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SDGwashing: a critical view of the pursuit of SDGs and its relationship with environmental performance

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The sustainable development goals (SDGs) provide a strategic vision and future-oriented plan that companies, regulators and society in general are challenged to face. However, companies' contribution to the achievement of SDGs is questioned by some critical voices. In the business context, SDGwashing refers to positively pursuing a contribution to some SDGs while ignoring the negative impact of others. The objective of this research is to study whether there is an association between pursuing SDGs of a different nature and environmental performance. Are companies pursuing the more environmental-focused SDGs, the ones with better environmental performance, compared to companies pursuing more social-focused SDGs? Thus, this work examines whether multinationals that pursue more environmental-focused SDGs have a similar level of environmental performance to those that make efforts to pursue more social-oriented SDGs. This study analyzes whether SDGwashing exists in relation to environmental performance by studying its relationship with two relevant variables of literature on environmental management: outcome-based environmental performance (through GHG emissions) and process-based environmental performance (through CDP scoring). Using a sample of multinational firms listed on the FTSE 100 index, we applied an ANOVA test and logistic regression to show whether the pursuit of both more environmental-focused SDG and more social-focused SDGs was associated with environmental performance. The results of this study offer a significant contribution to academic literature on SDGs. Our findings show that the organizational profile of multinational companies that pursue more environmental-focused SDGs differs from the organizational profile of multinationals that are pursuing more social-oriented SDGs, in terms of environmental performance. This offers empirical evidence by showing that SDGwashing exists in international business.

Keywords: SDGwashing; international business; environmental performance; GHG emissions; Carbon Disclosure Project Scoring; Global Reporting Initiative; logistic regression

1. Introduction

Since they appeared on the scene in 2015, the sustainable development goals (here abbreviated as SDGs) have become politically and economically institutionalized (van Zanten and van Tulder 2018) to such an extent that many of the leaders of the main developed economies wear the circular SDG pin on their suit jackets. Even though the

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SDGs were launched with good intentions by promoting that all social agents advance toward sustainable development (Chakravorti 2017; Howard-Grenville *et al*. 2019; Montiel *et al*. 2021), there are some skeptical parties who question both the agents', and especially the companies', compliance with the SDGs (Eccles and Karbassi 2018; Lashitew 2021; Nieuwenkamp 2017). Unconvinced people are asking whether the pursuit of the SDGs is closer to a symbolic business behavior than a substantive one (e.g. García Sánchez *et al*. 2020; Pizzi, Rosati, and Venturelli 2021). For instance, the updated version of the KPMG survey of sustainability reporting has suggested that SDG reporting focuses "almost exclusively on the positive contributions companies make towards achieving the goals, and lacks transparency of their negative impacts" (KPMG Survey 2020, 48). This fact is intimately interconnected with the concept of SDGwashing, that is the symbolic behavior of those companies that market their positive impact on some SDGs while ignoring their negative contribution to others (Nieuwenkamp 2017).

The wide range of SDGs includes different kinds of objectives: goals focused on environmental protection such as clean energy (SDG #7) and sustainable cities (SDG #11) *versus* goals focused on social issues such as zero hunger (SDG # 2) and no poverty (SDG # 1). Thus, due to their different nature, it seems logical to argue that companies cannot pay the same level of attention to this "colorful game board of big ideas" (Chakravorti 2017). For instance, continuing with the KPMG Survey (2020), the most prioritized SDGs were decent work and economic growth (SDG #8); meanwhile on the opposite side, the least prioritized SDGs were the two SDGs focused on biodiversity, that is life below water (SDG #14) and life on land (SDG #15). In fact, related to international business (here abbreviated as IB) sometimes there is not only a disparity in the level of prioritization of the SDGs, but also matching the achievement of two SDGs simultaneously is practically impossible. For instance, since CSR decisions are influenced by national priorities in MNE's home and host-countries (van Zanten and van Tulder 2018), it is plausible that managers have to face the dilemma of (a) favoring the protection of the natural environment of the subsidiaries from host countries (in a similar way to facilities located in the home country) or (b) reducing the high unemployment rate in the host countries where subsidiaries are located (in which social issues could be particularly pressing). What should SDG prevail in this case for an MNE? At this point, SDG-washing emerges through two paths. On the one hand, if the manager is interested in pursuing more environmental-focused SDGs, this could discourage the pursuit of more social-focused SDGs (and *vice versa*). On the other hand, a Solomonic decision with the aim of appearing to pursue environmental and social SDG targets could simultaneously be made by applying modest effort in both contexts, but without substantively delving into either. Both situations are clear examples of SDGwashing in an IB setting.

Several voices have manifested that SDGwashing could be a significant risk that may limit a company's contributions to the SDGs (Eccles and Karbassi 2018) and, for this reason, it is essential to analyze this phenomenon. Given the wide variety of SDGs, it is especially interesting to develop an analysis on the pursuit of the SDGs while distinguishing the nature of these goals (Montiel *et al*. 2021). In this pursuit of the SDGs by companies, monolithic analysis (i.e. pursuit: yes/no) or even additive analysis (i.e. how many SDGs does it pursue) may be insufficient when the dimension of the SDGs is not being considered. Thus, the novelty of this work is that it extends previous research on SDGs by moving forward in this line, considering not only whether

the company has or has not pursued the SDGs, but also the nature (e.g. more environmentally focused or social-oriented) of the pursued SDGs and how this nature is related to a firm's environmental performance.

Consequently, the objective of this paper is to analyze whether SDGwashing exists, showing differences in the form of environmental performance between companies that pursue more environmental-focused SDGs and those that pursue more social-oriented SDGs. We build on the literature that distinguishes between environmental issues and CSR issues (Montiel 2008; Bansal and Song 2017) within the framework of the pursuit of SDGs by multinational companies. We attempt to analyze whether multinationals that pursue more social-focused SDGs have the same level of environmental performance as companies that are focused on pursuing the more environmental-oriented SDGs.

To test our research hypotheses, we studied a sample of 97 multinational firms listed on the FTSE index that operate in both highly polluting sectors as well as less polluting sectors. By using an ANOVA and binary logistic regression, we tested whether the pursuit of more environmentally focused SDGs and more social-oriented SDGs is associated with GHG emissions as a proxy of outcome-based environmental performance, and Carbon Disclosure Project scoring as a proxy of process-based environmental performance.

2. Literature review: pursuing the SDGs and SDGwashing

The SDGs (and their 169 detailed targets) are becoming an institution not only in the field of political decision-making by governments but also for companies in general and for international business in particular (Montiel *et al*. 2021; Lashitew 2021; van Zanten and van Tulder 2018). Previous studies on the SDGs in the business context agree to determine that, compared to their precursors (i.e. the Millennium Development Goals), the SDGs proposed in the 2030 Agenda have two significant advances concerning who must promote the SDGs' achievement (Howard-Grenville *et al*. 2019; Pizzi, Rosati, and Venturelli 2021; Szennay *et al*. 2019; van Zanten and van Tulder 2018). On the one hand, the achievement of SDGs "explicitly requires an active contribution from both developing and developed countries" (Pizzi, Rosati, and Venturelli 2021, 404). On the other hand, the 2030 Agenda addresses not only governments but also companies, substituting their previous passive social and environmental commitments for more active roles (Lashitew 2021; Szennay *et al*. 2019). In addition to these two characteristics of SDGs, it is essential to point out their other features: their voluntary nature, lack of penalties for non-compliance, and the few (almost null) mechanisms to guarantee their achievement (van Zanten and van Tulder 2018).

