



Female executives and multinationals' support of the UN's sustainable development goals

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ABSTRACT

We examine the effect of female representation in multinationals' top management teams (TMTs) on firms' support of the UN's Sustainable Development Goals (SDGs). Despite the central importance of multinationals in achieving the SDGs, there has been little research on what drives their adoption by multinationals. We draw on social role theory and the literature on team decision-making to argue that female representation in TMTs increases multinationals' support of the SDGs. We also find that the effect of female representation in TMTs on multinationals' support of the SDGs varies with the level of international diversification.

1. Introduction

Achieving the United Nation's Sustainable Development Goals (SDGs) has been viewed as the key challenge for the new decade (Van Tulder, Rodrigues, Mirza & Sexsmith, 2021). Because of the intrinsically global nature of the SDGs, firms operating internationally play a vital role in their achievement (Kolk, 2016, 2017; van Zanten & van Tulder, 2018), and there has been increasing pressure on their executives to contribute to the advancement of the SDGs (IISD, 2019; WBCSD, 2021). Based on suggestions that female executives are more likely than their male counterparts to engage in sustainable business practices (e.g., Manner, 2010), we investigate how multinationals' support of the SDGs is driven by female representation on multinationals' top management teams (TMTs).

The SDGs are global, and their achievement requires strategies, practices, and measures that transcend national borders (Kolk, 2016; Van Tulder et al., 2021; van Zanten & van Tulder, 2018). Because multinationals have greater access to different ideas about and knowledge of sustainable business practices, they are central actors in overcoming the global challenges contained in the SDG framework (Duque-Grisales & Aguilera-Caracuel, 2021). They are thus seen as more important than domestic firms for achieving the SDGs, and their executives face greater pressures from a wider set of stakeholders to help do so. Multinationals' TMTs are also subject to greater scrutiny by home-country stakeholders who might perceive them as engaging in unsustainable business practices, such as evading domestic taxes,

offshoring production to low-cost countries, or exploiting weaker institutional frameworks in their overseas operations (see, for example, Castillo, Mollenkopf, Bell & Bozdogan, 2018; Kolk, 2016; Strike, Jijun & Bansal, 2006; Surroca, Tribó & Zahra, 2013). Because of this greater scrutiny and increased stakeholder exposure, executives' support for the SDGs and the alignment of their strategies and practices with the SDGs is thus of particular importance for multinational corporations (see, for example, Christmann, 2004; Liou & Rao-Nicholson, 2021; Miska, Witt & Stahl, 2016; Park & Ghauri, 2015; Xu & Liu, 2017). Consequently, although prior research has examined the drivers of multinationals' engagement in different corporate social responsibility practices (for an overview, see Kolk et al., 2017), recent international business (IB) research has been called on to focus specifically on the SDGs and the role of multinational corporations in achieving them (Eden & Wagstaff, 2021; Lewis, Yang, Moise & Roddy, 2021; Liou & Rao-Nicholson, 2021). Understanding how multinational corporations contribute to achieving the SDGs continues to be one of the grand challenges for IB research (Buckley, Doh & Benischke, 2017; Park & Ghauri, 2015). Prior research has focused on specific SDGs rather than on the breadth of SDGs (Kolk et al., 2017). Eden and Wagstaff (2021), for example, focus on multinationals' contribution to achieving gender equality (SDG 5). Although we suggest that analyzing the drivers of multinationals' alignment with individual SDGs is important, the SDGs as well as the different means of achieving them are interdependent; thus, there have been calls to account for these interdependencies when investigating multinationals' alignment with SDGs as a whole (Ramirez, 2021; Witte & Dilyard,

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2017).

Further, research has shown that firms with female representation on their boards are more likely to engage in sustainability-related activities (e.g., (Harjoto et al., 2015) Boulouta, 2013; Galbreath, 2011; Hafsi & Turgut, 2013; Halliday, Paustian-Underdahl & Fainshmidt, 2021; McGuinness, Vieito & Wang, 2017). The presence of women on the board, for example, has been associated with higher corporate philanthropy (Wang & Coffey, 1992; Williams, 2003). However, multinationals' adoption of sustainable practices has been argued to be influenced by upper-echelon composition in its entirety and thus to be shaped by both the TMT and the board of directors. Bao, Fainshmidt, Nair and Vracheva (2014), for instance, highlight the relevance of female executives not only on the board but also on the TMT in shaping US retailers' risk of being sued. Further, research on the role of TMTs for firms' social responsibility has stressed that the board's main task relates to monitoring and advising the TMT and that TMT members are seen as a key determinant of whether firms act responsibly, respond to stakeholder pressures, and engage in responsible business practices (Chin, Hambrick & Trevino, 2013; Kumar & Paraskevas, 2018; Manner, 2010; Reimer, Van Doorn & Heyden, 2018; Slater & Dixon-Fowler, 2009). This literature suggests that engaging in responsible practices is not only a response to external pressure but is driven by the values and individual characteristics of the TMT. Research has, for instance, documented a strong connection between female representation on the TMT and socially responsible initiatives (Manner, 2010). Following this evidence for the relevance of TMTs to firms' engagement in social responsibility, research has called for greater attention to the role of TMTs (Reimer et al., 2018). Therefore, we focus on the effect that female representation on TMTs has on multinationals' support of the SDGs through aligning their strategies and practices with the SDGs.¹ Specifically, we aim to answer the research question *How does female representation in the TMT of multinationals affect a firm's support of the UN's SDGs?*

