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Evaluating sustainable development goals through market capitalisation: where we are half way and future research ahead

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Abstract: The study shows the situation of the 2030 Agenda halfway between 2015 and 2030. The empirical study aims to determine which SDGs are positively correlated with market capitalisation of publicly listed companies. Through a multiple linear regression between the 17 SDGs and market capitalisation in 26 developed and 48 emerging countries, the study finds that, for the most part, SDGs are inversely correlated with the market capitalisation of the countries studied. Therefore, companies would tend to undertake initiatives only associated with those SDGs that are positively correlated (2, 3, 4, 6, 9, 12 and 17) with market capitalisation. This worrying inconsistency reflects a merely transactional implementation of initiatives, which becomes more acute depending on the type of country (developed or emerging). Seven potential factors are proposed as an explanation based on the rigorous literature review, and four relevant fields of future research are opened as a result of the study.

Keywords: 2030 Agenda; developed countries; emerging countries; greenwash; market capitalisation; SDGs; SDG-washing.

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1 Introduction

1.1 Overview

In September 2015, the United Nations General Assembly adopted a very relevant initiative: the 2030 Agenda for Sustainable Development (or simply the 2030 Agenda), which includes 17 Sustainable Development Goals (SDGs) and their corresponding 169

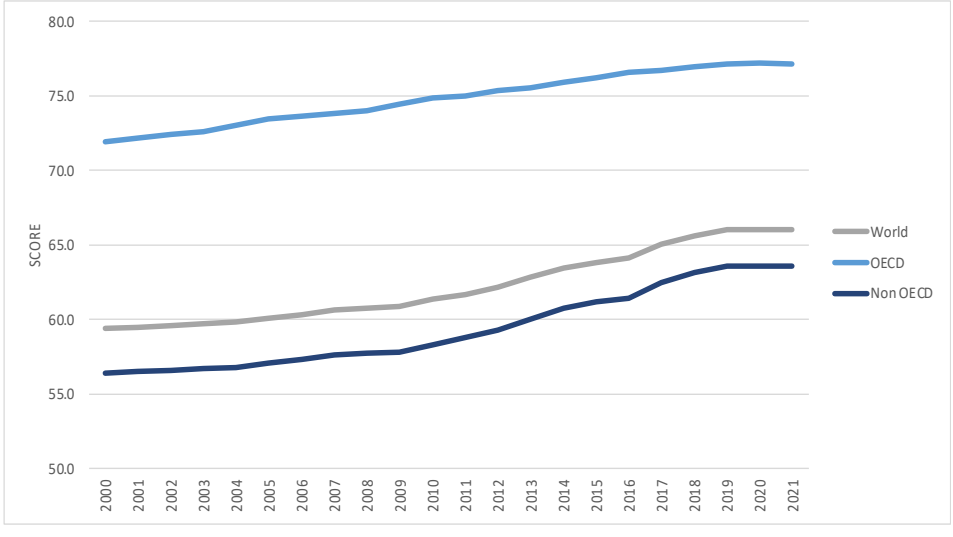
targets (United Nations, 2023a). The main objective is to summon all people, companies, universities, organisations, among other entities, to develop initiatives that are aligned with the effort to combat the main problems of the world (Dey, 2023; United Nations, 2023b). Said efforts should not be carried out separately, but rather revolve around the same spinal column. They are considered as the opportunity to leave behind the business as usual (Scheyvens et al., 2016), or even as the state of the art of what governments need around the world to secure their population's interests (Bebbington and Unerman, 2018; Mondal and Giri, 2025). They are also considered better than the Millenium Goals (Caprani, 2016). At a corporate level, the inclusion of SDGs in their private initiatives is considered fundamental for the success of the 2030 Agenda (Rosati and Faria, 2019; Van Zanten and Van Tulder, 2018). In parallel, some other scholars consider this as merely transactional (Gupta and Vegelin, 2016) for window-dressing (Peng et al., 2023), whether it is SDG-washing from a selective execution perspective (Heras-Saizarbitoria et al., 2022), or greenwash from a communications perspective (Lyon and Montgomery, 2015).

It is true that the SDGs have been a great advance towards achieving a better world (Biggeri et al., 2023). Nevertheless, efforts in research seem to be focused on trying to measure the SDGs better, instead of focusing on understanding whether they are serving as a means to a better world. There are attempts among the literature that try to measure SDGs and their evolution in a different way, such as the Sustainable Wellbeing Index (SWI) (Costanza et al., 2016) or the SDG Reporting Score (Pizzi et al., 2020). In parallel to the creation of the previously mentioned measurement alternatives, Moyer and Hedden (2020) stated that between 2015 and 2030, the world would have made minor advances towards the 2030 Agenda, its SDGs and their specific goals, independently of the way in which they are measured. The SDGs were proposed and are currently administered by the United Nations. They are in charge of measuring the SDGs through a rigorous methodology, and communicating their findings to the world through their open to the public Sustainable Development Report Dashboard (SDG Index, 2023). Whose responsibility it is to ensure that the SDGs are finally met? Is it possible to meet them? What does meeting an SDG mean? Are all the SDGs equally important?

