analyst}_{i,t} + \varphi_{19} \text{CSR\_Comm}_{i,t} + \varphi_{20} \text{Board\_Indep}_{i,t} \\ & + \varphi_{21} \text{NCSRPI}_i + \varphi_{22} \text{ICSRPI}_i + \varphi_{23} \text{Country}_i + \varphi_{24} \text{Industry}_i + \varphi_{25} \text{Year}_i + \varepsilon_{it} + \eta_i \end{aligned}$$

[4]

In this regard, Table 7 shows that women CEOs influence the implementation of SDG-aligned initiatives in the companies wherein they have greater power, combining the functions of the CEO with the chairperson of the board of directors (FemaleCEO\_Duality coeff. = 1.245). In the companies in which women hold only the position of CEO, there is no significant impact in this regard, irrespective of whether the management teams have a greater presence of women or not. These findings suggest that duality favours women leaders being perceived as more powerful, and this fact counteracts the effect that prejudices against women leaders may have on their influence on business commitment to the 2030 Agenda.

## 7. Conclusions

Although 8 out of the 17 SDGs are particularly significant to women's lives, one of them specifically tackling gender equality issues (Medupin, 2020), women's role to lead the progress towards the 2030 Agenda has often been underestimated (Barrios et al., 2020), and some obstacles prevent them from assuming leadership in this field. This paper aimed to open the "black box" of women's leadership (Hoobler et al., 2018) in the context of the 2030 Agenda, by analysing, first, the role female leaders play in relation to the implementation of sustainability strategies aimed at achieving the SDGs, and, second, if this role differs depending on the proportion of female presence in management teams.

For a sample of 4,089 international companies, we found that the commitment to the 2030 Agenda is higher in companies that have a woman as the CEO and/or the chairperson of the board of directors, and greater gender diversity in both, management teams and the monitoring body. However, the incongruity in the phenomenon of female leadership prototypes hinders the existence of a complementary relationship that reinforces female leadership.

This study responds to the need to understand the role of women leaders in driving business contribution to the 2030 Agenda and the achievement of the SDGs highlighted by Shinbrot, Wilkins, Gretzel, and Bowser (2019). On a theoretical level, our study contributes to understanding the role that women in several corporate positions (i.e., CEO, chairperson of the board of directors, board directors, and management team members) play in advancing towards sustainable development and the 2030 Agenda, and how gender stereotypes influence interactions among them.

Our findings confirm the social role theory, showing that women leaders behave in line with their "assigned gender role" by promoting socially and environmentally responsible policies and strategies, but they face gender stereotyping prejudices that affect interactions among them and women in their teams, limiting their ability to influence corporate decisions regarding engagement with the SDGs. Thus,

consistent with the social role theory, we prove that prejudices act as barriers to achieve synergic effects among women in different management positions.

Additionally, we show that power strengthens women leaders' influence on corporate strategies, counteracting the effect that prejudices against them may have on their impact on business commitment to the 2030 Agenda. In this sense, our findings extend those previously reported on the effect of board gender diversity (Boulouta, 2013; Byron & Post, 2016; Gallego-Sosa et al., 2021) and management team diversity (Larrieta-Rubín de Celis et al., 2015; Monteiro et al., 2021), and can explain differences among companies in terms of their commitment to the 2030 Agenda, based on gender diversity in corporate higher echelons.

From a methodological viewpoint, we contribute to literature by proposing a new way of measuring the level of business contribution to the SDGs, apart from those employed in previous studies (e.g., García-Sánchez et al., 2020b; Van der Waal & Thijssens, 2020 Gallego-Sosa et al., 2021), as well as evaluating the extent to which companies implement initiatives for the achievement of the SDGs, through a composite indicator computed from the sum of 50 items of responsible practices linked to different SDGs, identified according to various studies (Deloitte, 2017, 2018; PwC, 2017, 2018). We also highlight the breadth of the sample (12,404 observations related to 4,089 multinationals that reported on their initiatives in relation to the 2030 Agenda between 2015 and 2018), including companies belonging to different countries and industries, which contributes to the generalization of our results.

Regarding the study's practical implications, by showing the positive effect that both the presence of women in different corporate positions and gender diversity have on business commitment with the 2030 Agenda, our findings highlight the need to promote female leadership and gender diversity to boost the achievement of the SDGs. Thus, the results provide a valuable reason for both, firms and regulators, to increase their efforts to promote gender parity in corporate management. From a broader viewpoint, our findings have important social implications, like the need to fight against gender stereotypical beliefs about leadership roles to overcome the cultural obstacles that limit women leaders' potential to influence corporate strategies, thereby advancing towards a fair economy (Sanz, Peris, & Escámez, 2017; Jafari-Sadeghi et al., 2021). In this sense, education programs should train students to counteract prejudices and stereotypes that prevent women from exerting actual leadership and, thus, favour their empowerment (Wilson, Kickul, & Marlino, 2007; Kuehn, 2008; Armuña et al., 2020). This is especially important because, as a result of the COVID-19 pandemic's effects on business fabric and society, there is a higher necessity of involving women at corporate decision-making at all levels (Donthu & Gustafsson, 2020).

Lastly, it should be noted that this research is subject to some limitations, mainly related to the underrepresentation of women in corporate management. The negative moderating effect of gender diversity in both, management teams and the board of directors, on women leaders' ability to exert influence related to business commitment to the 2030

Agenda may be explained by the low presence of women in management teams and the board of directors in our sample, which suggests the possibility that a critical mass of women is necessary for the homophily effect to take place. Future research could explore this issue. Similarly, additional variables related to cultural gender stereotypes across countries that can affect the relationship between women leaders and their subordinates should be considered. Additionally, this study could be extended to also consider how women leaders' demographic characteristics (e.g., age, training, and background) may qualify such a relationship.

From a methodological viewpoint, as most studies on this subject, we measured women's leadership as a dummy variable, matching gender to managers' biological sex (Hoobler et al., 2018). However, we are aware that this proxy does not capture the connotations of the term gender as a social construct (Ahl, 2006), their implications on women managers' behaviour, power, and influence. Future studies could develop a scale for measuring women's leadership better. Moreover, case studies could delve into how women actually exert leadership in an organizational scenario.

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#### CRedit authorship contribution statement

**Isabel-María García-Sánchez:** Writing – review & editing, Writing – original draft, Validation, Supervision, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Cristina Aibar-Guzmán:** . **Miriam Núñez-Torrado:** . **Beatriz Aibar-Guzmán:** Writing – review & editing, Writing – original draft, Validation, Supervision, Project administration, Funding acquisition, Formal analysis, Data curation, Conceptualization.

#### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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