The upper echelons (UE) perspective has been the dominant approach to investigating the influence of TMT characteristics on strategic decision-making (Hambrick & Mason, 1984). Depending on the particular characteristics of the TMT and its members, research has drawn on additional theories, such as social role theory, agency theory, or resource dependence theory (Bao et al., 2014; Hafsi & Turgut, 2013; Krishnan & Park, 2005). We follow this approach and complement the basis UE perspective with insights from social role theory (see, for example, Beekun, Stedham, Westerman & Yamamura, 2010; Boulouta, 2013; Eagly, 2009; Galbreath, 2011; Gupta, Turban & Bhawe, 2008; Hyun, Yang, Jung & Hong, 2016) and recent research on the role of female participation in group decision-making (Adams & Ferreira, 2009; Keck & Tang, 2018; Post & Byron, 2015). Drawing on both streams of research, we theorize that high female representation on TMTs will positively influence multinationals' support of the SDGs.

We investigate this hypothesis empirically using a unique sample of firms listed in the S&P 500 index from 2016 to 2019. We find a positive effect of TMT female representation on multinationals' support of the SDGs. Through additional empirical analyses, we also examine the mechanisms that we argue underlie the relationship between TMT female representation and multinationals' support of the SDGs. These analyses show that the level of firm international diversification and female representation on the firm's board influences the direct effect of TMT female representation on multinationals' support of the SDGs. Our findings have important implications for our understanding of what drives these firms' support of the SDGs.

¹ We account for board-level variables, including female representation on the board, in our empirical analyses. We thank the editor for suggesting this approach.

2. Theory and hypothesis

According to the UE perspective, TMT members' characteristics shape the team's strategic decisions (Hambrick & Mason, 1984), including those concerning the firm's engagement in social responsibility initiatives (Petrenko, Aime, Ridge & Hill, 2016; Reimer et al., 2018). We draw on social role theory and the literature on female influence on decision-making to argue that multinationals' support of the SDGs will be driven by (1) specific beliefs and attitudes that distinguish female from male TMT members; by (2) socially embedded expectations towards female executives to support the SDGs; and, by (3) the effect that female executives have on group decision-making, and specifically, on TMT decision-making.

First, previous research has highlighted that *female managers differ from their male counterparts in their attitudes, beliefs, and behaviors* (Pelled, Eisenhardt & Xin, 1999; Terjesen, Sealy & Singh, 2009) and suggested that female managers have higher ethical standards, have lower thresholds for considering business practices as unethical, and are more attuned to the social expectations of stakeholders (see, for instance, Beekun et al., 2010; Birindelli, Dell'Atti, Iannuzzi & Savioli, 2018; Boulouta, 2013; Galbreath, 2011; Hyun et al., 2016; Ridgeway & Correll, 2004; Schwartz & Rubel, 2005). Female executives are thus more likely to engage in prosocial citizenship and consideration behavior than their male counterparts (see, for instance, Eagly, Johannes-Schmidt & Van Engen, 2003; Farrell & Finkelstein, 2007; Heilman & Chen, 2005; Pan & Sparks, 2012).

Second, because of socially embedded expectations for the characteristics of female executives, they will more likely be subject to greater *global pressure to engage in, but also receive greater support for, sustainability initiatives from external stakeholders*. Ambrose and Schminke (1999: 463) for example, emphasize that behaviors and attitudes may be shaped by an individual's "sense of expectations that others hold for him or her." Individuals adopt certain behaviors and attitudes to avoid violating socially embedded role expectations of them (Hill, Upadhyay & Beekun, 2015). Therefore, socially embedded expectations regarding the characteristics of female executives might shape their behavior and attitudes *irrespective* of whether they "regard the stereotype as true for themselves or their group" (Gupta et al., 2008: 1054). Eagly and Karao (2002) even suggest that individuals believe they will be better at performing tasks requiring characteristics that match the stereotypical expectations for the social groups they belong to.

Further, research has shown that female executives are subject to greater external scrutiny than male executives because of the perceived incongruity between stereotypically female characteristics and those associated with CEOs, such as aggressive, competitive, or similar agentic traits (Heilman, 2001; Hill et al., 2015). This "liability of gender" (Greene, Han & Marlow, 2013) implies that external stakeholders may focus on multinationals with female executives, who are seen as more receptive to sustainability concerns than their male peers because of socially embedded expectations about their characteristics (Gupta, Han, Mortal, Silveri & Turban, 2018). Stakeholders may view female executives not only as more receptive but also as more willing and better able to integrate business practices into multinationals' strategy. At the same time, however, engaging in activities that advance the SDGs is viewed not as "office housework" (Kolb & Porter, 2015) but as an essential task of executive work (IISD, 2019; WBCSD, 2021). Female executives are thus unlikely to feel as if they are walking the tightrope between agentic and communal gender-role expectations (Zheng, Surgevil & Kark, 2018).² Finally, because of socially embedded expectations, female managers may be offered greater opportunities to adopt the SDGs in a multinational's strategy, such as by being more likely to be approached by external stakeholders interested in sustainability improvements.