1.2 Evolution and current situation of SDGs

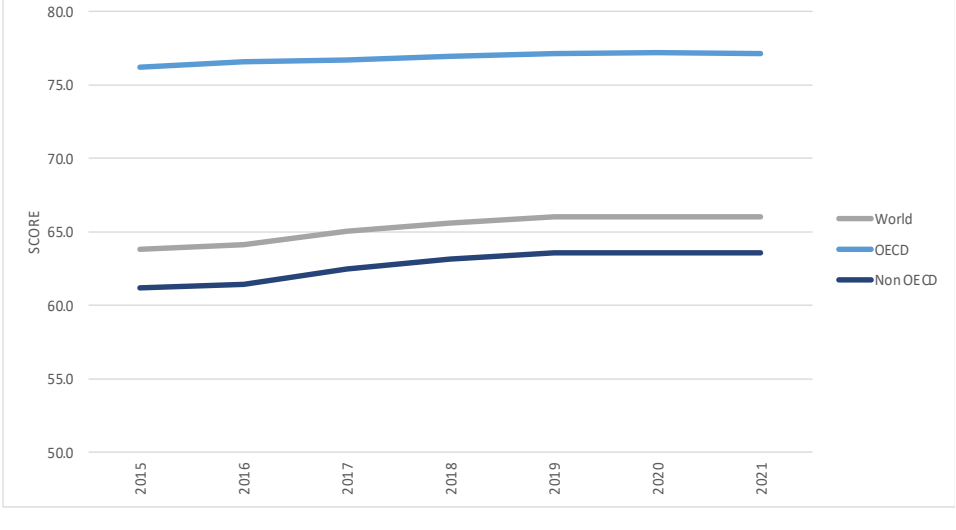
Beyond what accomplishing or meeting an SDG means, Figures 1 and 2 support Moyer and Hedden (2020)'s statement. Although there has been important progress in the evolution of the SDGs, the most relevant progress occurred mainly during a period of years in which the 2030 Agenda had not yet been officially launched. As of 2015 to 2021, progress on the SDGs is negligible. Based on the stagnation between 2019 and 2021, the Covid-19 pandemic neutralised the efforts (Zhao et al., 2022), contrary to Scarpa et al. (2023)'s findings about companies intensifying SDGs efforts during the Covid-19 pandemic. Additionally, the difference between the evolution of the SDGs in OECD and non-OECD countries is evident. This has been documented in a study for 26 countries, where OECD ones show a much higher capacity of undertaking approaches and tools towards better SDGs results (Allen et al., 2018). More worrying research results suggest that efforts to implement initiatives associated with the SDGs are still perceived as not contributing to their progress (Ordonez-Ponce and Weber, 2022).

Figure 1 Evolution of the SDG general score (2000–2021) for the World, OECD and non-OECD countries (see online version for colours)



Source: Adapted from the United Nations SDG database.

Figure 2 Evolution of the SDG general score (2015–2021) for the World, OECD and non-OECD countries (see online version for colours)



Source: Adapted from the United Nations SDG database.

The field of study of the evolution of the SDGs is still incipient, and there are many unanswered questions at the same time. However, the one that corresponds to the present study remains: the 2030 Agenda seeks that all the initiatives of people and institutions around the world are aligned with the SDGs (United Nations, 2023c). Therefore, accomplishing them is the world's responsibility, and if they are not met, then the world will have failed in the attempt. However, Van Zanten and Van Tulder (2018) emphasised that, although the 2030 Agenda is fundamental for sustainable development, the SDGs could not progress among time without the involvement of multinational enterprises (Rashed and Shah, 2021; Rosati and Faria, 2019; Van Tulder et al., 2021), despite the important role of governments (Singh and Bala, 2021). For this reason, it is essential to develop the role that companies play for the future of the 2030 Agenda.

1.3 The role of private companies in the 2030 Agenda

It has been argued that the 2030 Agenda requires the participation of different institutions, both public and private and even social companies (Ventura, 2020). However, the main axis of said participation are private companies (Rosati and Faria, 2019; Van Tulder et al., 2021) in accordance with what was stipulated by Van Zanten and Van Tulder (2018). They studied Financial Times Global 500 companies, and concluded that they would be willing to implement initiatives aligned to the SDGs, but only if they are actionable by them. Also, they would prefer those initiatives that 'avoid harm', instead of those that 'do good'. This is evidently not convenient to achieve the objectives of the 2030 Agenda, since it is known that social impact is increased through the involvement of private companies in the efforts towards achieving the SDGs (Fiandrino et al., 2022).

After this logical sequence, does the world then depend primarily on the efforts of private companies to get closer to the 2030 Agenda? There is evidence that the financial sector has been working on specific initiatives, none of which have represented important progress in the SDGs (Ordonez-Ponce and Weber, 2022). Costa et al. (2022)'s studied SDG reporting practices, and concluded that even though companies mention SDGs in their reports, they do not specify how their initiatives contribute directly to the 2030 Agenda. It could be SDG-washing (Heras-Saizarbitoria et al., 2022) or possibly because the SDGs are associated with people's well-being, and to achieve this, it is essential to first know their needs (Kenrick et al., 2010; Maslow and Lewis, 1987). In parallel, although Small and Medium Enterprises (SMEs) involvement is also mentioned in the literature as part of circular economy initiatives (Ferasso et al., 2023; Shaikh and Suguna, 2024) it mainly focuses on multinational companies (Rashed and Shah, 2021; Rosati and Faria, 2019; Van Tulder et al., 2021), since SMEs have restricted access to resources that could allow them to implement initiatives aligned with the SDGs (Smith et al., 2022).

There are discrepancies in the literature regarding authors who consider that the SDGs are a real priority for companies (Tsalis et al., 2020), even through green and sustainable innovation (Dasgupta, 2023; Manigandan and Raghuram, 2024), and those who consider that companies undertake initiatives associated with the SDGs only for convenience (Gupta and Vegelin, 2016; Lyon and Montgomery, 2015). What seems clear is that without the support, authentic or opportunistic, of private companies, the initiatives associated with the SDGs would not prosper (Rosati and Faria, 2019; Van Zanten and Van Tulder, 2018). Some companies incorporate the SDGs into their initiatives as a result of pressure received from investors to reveal the alignment between