In the academic arena, the special issue edited by *Academy of Management Discoveries* (Howard-Grenville *et al*. 2019) is one of the most recent publications that has analyzed the themes related to SDGs on management research. Due to the wide range of objectives compiled on the SDGs framework (Chakravorti 2017; Montiel *et al*. 2021; van Zanten and van Tulder 2018), academic studies of a very diverse nature are covered under the theoretical umbrella term of SDGs. This dispersion of themes could make it difficult to analyze the level of effectiveness of the SDGs as an institutional framework, especially in the international business context. In fact, with the objective of reducing the criticism that the SDGs are too numerous, Montiel *et al*. (2021) grouped the SDGs by their impact on externalities into six global categories:

knowledge, wealth, health, social cohesion, overuse of natural resources, and overconsumption. Nevertheless, a more (conceptual and practical) understanding of SDGs is still needed in an international setting (Pisani *et al*. 2017). For instance, what is the role of international business in pursuing[1] the SDGs? What are the effects of the pursuit of SDGs on companies? What characterizes the multinational companies that pursue the SDGs? This work attempts to shed light on some of these questions, paying special attention to the concept of SDGwashing.

Similar to greenwashing, it would expect SDGwashers to be firms that claim to address all or most of the SDG targets in a symbolic manner (e.g. placing the SDG icon all over their communications) but they fail to implement any substantive planning and control practices to contribute to the SDGs' achievement (Eccles, Ioannou, and Serafeim 2014). In fact, in IB literature, van Zanten and van Tulder (2018, 201) defined SDGwashing as "the use of the SDGs as an excuse for malpractice or as a cover up for modest efforts". At this point, Nieuwenkamp (2017, 1) stated that: "the term SDGwashing points to businesses that use the SDG to market their positive contribution to some SDGs while ignoring their negative impact on others". By considering this definition, although SDGwashing can be directly related to the concept of greenwashing, both concepts might be different (Szennay *et al*. 2019). Greenwashing refers to "the selective disclosure of environmental information by companies, concerning practices that exclusively portray positive environmental performance (and even hide practices with poor environmental performance), intending to project a positive corporate environmental image (Ferrón Vílchez, Valero Gil, and Suárez Perales 2021, 861). Thus, substantiating the presence of greenwashing would necessitate identifying both actual performance and reported performance that companies achieve and proving that they are significantly different (Ott, Schiemann, and Günther 2017). But SDGwashing does not refer exclusively to using the pursuit of SDGs in a symbolic or even misleading way to improve the environmental reputation of the company, which is what *a priori* could be thought of by approximating the terms of greenwashing, pinkwashing, bluewashing, or impactwashing. We consider that at least two main differences exist between greenwashing and SDGwashing. First, SDGwashing is a management phenomenon also related to the "cherry picking" of SDGs and not only to the intention of appearing to be more responsible from a social or environmental perspective. The cherry picking of SDGs consists of profiling certain positive effects on a particular SDG and ignoring any negative impacts (Howard-Grenville *et al*. 2019; Nieuwenkamp 2017). At this point, it is essential to understand the interconnections among SDGs. These interconnections imply that a business action could have a positive effect on one SDG and, at the same time, a negative effect on another, considering that both SDGs could have a different nature. For instance, the aquatic ecosystem of a coastal area of the Mediterranean Sea (i.e. La Manga del Mar Menor, in Murcia, Spain), is being destroyed by the excessive use of pesticides in agriculture, which will end up in the sea. The use of pesticides ensures greater agricultural production as well as greater local employment. However, as a consequence of this higher agricultural production, more pollution is generated in the coastal areas. Thus, the SDG related to economic growth and full and productive employment (i.e. SDG#8) is pursued, but the pursuit of the SDG related to minimization of release of hazardous chemicals into water ecosystems (i.e. SDG#6) is being harmed. Further, the "letter from the editors" of the special issue on SDGs published in AoM Discoveries pointed out this idea of cherry picking of SDGs: "businesses prioritized the specific SDGs that held most

promise for business growth, essentially cherry picking a few relevant SDGs rather than anticipating how they could impact all 17. By far, businesses reported prioritizing SDG#8 (decent work and economic growth) because impact in this area could be regarded as most straightforward; conversely, other goals (such as SDG#14, life below water; or SDG#1, no poverty) have been seen as holding limited opportunity for businesses" (Howard-Grenville *et al*. 2019, 359). Similarly, in the IB literature, the idea of SDG cherry picking was labeled as "actionability" by van Zanten and van Tulder (2018). They found that multinationals primarily engage with internally actionable SDG targets (compared to externally actionable SDGs), understanding an internally actionable SDG as a target that falls within a company's sphere of influence, meaning within its internal and value chain operations; meanwhile an externally actionable SDG is a target that can be meaningfully advanced only when the company works in partnership with other external agents (van Zanten and van Tulder 2018). In line with these results, in this work we consider that SDGwashing exists and it is closely related to the firm's environmental performance.

Second, another difference between SDGwashing and greenwashing is related to the measure for detecting both phenomena. One way to detect greenwashing (at least through case studies) is to confront what the company is publicly saying it does and what it actually does, in reference to its voluntary initiatives and its environmental performance. For instance, Siano *et al*. (2017) carried out a case study on greenwashing related to the Volkswagen scandal by using content analysis of CSR reports by the Volkswagen Group and 1,151 US newspaper headlines concerning Dieselgate. Even in a more quantitative way, following the "decoupling" literature, variables that reveal this controversy regarding the dilemma "to walk versus to talk" could be analyzed (Aravind and Christmann 2011; Delmas and Montes Sancho 2010; Ott, Schiemann, and Günther 2017; Ramus and Montiel 2005). However, the detection of SDGwashing has to be based on the guidelines and specific targets defined by the 2030 Agenda. In other words, is the company achieving (or pursuing) a specific group of SDGs? Therefore, the use of variables to detect or measure the presence of both phenomena also differs.

In sum, we argue that it is necessary to distinguish between these two terms since, despite being closely related concepts, there are some nuances between them. The said nuances imply that, in practice, a company may be undertaking greenwashing, but not SDGwashing, and *vice versa*. Due to these theoretical and methodological differences, it could be necessary to make a (small) distinction between SDGwashing and greenwashing.

3. Hypotheses development

3.1. The difference between CSR issues and environmental issues

In the literature on business and society, differences and overlaps between certain concepts such as corporate social responsibility (here abbreviated as CSR), sustainable development or environmental sustainability have been highlighted and debated (Bansal and Song 2017; Montiel 2008). Bansal and Song (2017, 105) stated: "(…) responsibility and sustainability were historically distinctive. Responsibility research took a normative position, railing against the amorality of business; sustainability research took a systems perspective, sounding the alarm of business-driven failures in natural systems". Following the distinction argued by Montiel (2008) and Bansal and Song (2017), our work places special emphasis on the differences between CSR

Table 1. Differences between CSR and environmental management.