As a result of these actual, perceived, or ascribed differences in

² We thank an anonymous reviewer for highlighting this issue.

behaviors and attitudes between female and male managers, female representation on multinationals' TMTs or boards has been linked to replacing less sustainable business practices with more sustainable ones. Research suggests, for example, that the presence of a higher share of female executives improves the level of disclosure on socially responsible practices (Barako & Brown, 2008; Kathy Rao, Tilt & Lester, 2012), reduces the likelihood of firms engaging in financial fraud (Cumming, Leung & Rui, 2015), improves corporate governance (Terjesen et al., 2009), and enhances firms' engagement in socially responsible initiatives (Bear, Rahman & Post, 2010; Hafsi & Turgut, 2013; Post, Rahman & Rubow, 2011; Webb, 2004).

Third, scholarship on gender diversity on board decision-making suggests that *differences in knowledge, experience, and values between female and male executives affect group decision-making* (Adams & Ferreira, 2009; Post & Byron, 2015). Specifically, research on decision-making in TMTs has highlighted that female executives change group decision-making dynamics (see, for example, Bear & Woolley, 2011; Keck & Tang, 2018; Post, Lokshin & Boone, 2020; Rao & Tilt, 2016). Female representation has been argued to influence the psychological processes and behaviors of all team members, including male members of the decision-making group, affecting how they interact and arrive at decisions (Adams & Ferreira, 2009; Williams & Polman, 2015). Female representation affects decision-making by increasing openness to change and group openness to considering novel information from a broader set of sources and from the perspectives of a wider range of stakeholders (Bao et al., 2014; Dezsö & Ross, 2012; Hillman, Shropshire & Cannella, 2007). A TMT's willingness and ability to account for multiple perspectives is argued to be a key driver of engagement in socially responsible practices (e.g., Wong, Ormiston & Tetlock, 2011) and should thus also lead to greater support of the SDGs.

In addition, the presence of female executives has been shown to lead to a shift in decision-making behavior of TMTs toward greater change orientation (Burgess & Tharenou, 2002; Post et al., 2020; Triana, Miller & Trzebiatowski, 2013) and greater innovation (Bantel & Jackson, 1989; Kumar & Paraskevas, 2018; Welbourne, Cycyota & Ferrante, 2007). Achieving the SDGs requires both. Research has highlighted, for example, the need to develop sustainable products and services (Bodur, Duval & Grohmann, 2015; Dangelico & Pujari, 2010) and for transitioning to a sustainable supply base (Ingenbleek & Reinders, 2013).

Finally, although research has stressed the positive effect of female representation on innovation and R&D spending—activities associated with some degree of risk (Welbourne et al., 2007)—female representation reduces the likelihood of taking excessive risks (Baixauli-Soler, Belda-Ruiz & Sanchez-Marin, 2015; Muller-Kahle & Lewellyn, 2011; Post et al., 2020; Triana et al., 2013). Through increased information processing and sharing within groups and the resulting improvement in confidence judgments (Keck & Tang, 2018; Rost & Osterloh, 2010), female representation reduces the likelihood of overconfidence and aggressive as well as excessively risky decisions (Ben-David, Graham & Harvey, 2013; Endrikat, de Villiers, Guenther & Guenther, 2020). A lower preference for taking excessive risks will thus manifest in TMTs' increased desire to meet legal and global, societal expectations, thereby reducing the firm's risk of legal challenges and reputational damage (Bao et al., 2014). The lower preference for taking excessive risks of TMTs with female representation also means that multinationals will be more likely to align their strategy with the SDGs because of the risk associated with ignoring global societal expectations regarding corporate sustainability.

Overall, based on these arguments drawn from social role theory as well as literature on the effects of female representation on group decision-making, we formulate the following hypothesis:

Hypothesis. Female representation in multinationals' TMT will positively influence multinationals' support of the UN's Sustainable Development Goals.

3. Methods

3.1. Data and sample

In constructing our sample to explore the effect that female representation on TMTs has on a multinational's support of the SDGs, we focused on multinationals³ listed in the S&P 500 and combined data on these firms from multiple sources for the period 2016–2019. Because the SDG agreement was ratified in 2015, 2016 is the earliest year for which data on multinationals' support of the SDGs are available, and 2019 is the most recent year for which these data are available. We sourced data on executives' gender, and on other board characteristics from BoardEx. Next, we collected data on firms' support of the SDGs in our sample using ASSET4,⁴ from which we also sourced our firms' Environmental, Social, and Governance (ESG) scores. We used ExecuComp to obtain data on other characteristics of multinationals' executives, including compensation. Finally, we collected our firm-level controls from Compustat and sourced data on shareholder pressure using the Institutional Shareholder Services (ISS). After merging the databases, our final sample for testing our hypothesis includes data for 1148 firm-year observations pertaining to 426 firms.