these initiatives and the 2030 Agenda (García-Sánchez et al., 2020). This is coherent with publicly listed firms incorporating SDGs as part of their financial reporting in a higher proportion than those companies that do not list publicly (Elalfy et al., 2021). It is evident that they do this because of their exposure to the market, or because they know that sustainable business practices could impact positively on other areas (Sinha et al., 2023), such as employee retention (Florek-Paszkowska and Hoyos-Vallejo, 2023). Retail companies are constantly challenged to reduce their environmental impact, which inevitably ends up in initiatives associated with the SDGs (Naidoo and Gasparatos, 2018). In fact, the rise of Environmental, Social and Governance (ESG) investing has greatly influenced how investors decide on their investments (Rau and Yu, 2024). ESG investors are not only concerned with high returns, but also with a genuine concern on the part of companies to find businesses that do not harm the planet and are committed to sustainability (Kräussl et al., 2024). Instruments such as green bonds and sustainability-linked bonds are proof of this (Anderson and Kish, 2024; Shi et al., 2023). Nevertheless, those initiatives tend to be primarily associated to corporate social responsibility (Poddar et al., 2019). The incorporation of those initiatives does not guarantee that companies really engage with their stakeholders (Lopez, 2020), in spite of being formally stated that corporate social responsibility is an important tool to achieve SDGs (Gunawan et al., 2020) not only for big companies, but for SMEs (Oduro et al., 2024). Considering that there is a latent risk of SDG-washing (Heras-Saizarbitoria et al., 2022) and greenwashing (Lyon and Montgomery, 2015) and that private companies should implement initiatives towards sustainable development (Rosati and Faria, 2019), what are the real motivations of companies to undertake initiatives associated with the SDGs?

1.4 The motivation of private companies to undertake SDG-related initiatives

The motivations of a company to undertake initiatives associated with the SDGs can be diverse. Within the framework of the stakeholder theory (Freeman and Reed, 1983), the degree of inclusiveness of actors associated to the SDGs influences the social impact achieved through initiatives that involve SDGs (Fiandrino et al., 2022), and that also have a positive impact on their customers (Mahajan and Gera, 2023; Sapsanguanboon and Faijaidee, 2024). Glambosky et al. (2023) proposed that the announcements about the purpose of a corporation associated to deliver value to all stakeholders have a positive response from the stock market, and even more with a good interlocutor (Fowler and Biekart, 2017). In light of signalling theory, companies will always have a high motivation to offer the correct signals to the market due to the asymmetry of information between them (Bafera and Kleinert, 2023), and aligned to what society expects from companies (Bhuiyan et al., 2023). Nevertheless, the announcements mentioned previously can involve any of the 17 SDGs, and even though there is strong literature about the positive correlation between sustainable business practices and financial performance (Muhmad and Muhamad, 2021; Xia, 2023), not every initiative pays off the same way. According to Schramade (2017), companies should evaluate which SDGs are better aligned to their company's and investors' interests, and funds are not necessarily available in the amount needed (Barua, 2019). Therefore, the money allocated to the company's projects should be prioritised based on its main concerns.

Companies try actively to increase their market value (Glambosky et al., 2023), which translates into a higher market capitalisation or firm size (Tamimi and Sebastianelli, 2017). It is also known that the fewer carbon dioxide emissions a company

makes, the higher its market capitalisation tends to be (Griffin et al., 2017), regardless of whether their stocks list publicly or not. Nevertheless, companies that do not list publicly are less worried about SDGs than those companies that do (Mezinova et al., 2022), when in reality, according to Griffin et al. (2017), they should. Not only should they, but according to legitimacy theory, they should share in accordance with what society seeks (L'Abate et al., 2023). Beyond that, considering that companies tend to SDG-wash (Heras-Saizarbitoria et al., 2022), it is reasonable to suspect that companies will undertake initiatives associated not with the SDGs, but with specifically those SDGs that allow them to increase their market value. Multinational enterprises are critical to the achievement of the SDGs (Rashed and Shah, 2021; Rosati and Faria, 2019; Van Tulder et al., 2021), but the specific SDGs to be involved in initiatives associated with the 2030 Agenda are not yet known. This means that, although companies are interested on increasing their market capitalisation (Tamimi and Sebastianelli, 2017), they currently do not know in which SDGs it is more or less convenient to invest to achieve their goal of greater market capitalisation.

1.5 Problem, aim, research questions and significance

The main theoretical problem is that the literature about which SDGs to embrace is still incipient, despite how critical it is to identify those that align with the companies' objectives (Schramade, 2017), specifically increasing their market capitalisation (Tamimi and Sebastianelli, 2017). Therefore, the research objective is to determine which SDGs are positively correlated (Schramade, 2017) with market capitalisation (Glambosky et al., 2023) of publicly listed companies, for both developed and emerging markets (Allen et al., 2018).

Regarding the research questions, they are the following:

- *Question 1*: Which SDGs have a statistically significant correlation between their evolution over time and the market capitalisation reflected in the main stock market indices of the developed countries studied?
- *Question 2*: Which SDGs have a statistically significant correlation between their evolution over time and the market capitalisation reflected in the main stock market indices of the emerging countries studied?

The study is significant for five reasons. First, the study initiates a fundamental debate regarding which SDGs are directly or inversely correlated with the stock market capitalisation of companies. Second, the results obtained will allow companies to invest their money in those initiatives aligned with the SDGs that are positively correlated with their market capitalisation. Third, the study will contribute to partially filling the gap that exists in the literature regarding which SDGs are convenient to incorporate into business initiatives through a longitudinal approach. Fourth, the study will allow us to rethink the 2030 Agenda when the time comes, better directing it toward the goals we wish to achieve as humanity. Fifth, the study will open new opportunities for future research based on the results obtained.

2 Materials and methods

The research is a quantitative, correlational and longitudinal study (Hair et al., 2018) with conceptual and empirical implications. The information about the SDGs was retrieved from the publicly available Sustainable Development Report Dashboard (SDRD) (SDG Index, 2023) as a data set (secondary source of information) on 18th July 2023. The database shows scores from 0 to 100 per country per year, which allows us to understand the evolution of the SDGs over time. Even though the literature mentions that companies tend to implement initiatives associated with the SDGs according to what suits them best (Heras-Saizarbitoria et al., 2022; Lyon and Montgomery, 2015; Peng et al., 2023), the SDRD, and in general the metrics of the 2030 Agenda, are found at the country level. For this reason, it is not possible to study the phenomenon at the company level. Although this could be seen initial as a limitation, it is actually a desirable delimitation, since companies are essential to drive efforts towards the 2030 Agenda (Rosati and Faria, 2019; Van Zanten and Van Tulder, 2018), but not any kind of company: SMEs tend to have problems accessing the necessary resources to implement initiatives aligned with the SDGs (Smith et al., 2022). Therefore, studying market capitalisation, a reflection of publicly listed companies, aligns the study with the literature review in terms of the general characteristics of the type of companies that have access to resources (Smith et al., 2022) and conduct public communications to their stakeholders (Costa et al., 2021; Elalfy et al., 2021; Fowler and Biekart, 2017; García-Sánchez et al., 2020; Glambosky et al., 2023; Rashed and Shah, 2021; Rosati and Faria, 2019; Van Zanten and Van Tulder, 2018).