CSR	Environmental management
Use values: "it only has value if it generates value for others".	Intrinsic values: "the value of an entity by itself".
The social and environmental are supplemental to the economic.	Economic, social and environmental results are complementary (same level; integrated results).
They have developed their own theories (e.g. Stakeholders Theory).	They have borrowed other theoretical approaches: RBV, Institutional Theory, …
Focused on the damage of markets, the economy, in society.	Focused on the damage of economic development to the environment.
Research was born in the 50's.	Research was born in the 80s.

Source: adapted from Montiel (2008) and Bansal and Song (2017).

objectives and environmental objectives. The pursuit of CSR objectives implies a broad concept, in which environmental objectives are combined with social objectives, based on the well-being of humanity (i.e. not especially focused on the adoption of environmental practices), while the pursuit of purely environmental objectives is focused exclusively on reducing the firm's environmental impact. Table 1 shows some differences between CSR and environmental management issues.

This debate about the similarities, differences, and overlaps between CSR issues and environmental issues can be easily transferred to the field of SDGs. In the research field on the pursuit of the SDGs by companies, the divergences between CSR and environmental issues emerge clearly: the same organizational resources and capabilities to pursue a more social-focused SDG will not always be required or needed for the pursuit of an exclusively environmental-focused SDG. At this point, similar to prior literature on environmental performance (Gallego Álvarez, García Sánchez, and da Silva Vieira 2014; Giannarakis, Zafeiriou, and Sariannidis 2017; Misani and Pogutz 2015), we considered the outcome-based environmental performance as the firm's impact on the natural environment such as its level of GHG emissions. Thus, it makes sense to think that companies that are focused on reducing their environmental impacts (i.e. improving their environmental performance) will be more focused on pursuing the SDGs related to environmental protection and climate change mitigation than companies less concerned about the reduction of their environmental impacts. In fact, when environmental risk exists, firms tend to be more willing to comply with reductions on environmental impacts (Chakravorti 2017; García, Mendes-Da-Silva, and Orsato 2017). On the contrary, companies that are interested in pursuing social-focused SDGs such as zero hunger or gender equality could be less focused on diminishing environmental impacts such as their level of GHG emissions to the point that environmental indicators can be ignored when making planning and control decisions and, as a consequence, the pursuit of more environmental-focused SDG could be overlooked. Thus, we hypothesize:

Hypothesis 1a: Higher levels of outcome-based environmental performance positively affect the pursuit of more environmental-focused SDGs.

Hypothesis 1b: Outcome-based environmental performance does not affect the pursuit of more social-focused SDGs.

3.2.　The difference between outcome-based and process-based environmental performance

In order to analyze the effect of environmental performance on management practices, prior studies have used different indicators (Gallego Álvarez, García Sánchez, and da Silva Vieira 2014) from a theoretical perspective. In fact, several authors have even differentiated between outcome-based measures of environmental performance and process-based measures of environmental performance (Busch and Hoffman 2011; Delmas, Etzion, and Nairn-Birch 2013; Misani and Pogutz 2015). As opposed to the outcome-based environmental performance measures covered in the previous section, the process-based measures of environmental performance are usually focused on firms' managerial efforts to improve environmental performance (Busch and Hoffmann 2011; Delmas, Etzion, and Nairn-Birch 2013; Misani and Pogutz 2015). The main difference between outcome-based and process-based environmental performance was pointed out by Delmas, Etzion, and Nairn-Birch (2013, 258): "Process measures indicate the efforts a company invests in attempting to mitigate its environmental impacts. Although process measures represent a potential for improvement in outcome performance, there is no guarantee that such improvements will indeed materialize". Therefore, the process-based measures could be considered as a prerequisite for companies interested in improving their outcome-based environmental performance indicators. This conceptual, well-established difference between outcome-based and process-based environmental performance (Misani and Pogutz 2015) can be easily transferred to the pursuit of SDGs by companies. Drawing on the theoretical pillars of the Resource-Based View (Barney 1991), we argue that companies that possess and implement an extensive range of environmental management practices such as environmental management systems, eco-design, lifecycle analysis, environmental certification, ecolabelling of products and more will be best-equipped for the pursuit of more environmental-focused SDGs. However, if the company is more interested in pursuing more social-oriented SDGs an excess of advanced environmental management practices can be counterproductive. In instances such as this, the investments in attempting to mitigate environmental impacts end up becoming idle resources that place a burden on the company that owns them and does not use them to pursue the SDGs of interest. Thus, we hypothesize:

> Hypothesis 2a: Higher levels of process-based environmental performance positively affect the pursuit of more environmental-focused SDGs.

> Hypothesis 2b: Higher levels of process-based environmental performance negatively affect the pursuit of more social-focused SDGs.

4.　Methodology

In order to evaluate the relationship between firms' pursuit of SDGs and environmental performance, we performed ANOVA tests and logistic binary regression analysis. The dependent variables in our empirical models are the pursuit of more environmental-focused SDGs (model A), the pursuit of more social-oriented SDGs (model B), and the combined pursuit of environmental and social SDGs (model C). The independent variables in our models are outcome-based environmental performance through firms'

carbon emissions, and process-based environmental performance through a score proposed by the Carbon Disclosure Project.

4.1. Sample

In order to test our hypotheses, empirical analysis was performed on a sample of firms listed on the FTSE 100. Similar to prior environmental studies (e.g. Alsaifi, Elnahass, and Salama 2020; Giannarakis, Zafeiriou, and Sariannidis 2017; Hassan and Ibrahim 2012; Silva 2021) as well as IB studies (e.g. van Zanten and van Tulder 2018), we relied on a sample that consists of constituents of the FTSE 100 index: the 100 firms listed on the London Stock Exchange with the highest market capitalization. The shares for the 100 largest companies by market capitalization are aggregated in the FTSE 100 index. This index, which is widely recognized as the benchmark index of the British stock market, is a market capitalization weighted index in which the largest companies have a higher weight in the index. In fact, the FTSE 100 index represents around 70% of the total market capitalization of companies listed on the London Stock Exchange. Thus, similar to prior studies that analyzed (symbolic or substantial) environmental practices (e.g. Silva 2021), we used the FTSE 100 as a sample in our study.

We used this specific set of companies for the necessity of analyzing firms that belong to the same business context, which is suitable in our analysis: firms listed on FTSE have similar organizational characteristics in terms of size, regulation exposure, financial situation and attention to non-financial reporting (Giannarakis, Zafeiriou, and Sariannidis 2017; Hassan and Ibrahim 2012). For instance, FTSE firms have shown higher commitment to non-financial reporting than SMEs (Giannarakis, Zafeiriou, and Sariannidis 2017) and the UK government encourages firms to adopt environmentally friendly initiatives (Hassan and Ibrahim 2012). By using a sample that consists of constituents of FTSE 100, we are "ensuring a specific business environment providing homogeneous results" (Giannarakis, Zafeiriou, and Sariannidis 2017, 1082). Out of these 100 firms, a total of 97 were multinationals: 87% of them were headquartered in the United Kingdom and 5% were headquartered in Ireland. Thus, our final sample is composed of 97 multinational firms and it includes 38 firms operating in highly polluting sectors and 59 firms operating in less polluting sectors.