3.2. Dependent variable

We measure our dependent variable, *SDGs*, as the number of SDGs that a multinational aligns its business practices with in a given year. We used the Refinitiv ESG (formerly ASSET4) database, which provides binary variables showing whether a company aligns its practices with each of the 17 SDGs. Refinitiv ESG collects this information from publicly available sources such as financial and non-financial company reports. The actual alignment as well as the existence of a process for aligning business practices with a specific SDG was required for a particular SDG to be classified as supported. To code our dependent variable, we count the number of supported SDGs per year and firm.⁵

3.3. Independent variable

We measure our independent variable, *ratio of female executives*, as the number of female TMT members in a given year divided by total TMT size.⁶ Following recent research (Cooper, Patel & Thatcher, 2014; Jeong & Harrison, 2017; Messersmith, Lee, Guthrie & Ji, 2014), we obtained the total TMT size from ExecuComp and the respective gender status from BoardEx.

3.4. Control variables

To rule out alternative explanations, we include various control variables at the firm and executive levels in our empirical specifications. Multinationals' support of the SDGs and female representation in

³ Firms that did not score higher than zero on the international diversification measure were excluded from our analyses.

⁴ We use the previous name of the database for the sake of simplicity. As of 2018, the Environmental, Social, and Governance (ESG) ratings data from Thompson Reuters are part of Refinitiv and are known as Refinitiv ESG.

⁵ Importantly, our measure of SDGs is distinct to overall sustainable practices in a specific firm as captured by the ESG score. Specifically, we find a positive but modest correlation between the ASSET4 ESG score, a measure often used to capture a company's overall sustainability performance (Birindelli et al., 2018; Del Bosco & Misani, 2016; Duque-Grisales & Aguilera-Caracuel, 2021; Hartmann & Uhlenbruck, 2015), and our measure for SDGs ($r = 0.19$), highlighting the validity yet distinctiveness of our measure. Further, we include the firm's ESG score as a control in our regressions, and all our results remain consistent.

⁶ We also model our independent variable as a yearly count of the number of female executives in the TMT while controlling for the size of the TMT and find consistent results.

multinationals' TMTs might both be driven by a firm's broader commitment to sustainable practices. We thus control for multinationals' overall commitment to sustainable business practices, using the *ESG score* of the firm in a given year, calculated by ASSET4. The ESG scores capture how firms perform with regard to environmental criteria, such as waste and pollution and climate change; on social criteria, such as employee relations and diversity and working conditions; and governance criteria, such as corruption and bribery. Further, recent research established that the presence of a *Chief Sustainability Officer* increases a firm's socially responsible activities (Fu, Tang & Chen, 2020); we thus used data from BoardEx to code a binary indicator to reflect whether a *Chief Sustainability Officer* was present in a firm in a given year.⁷

Research has highlighted the important role of boards and their diversity in firms' engagement in socially responsible practices (see, for instance, Birindelli et al., 2018; Boulouta, 2013; Hafsi & Turgut, 2013; Hollindale, Kent, Routledge & Chapple, 2019). Following prior research (e.g., Chen, Crossland & Huang, 2016), we code *Female board ratio* as the number of female directors in a given year divided by the total board size using BoardEx. Further, boards often create sustainability committees to expose their senior executives to sustainability issues and urge them to improve social performance (Endrikat et al., 2020; Fu et al., 2020; Walls, Berrone & Phan, 2012). We thus control for internal pressure to implement socially responsible best practices by coding whether a firm implemented a corporate social responsibility (CSR) committee to monitor, manage, and control its social responsibility. We measure the presence of such committees using BoardEx and assess it as the total count of committees related to social responsibility per year in a specific firm (*CSR committee*).

Additionally, the decision to support the SDGs may depend on a firm's available resources and financial performance. Thus, we control for *firm size*, measured as the natural logarithm of total assets; firm performance, measured as return on assets (*ROA*); and firm *R&D intensity*, measured as R&D investments in a specific year divided by the firm's total assets. We also control for governance conditions by including *board size* and *board independence* in our estimations. Further, we include a binary indicator of whether a female CEO was present in the firm (*Female CEO*).

The share of female executives and multinationals' support of the SDGs might also be affected by a given firm's public visibility. We thus control for firm visibility to external stakeholders with two variables. Specifically, we code a variable capturing whether the firm was one of the 50 *Most admired firms* using the established Fortune 50 list for a given year. We also include a variable capturing how many analysts issued earnings forecasts for the firm (*Number analysts*) (Chen, Chittoor & Vissa, 2015).