The SDRD lists 177 countries, of which only 163 registered data associated with the 17 SDGs. Considering that the information listed begins in the year 2000 and ends in the year 2021 (22 years), a total of 3,586 observations associated to the 163 countries were expected. However, not only did some countries present gaps within the database, but it was combined with the market capitalisation information of each countries' stock exchanges that belong to the World Federation of Exchanges (WFE, 2023). The total observations, which resulted from the combination of the two previous criteria, was reduced to 1094 for the world data in a time horizon that begins in the year 2000 and ends in the year 2021. These 1094 observations were divided into 505 for developed countries and 589 for emerging countries (World Data, 2023).

Regarding the method, a panel data multiple linear regression was conducted, one for each of the three scenarios considered: world data (regression 1), developed country data (regression 2) and emerging country data (regression 3). The regression correlated the 17 SDGs of each country in question (specifically the 0 to 100 score for each SDG per country per year) with the stock market capitalisations of each of the main stock markets of each country studied, specifically through the market capitalisation of the main general stock index of each market (in billions of US dollars). In total, 26 developed countries and 48 emerging ones were analysed, and the classification into both developed and emerging countries was made based on the World Data (2023). The developed countries analysed were Australia, Austria, Canada, Croatia, Cyprus, Czech Republic, Germany, Greece, Hungary, Ireland, Israel, Japan, Korea (South), Luxembourg, Malta, Netherlands, New Zealand, Norway, Poland, Singapore, Slovenia, Spain, Switzerland, UAE, UK and USA. The emerging countries analysed were Argentina, Armenia, Azerbaijan, Bahrain, Bangladesh, Barbados, Botswana, Brazil, Bulgaria, Chile, China, Colombia, Costa Rica, Egypt, Ghana, India, Indonesia, Iran, Jamaica, Jordan,

Kazakhstan, Kenya, Kuwait, Malaysia, Mauritius, Mexico, Morocco, Namibia, Nigeria, Oman, Pakistan, Panama, Peru, Philippines, Qatar, Romania, Russia, Rwanda, Saudi Arabia, South Africa, Sri Lanka, Tanzania, Thailand, Tunisia, Turkey, Ukraine, Vietnam and Zambia.

Since the SDGs are measured in a scale from 0 to 100, and market capitalisations range up to billions of US dollars, the market capitalisation was smoothed through a square root (Hair et al., 2018). For each regression, the statistically significant SDGs were identified and conserved at a 99% and 95% confidence level, leaving aside those SDGs that did not meet the previous criteria (Hair et al., 2018). In addition, multicollinearity was validated through the Variance Inflation Ffactor (VIF) and heteroskedasticity through the corresponding correlation matrices for those statistically significant SDGs. In the case of the VIF, values less than 5 should be obtained, and in the case of correlations, they should not exceed 0.75 (Hair et al., 2018). The multiple linear regression expression is the following:

$$\sqrt{Market\ cap.}_{ij} = \sum_{j=2000}^{j=2021} \beta_{ijx} * SDG_{ijx}$$

where '$Market\ cap._{ij}$' stands for market capitalisation of country 'i' in year 'j' expressed in US dollars, β_{ijx} stands for the regression coefficient for country 'i' in year 'j' assigned to SDG 'x' and SDG_{ijx} stands for the SDG number 'x' of country 'i' in year 'j' expressed in the United Nations' scale from 0 to 100. The time horizon of the analysis is between the years 2000 and 2021.

According to the research design previously explained, the following questions are decanted, as defined in the Introduction:

- *Question 1*: Which SDGs have a statistically significant correlation between their evolution over time and the market capitalisation reflected in the main stock market indices of the developed countries studied?
- *Question 2*: Which SDGs have a statistically significant correlation between their evolution over time and the market capitalisation reflected in the main stock market indices of the emerging countries studied?

3 Results

Three panel data multiple linear regressions were run, one for global data (regression 1), one for data from developed countries (regression 2), and one for data from emerging countries (regression 3). The results are shown in Tables 1 through 9. Table 1 shows the fit results for the 1094 observations of the world data for the first regression, with an adjusted R^2 of 0.6395. Table 2 shows the statistically significant SDGs in correlation with the square root of the market capitalisation of each country. These SDGs were 1, 2, 5, 6, 7, 8, 9, 10 and 15. Likewise, Table 2 also shows the VIFs, none of which exceeded the value of 5. Table 3 shows the correlation coefficients among the statistically significant SDGs, none of them exceeding 0.75 in absolute value.