4.2. Dependent variables: the pursuit of SDGs

Prior studies have measured SDGs through the firm's orientation toward SDG reporting (e.g. García Sánchez et al. 2020; Pizzi, Rosati, and Venturelli 2021). In contrast to this, our work does not focus on the intention of the company to report the achievement of SDGs as a dependent variable, but rather presents a measure of the degree of pursuit of the SDGs based on secondary information obtained from the EIKON database. EIKON is a broadly used database in the academic arena (i.e. García, Mendes-Da-Silva, and Orsato 2017; Miralles-Quirós, Miralles-Quirós, and Valente Gonçalves 2018). It has been elaborated since 2002 by Thomson Reuters and compiles economic, financial, environmental, social and corporate governance-related information from more than 6,000 companies around the world. Concerning the pursuit of SDGs, EIKON has developed a set of items called "Mapping to the UN Sustainable Development Goals" which are focused on indicators related to each of the SDGs that firms could pursue.

At this point, it is essential to note several nuances concerning the distinctions between SDGs. First, one of the novelties (and main strengths) of the 2030 Agenda SDGs is that the SDGs must be addressed not only by governments but also by companies (Folke *et al*. 2016; Lashitew 2021; Szennay *et al*. 2019). This implies that there are some SDGs that can and should be fulfilled at governmental level (i.e. by the national governments of each country), such as those related to improvements in sustainable economic growth, while there are other SDGs that can be completed at the organizational level by companies (Folke *et al*. 2016). Therefore, we have focused our attention on some targets (inside each SDG) that affect or that can be faced by companies with their decision-making through voluntary practices, especially decisions related to the task of planning and control. For instance, in the case of SDG#8, the target #8.5 proposed by 2030 Agenda says: "By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value". One of the indicators, proposed by the 2030 Agenda for measuring the achievement of target #8.5 is "average hourly earnings of female and male employees, by occupation, age and persons with disabilities". This indicator is not available in the EIKON database, since it involves aggregate data rather than organizational level data, but EIKON offers a proxy item that can serve to measure to what extent companies are pursuing this target. In this specific case, the proxy that EIKON proposes is to answer the item that asks: "does the company have a policy for the exclusion of child, forced or compulsory work, or to guarantee the freedom of association universally applied independent of the local laws?". The EIKON database operates in a similar manner with the rest of the SDG targets that it can approximate to the objectives that companies pursue (and not the economy of a nation, in aggregate terms) since this database collects information only from companies.

Second, although there is a strong link between the social and the ecological, insofar as "humans and nature are studied as an integrated whole, not as separated parts" (Folke *et al.* 2016, 49), we consider that, in the field of business management, it is essential to make a distinction between social and the environmental. We have focused on these two SDGs because, in order to empirically check that there are differences between the pursuit of the more environmental-focused SDGs and the the more social-focused SDGs, it is necessary to identify two SDGs that are conceptually distinct in nature (Montiel *et al*. 2021). To do so, we have relied on two studies on SDGs: Szennay *et al*. (2019) and Montiel *et al*. (2021). Szennay *et al*. (2019) analyzed the relationship between the GRI indicators linked to the SDGs using cluster analysis which is merging related indicators through a process of dimensional reduction. The three main SDG dimensions that emerged were "environment", "society" and "economy" and while SDG#6 showed a "pure dominance" in the environment dimension, SDG#8 showed that "there is no dominant dimension" (Szennay *et al*. 2019). In a similar vein, Montiel *et al*. (2021), in their classification for actionable goals for multinationals, labeled SDG#6 inside the dimension "reducing the overuse of natural resources" in the group "reducing negative externalities". Meanwhile the SDG#8 was labeled in the dimension called "increasing wealth" in the group "increasing positive externalities".

Appendix 1 (online supplementary material) shows the (literal) definition of SDG#6 and SDG#8 proposed by the 2030 Agenda, including some of its most relevant targets. Further, Appendix 1 (online supplementary material) shows the items with TRUE/FALSE response that EIKON has compiled in relation to SDG#6 (i.e. ensure availability and sustainable management of water and sanitation) and SDG#8 (i.e. promote sustained, inclusive and sustainable economic growth, full and productive employment and

decent work). By relying on the information obtained from the EIKON database, we cre-
ated three dependent variables: "pursuit of SDG#6", "pursuit of SDG#8", and "combined
pursuit of SDG". On the one hand, concerning the creation of the variable "pursuit of
SDG#6", we first added the six items related to SDG#6 proposed by the mapping of the
EIKON database. The maximum value of this variable was six, which meant that the com-
pany had complied with all the indicators related to SDG#6. The minimum value of this
variable was zero, which meant that the company had not complied with any of the indi-
cators related to SDG #6. Second, this variable, with values that ranged from 0 to 6, was
subsequently transformed into a dichotomous one, considering the median as a reference
point[2]. If the number of TRUE indicators was above the median, the variable took the
value "1" (i.e. the firm had pursued at least the median of the indicators related to
SDG#6) and below, the variable took the value "0". Furthermore, in relation to SDG#8,
we proceeded in the same way as with SDG#6, but in this case the maximum number of
dichotomous indicators was four which meant that the values of the variable "pursuit of
SDG#8" ranged from 0 to 4, and the median was two. On the other hand, once we had
identified the firms that had pursued at least the median of the indicators of SDG#6 and
SDG#8, we created the variable "combined pursuit of SDGs", which took the value "1"
when the firm had pursued at least the median of the indicators related to both SDG#6
and SDG#8, and took the value "0" otherwise.

4.3.   *Explanatory variables*

4.3.1.   *Outcome-based environmental performance*

As previously explained, to measure environmental performance (EP), prior studies
have differentiated between outcome-based measures of EP and process-based meas-
ures of EP (Busch and Hoffman 2011; Misani and Pogutz 2015). In the case of out-
come-based EP, prior literature relied on the firm's carbon intensity, measured as the
ratio between the total GHG emissions (CO_2) divided by the firm's sales or revenue
(Busch and Hoffman 2011; Gallego Álvarez, García Sánchez, and da Silva Vieira
2014; Misani and Pogutz 2015). Similar to these studies, we have measured the inde-
pendent variable "outcome-based EP" (i.e. OBEP) as a ratio between the total GHG
emissions (in tons) and the volume of revenues (in US$) for each company within the
sample. Both variables were obtained from the EIKON database. EIKON calculated the
total GHG emissions according to the GHG protocol considering total carbon
dioxide (CO_2) and CO_2 equivalent emissions in tons[3], also described as direct emissions
(Scope 1) and indirect emissions (Scope 2). Furthermore, to harmonize the measurement
we proceeded by following the process recommended by Busch and Hoffmann (2011):
taking the logarithm of the ratio previously mentioned, centering the data using the
median, and multiplying by (-1). By doing so, the obtained variable fulfilled the charac-
teristics for an OBEP measurement and its interpretation is: "a high value for OBEP cor-
responds to high (positive) environmental performance" (Busch and Hoffman 2011).