In addition, multinationals' support of the SDGs and share of female executives can be affected by pressure from shareholders. Therefore, we control for sustainability-related shareholder pressure by focusing on shareholder activism targeting firms with CSR proposals. Specifically, using the ISS database, we code the number of socially responsible investing proposals that a firm received in a given year (*CSR proposals*) (see, for instance, Cuñat, Gine & Guadalupe, 2012; David, Bloom & Hillman, 2007). Further, to control for increased stakeholder pressure for more internationally diversified firms, we control for their *international diversification*. Specifically, we follow prior research (Hitt, 1997; Verbeke, Coeurderoy & Matt, 2018) and use segments data from Compustat to measure the involvement of firms in overseas markets by estimating the entropy of international diversification.

Finally, to control for factors at the executive level that might affect multinationals' support of the SDGs, we control for the value of the *executive ownership*, measured as the mean percentage of total shares the executives hold in the company, as well as their annual remuneration

(*executive compensation*). In addition, we control for mean *executive age* and mean *executive tenure*.

4. Analyses and results

Table 1 shows the correlations and descriptive statistics.

We present the results of several models that test our hypothesis in Table 2. We first present the baseline results with all control variables, and then we add our independent variable. Because our dependent variable regarding a multinational's support of the SDGs is a count variable, we employ a Poisson model to analyze these variables.⁸ We include firm fixed effects in our estimations, to account for any unobservable firm characteristics that are time-invariant, and year fixed effects, to account for any time trend that could affect both the appointment of female TMT members and multinationals' support of the SDGs. We also address endogeneity concerns by deploying a coarsened exact matching (CEM) model to account for bias in selection on observables estimators, and by controlling for the possibility that female executives might be drawn to certain employers (see Appendix).

In our hypothesis, we posit that the share of female members of a firm's TMT will positively influence multinationals' support of the UN's SDGs. In support of this hypothesis, we find in Model 2, Table 2 a positive significant effect for the variables *Ratio of female executives* and *SDGs* ($\beta = 18.681$, $p = 0.000$).⁹ To allow for an economic interpretation of our result, we calculate the incidence rate ratio for our standardized independent variable. We find that a one-standard-deviation increase in the standardized share of female executives on firms' TMT leads to an increase in the number of SDGs that a multinational firm supports by a factor of 12.51.

We also conduct additional analysis of our data to empirically explore the mechanisms that we suggested underlie our hypothesis. Specifically, we investigate whether the relationship between female representation on the TMT and multinationals' support of SDGs varies with firms' level of international diversification. First, we argue that because of the specific characteristics of female executives as opposed to male executives, female representation increases TMTs' ability and willingness to account for a growing number and greater diversity of stakeholder perspectives. Second, internationally diversified firms will be subject to greater and more diverse pressures to adopt sustainable business practices from their stakeholders (Christmann, 2004; Park & Ghauri, 2015). Third, greater levels of international diversification will be associated with an increase in the concerns of domestic stakeholders regarding the (un)sustainability of a firm's practices (Castillo et al., 2018; Kolk, 2016; Strike et al., 2006). Such stakeholder pressures are also more likely to be directed at firms with female TMT members because of the latter's perceived greater ability and willingness to support sustainability issues (Greene et al., 2013; Gupta et al., 2018). Therefore, we would expect the relationship between female representation on the TMT and multinationals' support of the SDGs to strengthen in cases of high international diversification.

Fourth, greater international diversification also increases a firm's exposure to legal and reputational risks. The suggested influence of

⁸ Poisson models address the problem arising from count data by assuming that the errors follow a Poisson, not a normal, distribution and use the natural logarithm as the link function to model the natural logarithm of the dependent variable as a linear function of the coefficients (Cameron & Trivedi, 2005). To control for possible overdispersion, we cluster standard errors at the firm level (e.g., Cameron & Trivedi, 2005). As an additional robustness check, we conduct our analysis with negative binomial instead of Poisson models and obtain consistent results. Note that all observations within the panel for which there is no variation in the dependent variable are dropped from the estimation.

⁹ We also analyze the marginal effect of our independent variable across different values and all other covariates at their means and find a consistent effect of our independent variable on our dependent variable across these different values.

⁷ Please see Fu, Tang, and Chen (2020) for the exact coding procedure.

Table 1
Descriptive statistics and correlations.