Table 1 Adjustment results for Regression 1: world data

Adjustment	*Result*
R^2	0.6431
Adjusted R^2	0.6395
Observations	1,094

Table 2 Coefficients, *p*-values and VIF for Regression 1: world data

SDGs	*Coefficient*	*p-value*	*VIF*
SDG 1	–3.3567	0.020**	1.012
SDG 2	11.4274	0.000*	1.084
SDG 5	–6.4339	0.000*	1.079
SDG 6	13.4704	0.000*	1.095
SDG 7	–16.4461	0.000*	1.000
SDG 8	11.2366	0.000*	1.087
SDG 9	15.5923	0.000*	1.302
SDG 10	–9.3334	0.000*	1.000
SDG 15	–4.9314	0.000*	1.002

Notes: *Statistically significant at a 99% confidence level;
**Statistically significant at a 95% confidence level

Table 3 Correlation matrix for Regression 1: world data

	Market cap.	*SDG 1*	*SDG 2*	*SDG 5*	*SDG 6*	*SDG 7*	*SDG 8*	*SDG 9*	*SDG 10*	*SDG 15*
Market cap.	1.00									
SDG 1	0.11	1.00								
SDG 2	0.28	0.40	1.00							
SDG 5	0.27	0.23	0.27	1.00						
SDG 6	0.30	0.57	0.44	0.58	1.00					
SDG 7	0.01	0.51	0.29	0.28	0.50	1.00				
SDG 8	0.28	0.49	0.47	0.49	0.55	0.39	1.00			
SDG 9	0.48	0.50	0.46	0.54	0.54	0.31	0.65	1.00		
SDG 10	–0.02	0.52	0.31	0.10	0.32	0.14	0.53	0.47	1.00	
SDG 15	–0.05	0.18	0.18	0.24	0.32	0.07	0.26	0.20	0.37	1.00

Table 4 shows the fit results for the 505 observations of the data from developed countries that correspond to the second regression, with an adjusted R^2 of 0.7454. Table 5 shows the statistically significant SDGs in correlation with the square root of the market capitalisation of each country. Said SDGs were 1, 2, 3, 4, 6, 7, 10, 13, 14, 16 and 17, which are at the same time the SDGs that answer the first research question. Likewise, Table 5 also shows the VIFs, none of which exceeded the value of 5. Table 6 shows the correlation coefficients between the SDGs were statistically significant, none of them exceeding 0.75 in absolute value.

Table 4 Adjustment results for Regression 2: developed countries

Adjustment	*Result*
R^2	0.7524
Adjusted R^2	0.7454
Observations	505

Table 5 Coefficients, *p*-values and VIF for Regression 2: developed countries

SDGs	*Coefficient*	*p-value*	*VIF*
SDG 1	–29.9331	0.001*	1.005
SDG 2	28.0467	0.000*	1.028
SDG 3	42.2590	0.000*	1.045
SDG 4	29.3334	0.000*	1.001
SDG 6	31.9579	0.000*	1.062
SDG 7	–20.1917	0.000*	1.004
SDG 10	–34.4618	0.000*	1.371
SDG 13	–11.7761	0.000*	1.044
SDG 14	17.7000	0.000*	1.017
SDG 16	–49.2948	0.000*	1.014
SDG 17	9.9382	0.003*	1.026

Note: *Statistically significant at a 99% confidence level

Table 6 Correlation matrix for Regression 2: developed countries

	Market cap.	*SDG 1*	*SDG 2*	*SDG 3*	*SDG 4*	*SDG 6*	*SDG 7*	*SDG 10*	*SDG 13*	*SDG 14*	*SDG 16*	*SDG 17*
Market cap.	1.00											
SDG 1	–0.07	1.00										
SDG 2	0.17	–0.24	1.00									
SDG 3	0.21	0.08	–0.19	1.00								
SDG 4	0.04	–0.06	0.24	0.17	1.00							
SDG 6	0.24	0.10	0.08	0.16	–0.20	1.00						
SDG 7	–0.06	0.05	0.10	0.25	0.07	0.32	1.00					
SDG 10	–0.52	0.44	–0.10	–0.05	–0.05	0.13	0.19	1.00				
SDG 13	–0.20	–0.26	0.32	–0.30	0.34	0.00	–0.06	0.08	1.00			
SDG 14	0.13	0.29	0.03	–0.01	–0.14	0.52	0.27	0.32	–0.28	1.00		
SDG 16	–0.12	0.44	–0.06	0.45	0.09	0.37	0.29	0.26	–0.33	0.34	1.00	
SDG 17	0.16	0.20	–0.19	0.38	–0.12	0.48	0.45	0.19	–0.36	0.35	0.36	1.00

Table 7 shows the fit results for the 589 observations in the data from developed countries that correspond to the third regression, with an adjusted R^2 of 0.7561. Table 8 shows the statistically significant SDGs in correlation with the square root of the market capitalisation of each country. Said SDGs were 2, 4, 5, 7, 9, 10, 11, 12, 14, 15 and 16,

which are at the same time the SDGs that answer the second research question. Likewise, Table 8 also shows the VIF, none of which exceeded the value of 5. Table 9 shows the correlation coefficients between the SDGs were statistically significant, none of them exceeding 0.75 in absolute value.

Table 7 Adjustment results for Regression 3: emerging countries

Adjustment	*Result*
R^2	0.7619
Adjusted R^2	0.7561
Observations	589

Table 8 Coefficients, *p*-values and VIF for Regression 3: emerging countries

SDGs	*Coefficient*	*p-value*	*VIF*
SDG 2	7.6933	0.000*	1.053
SDG 4	8.6307	0.000*	1.053
SDG 5	–5.3961	0.000*	1.009
SDG 7	–7.6677	0.000*	1.006
SDG 9	12.7444	0.000*	1.183
SDG 10	–6.3174	0.000*	1.072
SDG 11	–3.8568	0.001*	1.009
SDG 12	13.7827	0.000*	1.003
SDG 14	–4.7086	0.001*	1.060
SDG 15	–5.8654	0.000*	1.047
SDG 16	–5.6044	0.002*	1.037

Note: *Statistically significant at a 99% confidence level

Table 9 Correlation matrix for Regression 3: emerging countries

	Market cap.	*SDG 2*	*SDG 4*	*SDG 5*	*SDG 7*	*SDG 9*	*SDG 10*	*SDG 11*	*SDG 12*	*SDG 14*	*SDG 15*	*SDG 16*
Market cap.	1.00											
SDG 2	0.22	1.00										
SDG 4	0.22	0.32	1.00									
SDG 5	0.09	0.17	0.38	1.00								
SDG 7	–0.08	0.24	0.36	0.08	1.00							
SDG 9	0.39	0.18	0.19	0.20	0.20	1.00						
SDG 10	–0.26	0.02	–0.05	–0.40	–0.11	0.08	1.00					
SDG 11	–0.09	–0.01	0.41	0.37	0.44	0.07	–0.23	1.00				
SDG 12	0.06	–0.06	–0.37	–0.12	–0.37	–0.40	–0.11	–0.18	1.00			
SDG 14	–0.24	0.00	–0.09	0.02	0.02	–0.16	–0.16	0.12	0.07	1.00		
SDG 15	–0.21	0.01	–0.32	0.12	–0.06	0.08	–0.05	–0.09	0.12	0.38	1.00	
SDG 16	–0.19	0.12	0.23	–0.06	0.34	0.31	0.34	0.20	–0.50	0.12	0.02	1.00