4.3.2.   *Process-based environmental performance*

Opposed to the OBEP variable that is focused on the total GHG emissions as a firm's
outputs, the "process-based EP" variable (i.e. PBEP) focuses on a firm's managerial
efforts to increase environmental performance (Delmas, Etzion, and Nairn-Birch 2013;
Misani and Pogutz 2015). In order to account for this difference, we measured PBEP

by relying on the Carbon Disclosure Project scoring (i.e. CDP scoring) for companies. CDP annually elaborated the scoring methodology to incentivize companies to measure and manage environmental impacts on climate change, water security, forests and supply chains (CDP 2020). The CDP scoring is conducted by accredited partners who do not focus exclusively on whether companies do or do not report their environmental impacts, but also evaluate what management tools and best practices they use to do so (CDP 2020). The CDP scoring assesses companies across consecutive levels which represent the steps a company has to follow for its progress toward environmental leadership. This CDP scoring ranges from "A and A-", which represents the leadership level, to "F", which represents the failure to provide sufficient information to be evaluated. We have focused on the scoring related to climate change, since this dimension is the one with the greatest quantity of data available for our sample (Hassan and Ibrahim 2012). Appendix 2 (online supplementary material) shows the description of each level of CDP climate change scoring.

4.4. Control variables

4.4.1. Highly or less pollutant sector

By using multinational companies listed on the FTSE 100 as a set, many organizational characteristics of the companies within the sample are homogenized. However, within the FTSE 100 index there are companies from various sectors that generate different levels of pollutant emissions. Previous studies on environmental issues have controlled their empirical models for the level of pollution associated with each sector (e.g. Gallego Álvarez, García Sánchez, and da Silva Vieira 2014; Hassan and Ibrahim 2012; van Zanten and van Tulder 2018). As a consequence, due to the wide-ranging industries that exist in our sample, we accounted for sector as a control variable considering whether the sector in which the firm operates is highly or less pollutant. To determine this fact, similar to prior studies (Ferrón Vílchez, Darnall, and Aragón Correa 2017), we relied on the classification of Mani and Wheeler (1998), in which highly polluting sectors are considered as "those with low elasticities of substitution between use of the environment and other productive factors" (Mani and Wheeler 1998, 216). The classification proposed by Mani and Wheeler (1998) is based on the average cost to reduce pollution in the industry, in such a way that the highly polluting sectors show higher environmental cost figures than the less polluting sectors. According to this classification, two types of industries emerged: the highly polluting ("dirty") sectors and the less polluting ("clean") sectors. Some examples of highly polluting sectors are the chemical, rubber, plastics or fuel industries (Mani and Wheeler 1998), while examples of less polluting sectors are the industries in charge of the production of medical instruments, watches and other appliances. Data belonging to this sector has been extracted from the EIKON database. If the company belongs to a highly polluting sector, the value will be "1". Otherwise, the value will be "0".

4.4.2. Adherence to non-financial reporting standards

We studied whether the pursuit of SDGs is related to non-financial reporting. We consider that both companies that pursue the more environmental-focused SDGs and those that pursue the more social-oriented SDGs tend to comply with high levels of adherence to the standards of non-financial reporting disclosure (Guenther *et al.* 2016; Ott,

Table 2. Correlations and descriptive statistics.

$N = 97$	Mean	S.D.	1	2	3	4	5	6	7
1- Pursuit of SDG #6	0.58	0.496	1	0.594**	0.980**	−0.409**	0.306**	0.425**	0.332**
2- Pursuit of SDG #8	0.77	0.423		1	0.629**	−0.268**	0.477**	0.407**	0.183
3- Combined pursuit of SDGs	0.570	0.498			1	−0.404**	0.284**	0.434**	0.347**
4- OBEP	−0.073	1.000				1	−0.015	−0.431**	−0.454**
5- PBEP	4.648	1.394					1	0.147	0.066
6- Adherence to non-financial reporting standards	2.940	1.797						1	0.360**
7- Highly/less pollutant sector	0.38	0.488							1

**The correlation is significant at the 0.01 level (bilateral).

Schiemann, and Günther 2017). When the intention of appearing to be environmentally responsible exists, companies focused on pursuing the more environmental-focused SDGs pay the same attention as those that pursue the more social-oriented SDGs. We computed non-financial reporting as a control variable for the pursuit of SDGs. To measure the degree of non-financial reporting, we relied on the firm's level of adherence to Global Reporting Initiative (GRI) standards, one of the most widely recognized set of voluntary guidelines for non-financial reporting (Nikolaeva and Bicho 2011; Pizzi, Rosati, and Venturelli 2021; Szennay *et al*. 2019). We have considered the level of adherence to GRI Standards edition or GRI G4.0 edition[4] since it reflects the extent to which the GRI standards have been applied to a non-financial report (GRI 2020). Information about the values of the control variable "adherence to non-financial reporting standards" for each multinational company within the sample was obtained from the GRI Sustainability Disclosure Database. The range of values for this explanatory variable is shown in Appendix 3 (online supplementary material). Table 2 shows correlations as well as descriptive statistics.

4.5. *Anova and binary logistic regression*

To empirically test our hypotheses, as a first approximation, we run mean difference tests (i.e. ANOVA) to verify that differences exist between the pursuit of the SDGs and the environmental performance measures. The ANOVA test is characterized by using a continuous or metric dependent variable and a set of independent variables that are usually dichotomous (i.e. yes/no), although it is also possible to include covariates (i.e. continuous or metric explanatory variables). In model A, the dependent variable was the "pursuit of SDG#6" in its continuous version with a range from 0 to 6, while the explanatory variables were the environmental performance measures (i.e. OBEP and PBEP). In addition, the sector (i.e. highly/less polluting sector) and adherence to GRI standards were included as control variables. Similarly, in model B, model A was replicated, but being the dependent variable the "pursuit of SDG#8"

Table 3. ANOVA tests results.

Dependent variables	Coefficients of **Model A** Pursuing SDG #6	Coefficients of **Model B** Pursuing SDG #8
Explanatory variables		
Intercept	1.072**	2.793***
OBEP	−0.348**	−0.059
PBEP	0.310***	0.140***
Adherence to reporting standards	0.159**	0.098***
Highly/less pollutant sector [a]	−0.508**	−0.062
Goodness of model fit		
R^2	0.366	23.883***
Adjusted R^2	0.338	74.836
N	97	97