	Variable	Mean	Std.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	Ratio female executives	0,105	0,127	1																			
2	SDGs	0,597	2414	0,05	1																		
3	ESG Score	57,899	17,486	0,20	0,19	1																	
4	International diversification	0,632	0,407	-0,06	0,10	0,15	1																
5	Executives tenure	15,276	10,388	-0,02	0,04	0,06	-0,02	1															
6	Executives compensation	5972,827	4447,182	0,06	0,05	0,12	0,14	0,09	1														
7	Executives age	54,545	3346	-0,02	0,04	0,11	-0,06	0,18	-0,01	1													
8	Executives ownership	0,282	0,745	0,05	-0,05	-0,19	0,05	0,16	0,14	0,17	1												
9	Female CEO	0,050	0,217	0,26	0,00	0,11	-0,11	0,00	0,07	0,11	0,04	1											
10	Chief Sustainability Officer	0,129	0,335	0,05	0,14	0,16	0,04	0,00	0,02	0,08	0,00	0,02	1										
11	CSR proposals	0,522	1018	-0,01	-0,13	0,13	-0,08	0,10	0,16	0,07	-0,05	0,08	0,06	1									
12	ROA	0,066	0,069	0,07	-0,01	0,09	0,04	0,08	0,05	-0,01	-0,01	0,02	-0,03	0,00	1								
13	R&D intensity	0,022	0,042	-0,04	0,00	0,04	0,34	-0,01	0,10	-0,15	0,00	-0,06	-0,06	-0,06	0,25	1							
14	Firm size	9997	1318	0,04	0,09	0,39	-0,03	0,04	0,50	0,14	-0,11	0,12	0,08	0,33	-0,12	-0,18	1						
15	CSR committee	0,079	0,270	0,04	-0,07	0,04	-0,01	0,04	-0,04	0,02	0,00	0,02	0,00	0,13	-0,06	-0,07	0,02	1					
16	Female board ratio	0,207	0,081	0,18	-0,01	0,25	0,00	0,07	0,09	0,04	-0,01	0,09	0,07	0,14	0,04	-0,01	0,14	0,09	1				
17	Board size	11,097	2135	0,03	0,05	0,24	0,00	0,06	0,15	0,14	-0,11	0,07	0,13	0,13	-0,08	-0,18	0,39	0,05	0,20	1			
18	Board independence	0,878	0,065	0,03	0,04	0,18	-0,05	-0,15	-0,03	-0,17	-0,46	0,00	0,03	0,10	-0,12	-0,08	0,23	0,10	0,08	0,24	1		
19	Most admired firms	0,105	0,307	0,09	0,02	0,19	0,06	0,18	0,34	0,06	-0,02	0,02	0,04	0,28	0,09	-0,03	0,41	0,03	0,17	0,20	0,06	1	
20	Number analysts	6551	4018	-0,04	0,06	-0,02	0,04	0,08	0,22	-0,05	0,02	-0,01	-0,05	0,12	-0,09	0,06	0,15	0,09	0,02	-0,03	-0,01	0,17	1

Table 2
Results of Poisson fixed-effect models for the UN Sustainable Development Goals.

	UN's Sustainable Development Goals		
	Model 1	Model 2	Model 3
Ratio female executives		18.681*** (5.025)	18.626** (9.225)
Ratio female executives*			24.324** (11.038)
International diversification			
ESG Score	0.128*** (0.049)	0.105* (0.059)	0.150* (0.082)
International diversification	-12.720*** (4.746)	-13.871** (6.223)	-8.333 (7.250)
Executives tenure	0.564* (0.339)	0.945** (0.406)	1.473 (1.213)
Executives compensation	0.000** (0.000)	0.000 (0.000)	0.001*** (0.000)
Executives age	-0.372*** (0.134)	-0.629*** (0.193)	-0.881*** (0.269)
Executives ownership	0.035 (2.080)	-4.440 (4.385)	-11.973* (7.116)
Female CEO	-1.391 (1.514)	-1.497 (1.852)	-2.732 (2.288)
Chief Sustainability Officer	-1.335** (0.522)	-1.636*** (0.553)	-1.464** (0.626)
CSR proposals	-2.014* (1.086)	-2.298* (1.311)	-5.594 (5.134)
ROA	-1287 (3.830)	-1.278 (4.895)	-7.189 (5.815)
R&D intensity	-43.549** (20.016)	-60.807*** (21.685)	-74.841** (35.509)
Firm size	-3.258* (1.781)	-1.352 (2.690)	-1.779 (3.265)
CSR committee	-16.872 (2197.985)	-17.381 (3933.096)	-11.469 (3361.116)
Female board ratio	43.827*** (12.098)	69.792*** (19.588)	83.872*** (22.606)
Board size	-1.727*** (0.584)	-1.833** (0.753)	-1.895* (1.035)
Board independence	3.219 (14.826)	42.292 (30.009)	106.080*** (40.327)
Most admired firms	-10.670 (4534.387)	-11.939 (6553.398)	-5.845 (6571.914)
NumberAnalyst	-0.065 (0.078)	-0.140* (0.085)	-0.246** (0.097)
Year fixed effects	YES	YES	YES
Firm fixed effects	YES	YES	YES
Observations	426	426	426

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

female representation on multinationals' support of the SDGs by reducing TMTs' concern for these risks should therefore be stronger for multinationals having high international diversification.