The three regressions expose a different reality for each data set. To facilitate subsequent interpretation and analysis, Table 10 shows the same coefficient results for each regression by colour, with red being a statistically significant and negatively correlated ODS, and green a statistically significant and positively correlated ODS, both against the square root of market capitalisation.

Table 10 Regressions' statistically significant coefficients dashboard (see online version for colours)

	World	*Developed*	*Emerging*
SDG 1	–3.3567	–29.9331	
SDG 2	11.4274	28.0467	7.6933
SDG 3		42.2590	
SDG 4		29.3334	8.6307
SDG 5	–6.4339		–5.3961
SDG 6	13.4704	31.9579	
SDG 7	–16.4461	–20.1917	–7.6677
SDG 8	11.2366		
SDG 9	15.5923		12.7444
SDG 10	–9.3334	–34.4618	–6.3174
SDG 11			–3.8568
SDG 12			13.7827
SDG 13		–11.7761	
SDG 14		17.7000	–4.7086
SDG 15	–4.9314		–5.8654
SDG 16		–49.2948	–5.6044
SDG 17		9.9382	

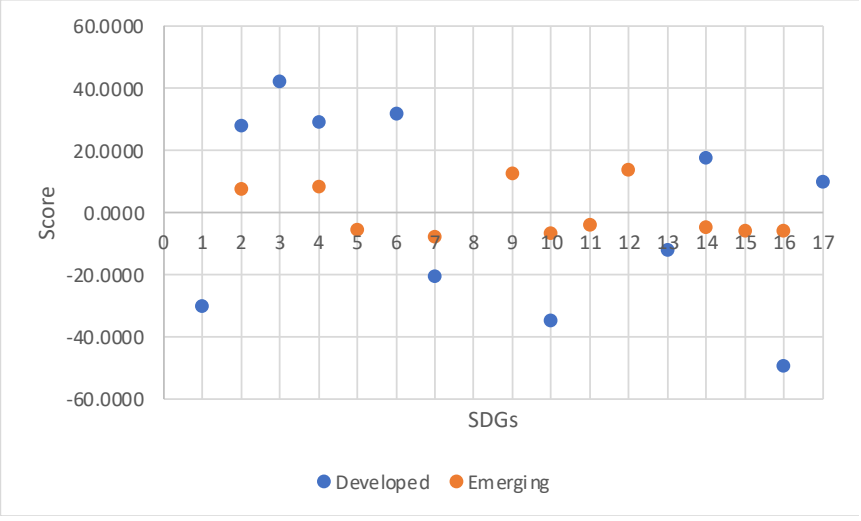
4 Discussion

The interpretation of the results must occur within the limits of the theoretical framework previously developed, especially because of the incipient literature associated with the motivations that companies have to invest in initiatives associated with the SDGs. The 2030 Agenda seeks to increase the well-being of humanity (Dey, 2023; United Nations, 2023a, 2023b). Unfortunately, we know that the progress that will be made by 2030 will be negligible (Moyer and Hedden, 2020). This is not only based on the trend of the evolution of the SDGs, but also based on the perception of the actors involved (Ordonez-Ponce and Weber, 2022). However, private companies emerge as a fundamental actor within the framework of the 2030 Agenda (Rosati and Faria, 2019; Van Zanten and Van Tulder, 2018), since without them the SDGs could not prosper, even if said progress is small (Rashed and Shah, 2021; Rosati and Faria, 2019; Van Tulder et al., 2021). Within the framework of stakeholder theory, companies will analyse their interest groups in order to invest in initiatives that benefit them according to their convenience (Freeman

and Reed, 1983; Glambosky et al., 2023). At this point, it is known that the level of involvement of the actors associated with the SDGs impacted by these initiatives influences the social impact they generate (Fiandrino et al., 2022). The ideal scenario would be for the greatest number of initiatives to be generated, but private companies are not social companies (Ventura, 2020), but rather ones with particular economic interests. One of them is the increase in its market value, since this is the product of a greater perception of future profits (Glambosky et al., 2023; Tamimi and Sebastianelli, 2017), and it is not certain which initiatives associated with which SDGs could generate an effect in favour or against said capitalisation (Muhmad and Muhamad, 2021; Xia, 2023). Therefore, it is absolutely reasonable for companies to evaluate which projects they invest in Schramade (2017), not only because of the impact on the SDGs, but because of the scarcity of resources that forces them to prioritise the most beneficial ones (Barua, 2019). Obviously, what has been said previously indicates that the implementation of initiatives is for convenience (Gupta and Vegelin, 2016; Lyon and Montgomery, 2015), but this does not justify companies lying about the true impact (Heras-Saizarbitoria et al., 2022; Lyon and Montgomery, 2015), or omit it from their financial or sustainability reports (Costa et al., 2021). Investment in initiatives should be for the perceived benefit in market capitalisation (Tamimi and Sebastianelli, 2017), in addition to the authentic impact on the SDGs involved (Sinha et al., 2023; Tsalis et al., 2020), as long as those projects are actionable by companies (Van Zanten and Van Tulder, 2018).