***$p<0.01$; ** $p<0.05$; [a]The reference category is "less polluting sector".

(also in its continuous version, with a range from 0 to 4). However, when using ANOVA tests, it is necessary to comply with the assumptions of normality in the sample distribution and homoscedasticity. These assumptions were fulfilled in the case of Model A. It was found, through the Kolmogorov-Smirnov test (Hair *et al*. 2008), that the dependent variable "pursuit of SDG#6" followed a normal distribution. It was also verified that there was homogeneity of variances through the Levene test (Hair *et al*. 2008), whose null hypothesis indicates that the error variance of the dependent variable is the same between groups (p-value> 0.05). However, for model B these assumptions were not fulfilled, that is, there was no normality in the distribution of the dependent variable and heteroscedasticity concern existed. Due to this non-compliance with the assumptions of the ANOVA test, we used another less restrictive, but robust, statistical technique to be able to empirically test the hypotheses. At this point, according to Hair *et al*. (2008) logistic regression does not face the strict assumptions of normality and homoscedasticity, being a robust regression technique when these assumptions are not met. Thus, we relied on binary logistic regression to empirically corroborate our hypotheses. This statistical technique is useful when trying to predict the relationship between a dichotomous dependent variable (i.e. in this work, pursuit of SDG#6, pursuit of SDG#8, and combined pursuit of SDGs) and a set of explanatory variables (i.e. OBEP and PBEP) and control variables (i.e. highly/less polluting sector and adherence to non-financial reporting). We ran three logistic regression analyses having a model for each one of the dependent variables. The method used was the step forward binary logistic regression. In the first step (base model), the variables "highly/less pollutant sector", "OBEP", and "PBEP" were included, whereas in the second step (full model) all variables contained in the base model were included and the control variable "adherence to reporting standards" was added. The Exp (B) may be used to determine the odd ratio of each independent variable. The values of Exp (B) indicate, in the case of being statistically significant, the relationship between change in the probability of the dependent variable and change in a unit in the explanatory variable, *ceteris paribus*.

5.   Results analysis

Table 3 shows the results of the two ANOVA tests and Table 4 shows the results of the three binary logistic regressions. Related to binary logistic regression, in the case of the first pair of models (Model A, in which the dependent variable is "pursuit of

Table 4. Binary logistic regressions results.

| Dependent variables | Exp (B) of **Model A** | | Exp (B) of **Model B** | | Exp (B) of **Model C** | |
| | Pursuing SDG #6 | | Pursuing SDG #8 | | Combined SDGs | |
	Base model	Full Model	Base model	Full Model	Base model	Full Model
Explanatory variables						
Constant	0.103**	0.041**	0.131**	0.006**	0.117**	0.045**
OBEP	0.417**	0.509**	0.479**	0.873	0.440**	0.539**
PBEP	1.664**	1.622**	2.164***	2.344***	1.590**	1.541**
Adherence to reporting standards		1.483**		3.465**		1.513**
Highly/less pollutant sector	2.299	2.049	1.274	0.903	2.550*	2.261
Goodness of model fit						
Chi^2 Model	27.652***	33.552***	23.883***	36.906***	26.573***	33.169***
−2 log likelihood	103.072	97.173	74.836	61.812	104.903	98.306
Cox & Snell R^2	0.248	0.292	0.218	0.316	0.240	0.290
Nagelkerke R^2	0.335	0.395	0.342	0.496	0.323	0.390
% of cases correctly predicted	74.20%	75.30%	83.50%	86.60%	71.10%	75.30%
N	97		97		97	

***$p<0.01$; ** $p<0.05$.

SDG#6") both models are statistically significant ($\chi^2 = 27.652$; p-value < 0.01 and $\chi^2 = 33.552$; p value <0.01 for base model and full model respectively). The R^2 values are especially useful when comparing the R^2 values of two models that use the same data, the fit being better in those models with a higher R^2 value. In models A, the increasing progression of the R^2 value (e.g. from 0.335 to 0.395 in Nagelkerke's R^2) showed that the inclusion of the variable "adherence to non-financial reporting" improved the explicative quality of the full model. Further, the percentage of cases correctly predicted increased from 74.2% in the base model A (step 1) to 75.3% in the full model A (step 2). This increase manifested the significant improvement that the inclusion of the control variable "adherence to non-financial reporting standards" implies in the goodness of fit of the final model. Looking at Table 3 it can be concluded that the explanations for the results of the goodness of fit in model A could be fully replicable to both model B (in which the dependent variable is "pursuit of SDG#8") and to model C (in which the dependent variable is "combined pursuit of the SDGs"): both models were statistically significant and the inclusion of the variable "adherence to non-financial reporting standard" improved the quality of the goodness fit.

To identify whether the proposed hypotheses were statistically supported, it was necessary to interpret the estimated coefficient Exp(B) shown in Table 4. The coefficients Exp(B) are odd ratios that can be compared to each other to know which explanatory variable is associated with the dependent variable to a greater extent when

all the values of the rest of the variables in the model remain constant. When Exp(B) is greater than unity (i.e. Exp(B)>1), it indicates that an increase in the independent variable increases the probability that an increment in the dependent variable will occur, *ceteris paribus*. However, when Exp (B) is less than unity (i.e. Exp(B)<1), it indicates that an increase in the independent variable reduces the probability of an increase in the dependent variable occurring, everything else remaining constant.

Concerning the relationship between OBEP and the pursuit of SDG#6, the Exp(B) of the variable OBEP in the full model A was statistically significant and less than unity (0.509; *p*-value < 0.05). To interpret an Exp(B) <1, it is suitable to calculate its inverse and, by doing so, it is possible to compare more easily with the rest of Exp(B) in the model. In our analysis, the inverse of OBEP variable was $1/0.509 = 1.964$. Therefore, *ceteris paribus*, the probability of pursuing the more environmental-focused SDG increases 1,964 times for companies with low levels of OBEP than for companies with higher levels of OBEP. This finding is contrary to Hypothesis 1a that stated that higher levels of OBEP positively affect the pursuit of more environmental-focused SDGs. Our results showed that OBEP is a statistically significant variable but in the opposite path to what was expected. Regarding the relationship between OBEP and the pursuit of SDG #8, the Exp(B) of the variable OBEP in the full model B was not statistically significant, which supports Hypothesis 1 b that stated that OBEP does not affect the pursuit of more social-oriented SDGs.

Concerning the relationship between PBEP and the pursuit of SDG#6, the Exp(B) of the variable PBEP in the full model A was statistically significant and greater than unity (1.622; *p*-value < 0.05). The interpretation of this Exp(B)> 1 is that when the PBEP variable increases by one unit and all the values of the other variables in the model remain constant, the probability of pursuing the more environmental-focused SDG increases 62.2% more than the probability of not pursuing it. This result supported Hypothesis 2a that stated that higher levels of PBEP positively affect the pursuit of more environmental-focused SDGs. Similarly, the Exp(B) of PBEP in the full model B was statistically significant and greater than unity (2.344; *p*-value < 0.05) which meant that the probability of pursuing more social-oriented SDGs increases 2.344 times for companies with high levels of PBEP than for companies with lower levels of PBEP, everything else remaining constant. This finding did not support Hypothesis 2 b which stated that higher levels of PBEP negatively affect the pursuit of more social-oriented SDGs. Further, results of the last pair of models (Model C, in which the dependent variable is "combined pursuit of both SDG#6 and SDG#8") showed that, in terms of environmental performance, the profile of companies that pursue both SDGs simultaneously is closer to the profile of multinationals that only pursue the environmental SDGs.

Related to control variables, the variable that accounted for whether the sector in which the firm operates is highly or less polluting was not statistically significant in any statistical model, which meant that highly/less polluting sector does not influence pursuing the SDGs. Further, the association between "adherence to non-financial reporting standards" and the pursuit of SDGs in all full models was statistically significant and greater than unity. These results implied that higher adherence to non-financial reporting standards positively affects the pursuit of both environmental and social SDGs.