Finally, the UE perspective suggests that given increasing external uncertainty and job demands, executives will draw even more on their own specific values and attitudes in their decision-making (Haleblian & Finkelstein, 1993; Hambrick, Finkelstein & Mooney, 2005). International diversification increases external uncertainty and job demands (Boulouta, 2013; Gupta et al., 2008; Hill et al., 2015). In a similar vein, psychologists have stressed that an individual's attitudes and characteristics become more important drivers of individual behavior in "weak," as opposed to "strong," situations (see, for instance, Cooper & Withey, 2009; Meyer, Kelly & Bowling, 2018). Weak or ambiguously structured situations do not provide clear cues about what individuals are required to do, leaving them with more options and greater uncertainty (Mischel, 1977). International diversification reduces the "strength" of the situation that executives find themselves in, thus increasing the options that are available to executives. Such situations allow for a greater effect of female executives on multinationals' support of the SDGs.

If the positive relationship between TMT female representation and multinationals' support of the SDGs is based on the suggested

mechanisms, we would expect international diversification to have a positive moderating effect on this relationship. We therefore interact our independent variable with our measure for international diversification to empirically test this moderating effect. The results of this additional empirical analysis show that the coefficient for the interaction between female share and international diversification is positive and statistically significant (Model 3, Table 2, $\beta = 24.324$, $p = 0.028$) and thus lends support for the existence of the suggested mechanisms.

5. Discussion

Because of the transnational nature of the SDGs (Kolk, 2016; Van Tulder et al., 2021; van Zanten & van Tulder, 2018), increasing attention has focused on the role of multinationals in achieving them (see, for example, Christmann, 2004; Duque-Grisales & Aguilera-Caracuel, 2021; Liou & Rao-Nicholson, 2021; Miska et al., 2016; Park & Ghauri, 2015; Xu & Liu, 2017). Their considerable importance is paralleled by a scarcity of research on what drives multinationals to support the SDGs, leading scholars to call for more research on the role of multinationals' contribution (see, for example, Buckley et al., 2017; Eden & Wagstaff, 2021; Lewis et al., 2021; Liou & Rao-Nicholson, 2021; Park & Ghauri, 2015). Given the interdependence between the SDGs and the means for achieving them (Ramirez, 2021; Witte & Dilyard, 2017), we respond to these calls by examining the role of TMT female representation in multinationals' support of the SDGs. Although scholars have stressed the effect of female representation on boards of directors on firms' sustainability-related activities (e.g., Boulouta, 2013; Galbreath, 2011; Hafsi & Turgut, 2013; Halliday et al., 2021), recent research has emphasized the importance of studying the TMT as an equal or even more important driver of firms' engagement in socially responsible practices (Bao et al., 2014; Chin et al., 2013; Kumar & Paraskevas, 2018). By focusing on TMT female representation, we further complement our understanding of the effects of female representation on boards of directors.

Combining the basic UE perspective with insights from social role theory and the literature on the effects of female representation on group decision-making, we argue for a positive effect of female representation on the TMT on multinationals' support of the SDGs. We find empirical evidence for this effect and thus contribute to existing research on the importance of female representation for firms' socially responsible practices (Beekun et al., 2010; Birindelli et al., 2018; Boulouta, 2013; Galbreath, 2011; Hyun et al., 2016; Ridgeway & Correll, 2004; Schwartz & Rubel, 2005). Our argument for a positive effect of female representation on the TMT on multinationals' support for the SDGs is in part based on the assumption that female executives are less likely to engage in unsustainable practices. To explore this possible effect empirically, we examine the relationship between female representation and MNEs' use of irresponsible practices. We follow prior research on corporate social irresponsibility (Chiu & Sharfman, 2018; Tang, Qian, Chen & Shen, 2015) and use a composite measure of the "concern scores" provided by MSCI ESG Stats (formerly Kinder, Lydenberg, Domini & Co., Inc. [KLD]) to capture irresponsible practices. Specifically, we measure corporate social irresponsibility using a composite score comprising twelve concern categories from the MSCI database: alcohol, corporate governance, community, diversity, employee relations, environment, gambling, human rights, military, nuclear, product, and tobacco. Each category contains multiple items rated by MSCI for concerns, and we use the standardized raw scores from each dimension to create our composite score. We collected data for our set of S&P 500 firms, and we ran the analyses using the total number of concerns as our dependent variable. We used a Poisson regression model, with firm and year fixed effects, and included all control variables from our main estimations. Our findings suggest that female representation on firms' TMT does indeed have a negative effect on unsustainable business practices ($\beta = -1.451$, $p = 0.038$).

Although prior research on gender representation and socially

responsible practices argues for the existence of certain mechanisms that link female representation to such practices, it does not usually explore the suggested mechanisms empirically (see, for example, Endrikat et al., 2020). Therefore, we also contribute to our understanding of the effects of female representation on TMTs by exploring the effect of such representation on firms' support of the SDGs. To do so, we investigate how multinationals' level of international diversification affects the relationship between female representation on the TMT and multinationals' support of the SDGs. We suggest that international diversification strengthens this core relationship because it increases the likelihood and/or strength of these effects. Specifically, we highlight the greater number and diversity of stakeholder perspectives and the greater uncertainty associated with international diversification of multinationals as strengthening the effects of female representation on TMTs. Our empirical analysis confirms this moderating influence of international diversification and is thus likely that one or more of the theoretical mechanisms that we develop drive the relationship between female representation on TMT and multinationals' support of the SDGs.