An important premise of the companies studied is that they are publicly listed on the respective stock exchanges of their countries. This means that they should be more concerned about implementing initiatives associated with the SDGs regarding companies that do not list (Mezinova et al., 2022) and that reveal it in their public reports (Elalfy et al., 2021). Therefore, the results are even more worrying, since these are companies with stronger motivations than others to incorporate initiatives associated with the SDGs. In addition to this, the differences between the results of developed countries (see Table 5) versus those of emerging countries (see Table 8) is evident, which marks an important challenge for the world (Allen et al., 2018). Among the 11 statistically significant SDGs for developed countries, 6 are directly correlated, and five are inversely correlated. On the side of emerging countries, there were also 11 statistically significant SDGs, although in their case the opposite situation occurred: four objectives were directly correlated with market capitalisation, while seven were negatively correlated. Figure 3 offers Tables 5 and 8 results from a different graphic perspective. Although very little progress was expected in the progress of the SDGs towards 2030 (Moyer and Hedden, 2020), in combination with the difference between developed and emerging countries it is possible to suspect that progress will be even more irrelevant for the latter.

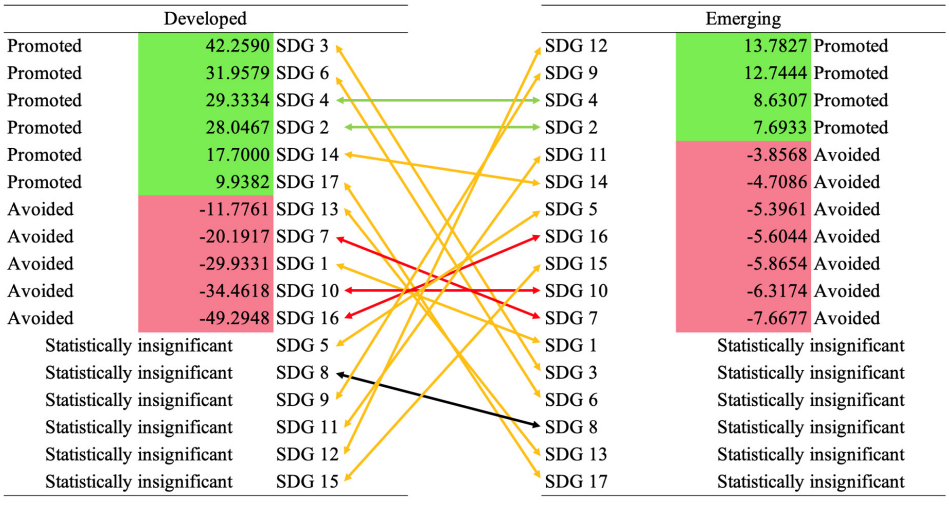
Figure 3 Sustainable development goals per country type (developed and emerging) (see online version for colours)



Despite the fact that both research questions were satisfactorily answered regarding how the behaviour of the evolution of the SDGs correlates with the evolution of the market capitalisation of companies in the studied markets, it was not expected that one or several of the SDGs would be inversely related. According to the results obtained and shown in Table 10, SDGs 1 (No poverty), 5 (Gender equality), 7 (Affordable and clean energy), 10 (Reduced inequalities), 11 (Sustainable cities and communities), 13 (Climate action), 15 (Life on land) and 16 (Peace, justice and strong institutions) should be avoided as part of the sustainable development initiatives of multinational corporations in both developed and emerging countries, since in all cases they correlate with a setback in the market capitalisation of the stock market indices studied. The only SDG that yields contradictory results between developed and emerging countries is SDG 14 (Life below water): according to the results, it should be considered as part of sustainable development initiatives in developed countries, but not in emerging countries. Regarding the SDGs directly correlated with stock market capitalisation in developed countries, initiatives associated with SDGs 2 (Zero hunger), 3 (Good health and well-being), 4 (Quality education), 6 (Clean water and sanitation), 14 (Life below water) and 17 (Partnerships for the goals) should be promoted. In the case of emerging countries, initiatives associated with SDGs 2 (Zero hunger), 4 (Quality education), 9 (Industry, innovation and infrastructure) and 12 (Responsible consumption and production) should be promoted.

Figure 4 shows the relationship between the results of developed countries compared to emerging countries. The green arrows show those positive coefficients for both countries between the SDGs and stock market capitalisation. The red arrows show the negative coefficients for both countries. The orange arrows represent the contradictory results, and the black arrows show the cases in which both results are statistically insignificant.

Figure 4 Relationships between regressions' coefficients for developed and emerging countries (see online version for colours)



This view not only reflects the difference between the number of directly and inversely related SDGs according to each type of country, but also allows us to observe the important difference in the coefficients of those SDGs that should be promoted and those that should be avoided. There is a significantly greater amplitude between the SDG coefficients of developed countries (see Table 5), with an interval ranging from 42.26 to –49.30, compared to emerging countries (see Table 8). In the case of the latter, said interval only goes from 13.78 to –7.67. Furthermore, the first five SDGs to be promoted in developed countries obtain higher coefficients than the first SDG to be promoted in emerging countries. This can be interpreted as saying that it is much better for multinational companies to invest in initiatives associated with the first five SDGs in developed countries, rather than investing in any kind of initiatives in emerging countries. It is important to clarify that the study does not incorporate the potential integration within the SDGs that should be implemented as well (Lim et al., 2018). In other words, SDGs should not be studied nor implemented individually, but in groups or clusters.

However, these findings make sense in the context of the associated literature. On the one hand, some companies tend to undertake sustainable development initiatives that avoid harm, rather than do good (Van Zanten and Van Tulder, 2018). They could be reflected in a lower interest on the part of companies in concentrating on initiatives associated with the SDGs that are better aligned with their business objectives or corporate strategies, migrating towards those that mitigate their operational risks. This would be supported by the fact that companies will always try to execute projects that are convenient for them, with which various authors agree (Barua, 2019; Florek-Paszkowska and Hoyos-Vallejo, 2023; Glambosky et al., 2023; Gupta and Vegelin, 2016; Lyon and Montgomery, 2015; Schramade, 2017; Van Zanten and Van Tulder, 2018). On the other hand, SDG-washing biases organisations to undertake only those initiatives that, within their scope, allow them to comply with what they must comply (Heras-Saizarbitoria et al., 2022), particularly linked to social concerns (L'Abate et al., 2023), regardless of

which stakeholder is requesting it (Freeman, 1983). Of course, the motivation to undertake and communicate socially responsible initiatives, effective or not, is justified by the signals that companies want to send to the market (Bafera and Kleinert, 2023) aligned to the society's expectations (Bhuiyan et al., 2023).