Finally, for comparative purposes, it is important to note that the results of both statistical techniques used (i.e. ANOVA and binary logistic regression) offer similar results, despite not complying with the assumptions of normality and homoscedasticity in the case of model B using ANOVA. The results of Model A using ANOVA showed

that Hypotheses 1a and 1b provided the same conclusions as the results of the binary logistic regression, that is, the OBEP is negatively associated with the pursuit of SDG#6 and that its relationship with the pursuit of SDG#8 was not statistically significant. Similarly, the results of Model B using ANOVA showed that Hypotheses 2a and 2b offered the same conclusions as the findings of the binary logistic regression, that is, the PBEP is positively associated with the pursuit of both SDG#6 and SDG#8. This coincidence of results between ANOVA and binary logistics may be due to the fact that, when using an ANOVA test, it is highly recommended to use balanced groups for considering reliable results. A design (per group) is considered balanced[5] when (1) the number of observations is not less than ten cases per group and (2) the standard deviation does not vary more than three times between groups (McDonald 2014). Both circumstances are fulfilled in our sample, which could be the reason for the coincidence of the results of the ANOVA test and the binary logistic regression.

6. Discussion

SDGwashing is a concept based on the existence of SDGs of a different nature, such as environmental, social or economy-focused (Montiel *et al*. 2021; Szennay *et al*. 2019) and the existence of cherry-picking benefits, that is, pursuing positive effects on a particular SDG while ignoring any negative effects on another SDG (Howard-Grenville *et al*. 2019; Nieuwenkamp 2017). In relation to the foundations of the SDGwashing concept, this work shows the relationship between the pursuit of SDGs of different natures and environmental performance measured through two vias: outcome-based measures and process-based measures (Busch and Hoffman 2011; Misani and Pogutz 2015). Therefore, our results indicate that:

- Multinational companies with low OBEP profiles are more focused on pursuing the more environmentally oriented SDGs. This finding is contrary to what is theoretically expected, but plausible since companies with negative environmental impacts will pay more attention to being able to improve their performance related to environmental issues. This profile tends to have greater needs for environmental improvement, and for this reason, they will be specially focused on pursuing the environmental-oriented SDGs.
- As expected, there is not a significant relationship between the OBEP and the multinational companies analyzed focused on the pursuit of the more social-oriented SDGs.
- Companies in the sample with high-level PBEP profiles seek to achieve both the the more environmental-oriented SDGs and the more social-oriented SDGs. This result is opposite to what was expected, but plausible because companies in the sample with more resources (financial, technological and human) tend to adopt a greater number of voluntary policies and practices of both a social and environmental nature. For this reason, this profile could be the one that pursues the greatest possible number of SDGs.

In summary, the findings of this study empirically demonstrated that SDGwashing exists: in the IB arena the achievement of SDGs of a different nature might be uneven and could be influenced by varied organizational configurations related to environmental performance.

7. Conclusions and implications

7.1. Theoretical implications

The results of this work imply several contributions from theoretical and methodological points of view. From a theoretical perspective, our findings contribute to existing research in at least three ways. First, Howard-Grenville *et al*. (2019) argued that there is considerable research to be done to understand the SDGs and their effects on businesses more holistically. Our empirical results shed light on this fact, demonstrating that the pursuit of some SDGs is closely related to different and specific organizational profiles. In our sample, the pursuit of some SDGs compared to other SDGs (of a different kind) by multinational companies largely depended on their environmental profile. Our results showed that multinational companies that generated greater negative environmental impacts and that implemented a greater number of processes focused on reducing these impacts had a greater probability of pursuing the more environmental-focused SDGs than of pursuing the more social-oriented SDGs. However, in our sample, the level of environmental impact generated (i.e. OBEP) did not influence the pursuit of the more social-oriented SDGs in multinationals, but having active environmental processes positively affected them when it comes to pursuing the more social-focused SDGs. These results confirmed that, in the international business context, the analysis of the pursuit of the SDGs should be avoided in a monolithic way. Our findings showed that, in terms of environmental impacts, the pursuit of an SDG does not necessarily lead to the pursuit of other SDGs of a different nature. This result contributes to the debate on the differences between CSR practices and environmental sustainability practices (Bansal and Song 2017; Montiel 2008), showing that these practices cannot all be placed in one basket, since environmental results differ depending on their implementation.

Second, related to the relationship between IB and sustainable development, most studies have analyzed a common CSR pattern in IB setting: a combination of developed home countries and emerging host countries (Pisani *et al*. 2017). This majority response pattern is closely related to the importance of SDGwashing as a form of corporate irresponsibility in IB. For instance, van Zanten and van Tulder (2018) showed that MNEs primarily engage with SDGs that "avoid harm" instead of those SDGs that "do good". This passive role of MNEs in contributing to the SDGs is in line with our results, that corroborate the arguments of prior literature about SDG cherry picking (Howard-Grenville *et al*. 2019; Nieuwenkamp 2017): companies tend to focus, at first glance, on the pursuit of SDGs that are closer to being achieved, which leads to others being "orphaned" (Chakravorti 2017). Despite the existence of SDG cherry picking, it is essential to note that "(…) sustainable development, however, demands that SDGs that seek to do good are also realized" (van Zanten and van Tulder 2018, 228) and multinational companies should contribute to eliminate SDGwashing and similar symbolic behaviors related to SDGs, especially those companies that operate in unequal economic contexts in the comparison between home country versus host country.

Third, concerning the adherence to non-financial reporting standards, our results are in agreement with prior studies that concluded the importance of non-financial reporting (e.g. Alsaifi, Elnahass, and Salama 2020; Clarkson, Overell, and Chapple 2011; Giannarakis, Zafeiriou, and Sariannidis 2017; Guenther *et al*. 2016). However, our results go one step further in the literature on non-financial disclosure. In this respect, prior literature has analyzed what the factors that influence the SDG disclosure are (e.g. García Sánchez *et al*. 2020; Guenther *et al*. 2016; Pizzi, Rosati, and

Venturelli 2021) and the novelty of our results resides in demonstrating that there is a positive relationship between the level of adherence to GRI and the pursuit of the SDGs, regardless of their nature. This result reinforces the idea that symbolic behaviors exist (i.e. SDGwashing) in reference to the pursuit of the SDGs since, regardless of the level of environmental performance, companies strive to disclose and publicly demonstrate that they pursue the SDGs, whatever their nature.

Furthermore, our findings contribute significantly, from a methodological perspective, to existing research in at least two ways. On the one hand, prior literature argues the necessity to differentiate at least two dimensions of environmental performance; that is outcome-based and process-based measures (Busch and Hoffman 2011; Delmas, Etzion, and Nairn-Birch 2013; Misani and Pogutz 2015). For instance, Misani and Pogutz (2015) measured environmental performance considering these two dimensions arguing that stakeholders can react differently to different measures of environmental performance. Our results are in line with this inclusion of differentiated measures: the confronting results between the positive association PBEP-SDG#6 and the negative association OBEP-SDG#6 illustrate this fact. Thus, it is essential that research on environmental management accounts for the analysis of environmental performance using this double perspective. In other words, it is necessary to consider the polluting emissions and other measures of the firm's environmental impact, but it is also important to know about the organizational effort in which the company is investing to mitigate these negative impacts. On the other hand, related to IB studies, Pisani *et al.* (2017) presented a systematic review of international CSR research and they argued that, to move IB research forward, it could be interesting to utilize sustainability rankings/ratings databases as well as rethinking the empirical variables by including CSR measures and outcomes. Our findings offer these methodological best practices recommended by Pisani *et al.* (2017) for the literature on IB: we utilized CDP and GRI as databases concerning sustainability ratings and we used two measures of environmental performance as explanatory variables.