Our findings also have practical implications. First, they highlight the importance of increasing the share of female executives on multinationals' TMTs as a means to increase multinationals' support of the SDGs. Although gender equality is a central goal in itself, our findings suggest that gender equality on these teams may also help achieve other SDGs, further increasing the importance of gender equality for

multinationals. Second, our additional analyses suggest that the positive effects of an increase in the share of female executives are more pronounced for firms with high international diversification. Multinationals with high international diversification are thus more likely to be able to enhance their support of the SDGs through an increase in the share of female executives on their TMTs than firms with low levels of international diversification.

Our study has a number of *limitations* that open up interesting avenues for future research. Our sample contains large, publicly listed US firms. Being publicly listed is likely to raise a firm's willingness to engage in sustainable practices (King, 2008). Further, our focus on US firms prevents us from accounting for home-country factors that might affect multinationals' support of the SDGs. Research has suggested that (home-country) institutional factors affect firms' sustainability practices, such as sustainability reporting (Arora & De, 2020; Barkemeyer, Preuss & Lee, 2015; Fiaschi, Giuliani & Nieri, 2017; Hartmann & Uhlenbruck, 2015; Jamali, Jain, Samara & Zoghbi, 2020, 2017). Because larger firms receive more scrutiny (e.g., King, 2008), future research should also examine the effect of female executives on the sustainability of smaller firms.

Declaration of Competing Interest

None.

Appendix: Addressing endogeneity concerns

An important concern in our analysis is that despite the inclusion of various controls as well as year and firm fixed effects, our estimates could be biased because of the sorting of female executives into firms with a certain strategic orientation, or vice versa. While our fixed-effects estimator should be effective in controlling for unobservable variables at the firm level (Custódio, Ferreira & Matos, 2019), we cannot rule out all possible endogeneity concerns. Indeed, research suggests that executives with certain attributes may be specifically attracted to and hired by firms where these characteristics are considered desirable because of the firms' specific circumstances (Schneider, 1987). To address such endogeneity concerns, we use two approaches: first, we deploy coarsened exact matching (CEM) to address potential bias stemming from selection on observables. Second, we follow prior research (Chatterjee & Hambrick, 2007, 2011) and control for the possibility that female executives might be drawn to certain employers.

Coarsened exact matching. We use CEM (Imbens, 2015) to construct a "matched" sample (Blackwell, Iacus, King & Porro, 2009; Iacus, King & Porro, 2012). Importantly, CEM has been shown to reduce the imbalance in the covariates between the treated and control groups more effectively than other matching methods (Blackwell et al., 2009; Iacus et al., 2012). To implement the matching algorithm, CEM creates "bins" by using the natural breakpoints of categorical variables and coarsening continuous variables, and then matches observations according to the confines of these bins. This process results in treatment and control groups that are similar for all variables specified in the matching algorithm. In the first stage of CEM, we specify the variables the CEM algorithm uses in order to predict our manually generated binary female executives measure indicating whether there was at least one female executive in a given year. Because the multidimensionality of the CEM process restricts the number of variables to be matched in the first stage, we identify the most important variables to be matched on (Connelly, Shi & Zyung, 2017; Younge, Tong & Fleming, 2015). In particular, we match on two variables shown to affect the type of executives that a firm appoints and that most strongly predict the support of the SDGs: *ESG score* and *Firm Size*. The CEM procedure using the Freedman-Diaconis rule substantially improves the in-sample multivariate imbalance of our data, from $L_1 = 0.331$ to $L_1 = 0.212$, and enables us to remove all statistically significant differences between the treatment and control groups for both matching variables. The second-stage analysis uses Poisson models that include *Ratio of female executives* as our independent variable and all covariates used in our main analysis. The results are consistent with those of our main analysis reported earlier, and support for our hypothesis remains robust. Specifically, we find a statistically significant, positive effect for *Ratio of female executives* on multinationals' support of the SDGs ($\beta = 0.194$ $p = 0.026$).

Endogeneity control. To further address endogeneity concerns, we follow prior research (Chatterjee & Hambrick, 2007, 2011; Chen, Ma & Schumacher, 2020; Schumacher, 2021; Tang, Mack & Chen, 2018) and control for the entry conditions when a female executive is hired. Specifically, we regress the entrance of a female executive in the firm (coded with a binary indicator) against a set of variables capturing the firm-specific entry conditions of a particular female executive. These variables comprise the ESG score, firm performance, and firm size, as well as year fixed effects. Among these variables, none significantly predicts the entrance of a female executive in the firm. When we then include the predicted score as a control in our estimations, our main result remains significant: we still find a positive significant effect of female executives on multinationals' support of the SDGs ($\beta = 11.012$, $p = 0.001$).

In sum, our analysis suggests that endogeneity due to sorting is not a main driver of our results. However, because we cannot fully rule out such endogeneity concerns, we need to interpret our findings cautiously.

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