This study does not attempt to establish the specific causes of why the relationship between the behaviour of a particular SDG is positively or negatively correlated with the behaviour of the market capitalisation of the countries studied. Nevertheless, the literature suggests that the problem associated with the SDGs negatively correlated with stock market capitalisation lies in the following nine potential factors:

1) The scarcity of resources by companies (Allen et al., 2018; Barua, 2019; Van Zanten and Van Tulder, 2018).

2) The great disadvantage in which emerging countries find themselves versus developed countries in terms of the availability of resources (Allen et al., 2018).

3) Implementation only due to pressure from stakeholders, generating a high risk of window-dressing (Freeman and Reed, 1983; García-Sánchez et al., 2020; Glambosky et al., 2023; Kräussl et al., 2024; Naidoo and Gasparatos, 2018; Rau and Yu, 2024).

4) The previously mentioned pressure is mainly received by companies that are publicly listed on the stock exchanges (Elalfy et al., 2021; Mezinova et al., 2022).

5) Implementing initiatives without real impact, particularly during the Covid-19 pandemic (Ordonez-Ponce and Weber, 2022; Zhao et al., 2022).

6) The lack of knowledge on the part of companies of how to evaluate their projects to reduce the risk of not generating a positive impact on stakeholders (Mahajan and Gera, 2023; Muhmad and Muhamad, 2021; Sapsanguanboon and Faijaidee, 2024; Schramade, 2017; Xia, 2023).

7) The influence of the specific needs of the people for whom well-being is sought, so that the initiatives associated with the SDGs are aligned with these needs to achieve their well-being (Kenrick et al., 2010; Maslow and Lewis, 1987; Oduro et al., 2024).

8) The widespread perception that efforts to implement initiatives are in vain, since they do not contribute to the progress of the SDGs (Ordonez-Ponce and Weber, 2022).

9) Although governments have greater resources, they tend to be inefficient in their use, and private companies become the main driver of sustainability worldwide (Mondal and Giri, 2025; Singh and Bala, 2021).

In light of the results, it would be possible to speculate on the reasons that lead each SDG to be positively or negatively correlated with the stock market capitalisation of the companies studied. For example, it makes sense that SDG 14 (Life below water) presents a positive correlation for developed countries and a negative one for emerging countries: the ocean has been minimally explored and offers great potential, but requires very high budgets (Bell et al., 2022). However, contradictions also arise. Griffin et al (2017) proposed that the lower the carbon dioxide emissions, the market capitalisation of a company tends to be higher, and despite this, SDGs 7 (Affordable and clean energy), 11 (Sustainable cities and communities) and 13 (Climate action) were inversely correlated

with stock market capitalisation in both developed and emerging countries. Still, green and sustainability-linked bonds are still vital (Anderson and Kish, 2024; Shi et al., 2023) and ESG investors ask companies to issue them (Dasgupta, 2023; Manigandan and Raghuram, 2024). Although studies have begun to emerge that try to glimpse what is happening specifically with each SDG, such as the fact that the educational level of master's and doctoral degrees contributes to sustainable development (Lisi, 2024), the main lessons from this research are that there is an immense variety of fields in which actions can still be taken, both theoretically and practically, before the world reaches 2030. Future research should mainly revolve around the nine main factors found in the literature that could explain the empirical results of this research.

5 Conclusions and recommendations

As of 2020, the world already knew that the progress the SDGs will have made by 2030 will be negligible (Moyer and Hedden, 2020). Therefore, it is striking why literature has not taken a direction that allows efforts to be focused on defining how to change that future. The existence of SDGs negatively correlated with the market capitalisation of companies in different countries of the world, both developed and emerging, raises an alarming worry: the relationship between the search for well-being in the world and the increase in the stock market capitalisation of companies, which are the main driver of said well-being, is not clear. Four large fields of research emerge from this: how to make companies take advantage of the positively correlated SDGs; how to make the negatively correlated SDGs become positively correlated; how the population's needs influence which SDGs should take part of corporate initiatives; and how to get emerging countries to implement policies, both public and private, to achieve a sustainability ecosystem similar to that of developed countries. Regarding the second field of research, eight possible causes that the literature proposes for a negative relationship are offered: the scarcity of resources on the part of companies; the disadvantage suffered by emerging countries; the implementation of initiatives only due to pressure; the greater pressure that publicly listed companies receive; the implementation of initiatives without significant impact; the lack of knowledge on the part of companies about how to evaluate their projects from a sustainability perspective; the lack of knowledge of people's true needs; and the widespread perception that the initiatives are a wasted effort and do not contribute to the 2030 Agenda.

This research formally opens a new field of study regarding why the expected results for the year 2030 are not being achieved. The main theoretical contributions lie in the extensive literature review and the determination of the correlation between the SDGs and stock market capitalisation of multinational companies, a correlation that is also justified with the theoretical framework. The main practical implications lie in the impact that this study will have on the formulation of public and private policies that allow the positive relationships found to be exploited, and the negative relationships to be modified.

Four recommendations are offered. First, it is suggested that opportunities for future research become published articles that allow a better understanding of the phenomenon studied, especially due to the scarcity of literature. Second, future research has great potential regarding those SDGs that are negatively correlated with stock market capitalisation, especially regarding the causes behind this and the interests of private

companies in doing so. Third, it is recommended that public and private institutions formulate policies that allow initiatives associated with all the SDGs to be desirable by multinational companies. Fourth, it is recommended that the United Nations take advantage of the global reach of the 2030 Agenda to call for a deeper understanding of the impact of the initiatives associated with the SDGs on the interests of companies, these being fundamental for the success of the 2030 Agenda.

Declarations

All authors declare that they have no conflicts of interest.

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