7.2. Practical implications

Our study also offered important implications for practitioners. For instance, it is particularly interesting to understand how managers might interpret the importance and urgency of the pursuit of SDGs. At this point, Chakravorti (2017) offers three main steps for answering the managerial question of where to begin with SDG issues: segment and rank the SDGs, identify where the company fits and make the business case. He argued that "the first step is to stop trying to visualize the entire SDG framework, and frame it as a hierarchy of connected and sequenced goals" (Chakravorti 2017). In a similar vein, Johnsson *et al.* (2020, 1) made several suggestions "for an SDG assessment to provide basis for informed decisions regarding real change toward more sustainable corporate practices". Their recommendations are relevant for managers who decide to pursue SDGs, especially in the stage of planning and control process: (1) identify and include concrete measures to align with the term of the Paris Agreement, (2) include relevant value chains, and (3) consider both the short-term and long-term effects of strategic choice (Johnsson *et al.* 2020, 1).

Further, related to pursuing SDGs, managers tend to apply the "principle of materiality" which implies that they must focus on SDGs that are material to their stakeholders (specially shareholders), including the environment among them. From the view of

allocative efficiency, it could be better if the company channels its resources into a few SDGs where its impact could generate synergies among them due to being SDGs with the same nature (e.g. to focus on pursuit of most of the SDGs related to environmental protection). At this point, our results show that managers of multinational companies more concerned with environmental issues will be more prepared to face, for instance, SDG#6 (clean water and sanitation), #7 (clean energy) and #13 (climate action) meanwhile managers of companies more focused on social issues must prioritize the achievement of SDG#8 (decent work), #10 (reduced inequalities) and #1 (no poverty), among others.

7.3. Limitations and future research

This study is not exempt from several limitations. First, prospective research would benefit from studying the proposed relationship using other sample configurations. For instance, it would be interesting to replicate the hypotheses by using a different sample size. Are there differences between SMEs and large companies relating to the pursuit of SDGs? Further, although previous studies have shown that the use of the FTSE 100 as a sample offers some homogeneity in relation to organizational characteristics such as size, regulation exposure, financial situation, etc. (Giannarakis, Zafeiriou, and Sariannidis 2017; Hassan and Ibrahim 2012), firm heterogeneity is substantial even among firms within narrow industry groups and this fact should be considered a limitation of our work. Similar to different size, it is essential to analyze a sample composed of multinational companies headquartered in different countries, especially from both developed and less-developed countries. It is possible that the SDG cherry picking differs from developed countries compared to developing countries. A priori, companies headquartered in developed countries have already pursued some more social-focused SDGs such as no poverty or zero hunger, while these SDGs could not be pursued by companies located in developing economies.

Second, in this work we have chosen to analyze SDG#6 for being of a purely environmental nature and SDG#8 for being more related to "well-being and future human development" (Folke *et al*. 2016). These SDGs have been chosen to facilitate the comparison between one SDG with indicators (according to the EIKON database) exclusively focused on the adoption of environmental practices by companies with other SDGs whose indicators are more oriented to practices with a social nature. However, results based exclusively in the analysis of these two SDGs could be interpreted as an overgeneralization, since our findings only give guidance in reference to these specific SDGs. As a consequence, since the range of SDGs is wide, we encourage the analysis of other SDGs in order to check whether SDGwashing exists in other contexts. Future work will be in charge of, on the one hand, contrasting a greater number of SDGs and, on the other hand, using and comparing other SDGs different from those proposed here.

Third, another important limitation is that this work does not analyze the concern of reverse causality. Is it environmental performance that influences the pursuit of the SDGs? Or is it pursuing the SDGs correctly that consequently improves environmental performance? This relationship opens the door for future research into what comes first: achievement of the SDGs or good (environmental) performance? Prospective work will be in charge of providing answers to this methodological problem by analyzing this relationship through specific statistical techniques that control causality,

such as the Heckman model (Heckman 1979) among other techniques related to selection bias.

Fourth, this work has measured the pursuit of the SDGs using secondary information (i.e. obtained from the EIKON database). This fact implies that the dependent variable for this work includes the adoption of policies and voluntary management practices that (1) are related to the achievement of the SDGs and (2) are currently being implemented by the companies in the sample. However, this variable does not reflect the current full degree of achievement of the SDGs, nor the future targets formulated by the company, as well as whether the achievement of these targets is being considered in both short and long term contexts (Johnsson *et al.* 2020). One way to collect this essential information to analyze the achievement of SDGs by companies more accurately would be through the use and treatment of primary information (i.e. by asking managers directly what and how they are managed for the achievement of the SDGs in a questionnaire or survey) and even qualitative information. By doing so, it is possible to analyze: the level of achievement of the SDGs that companies have reached (i.e. past), what they are doing to reach this level of achievement (i.e. present) and the targets that have been planned for the coming years in this respect (i.e. future). In this regard, the study by Johnsson *et al.* (2020), that shows a case study exploring how an SDG assessment can be framed to discourage SDGwashing, represents a good starting point for future research in charge of continuing with this interesting line of research.

Finally, we have focused our attention on the relationship between the pursuit of the SDGs and environmental performance. However, it is of special interest to know the association between the achievement of the SDGs and other outcome variables such as business performance, social performance or export performance in the case of multinational companies. Further, it is also interesting to analyze other governance or regulatory factors that could affect the relationship between the pursuit of the SDGs and performance (Eccles, Ioannou, and Serafeim 2014; Ioannou and Serafeim 2012). Thus, future research would benefit from studying other organizational and institutional variables on the relationship between the pursuit of SDGs and environmental performance.

Supplemental data

Supplemental data for this article is available online at https://doi.org/10.1080/09640568.2022.2033960.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes

1. According to the *Merriam Webster Dictionary*, the term "pursue" has three essential meanings: (1) to follow and try to catch or capture (someone or something) for usually a long distance or time; (2) to try to get or do (something) over a period of time; (3) to be involved in (an activity). Thanks to the suggestion of two anonymous referees, we opted for using the term "pursue the achievement of SDG" since it reflects that companies are attempting to achieve SDGs, but it does not necessarily imply that they are going to do so.
2. The median of this variable, for the FTSE 100 sample, is to comply with four indicators related to SDG#6.

3. The following gases are relevant: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCS), perfluorinated compound (PFCS), sulfur hexafluoride (SF_6), nitrogen trifluoride (NF_3)

4. The current version of GRI, called GRI Standards, was released in 2018 and is currently valid; meanwhile the previous version, called GRI G4, was published in 2013 and was valid until 30 June 2018.

5. Note that for unbalanced models where the homoscedasticity hypothesis does not hold, it is convenient to use Welch's ANOVA (McDonald 2014).

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