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Factors affecting the ESG performance of companies located in the PIIGS economies

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Abstract

Aim: to identify the factors influencing the ESG (Environmental, Social, and Governance) performance of companies located in the European countries of the PIIGS group (Portugal, Italy, Ireland, Greece, and Spain).
Methodology: as regards the objectives, this research is outlined as descriptive, with a quantitative approach, through documentary research. The study used a sample composed of 254 companies and 1,270 observations between the years 2018 and 2022. The data were analyzed using correlation tests and linear regressions by panel data.
Originality: it is based on the specific approach to the European countries of the PIIGS group and the analysis of the factors affecting ESG performance, considering variables like economic freedom, corruption, global sustainable competitiveness, and adherence to the United Nations Global Compact.
Results: countries with greater economic freedom tend to have companies with more positive ESG performance, except in the environmental dimension. Similarly, nations with less corruption and greater attention to sustainability have better ESG performance, except in the environmental dimension. Adherence to the United Nations Global Compact principles had positive effects on all dimensions of ESG performance. In addition, the size of companies and their positive financial performance are associated with better ESG performance, while the debt of companies has a negative influence.
Theoretical Contributions: this study may contribute to the literature by identifying the determinants of ESG performance in companies in countries of the PIIGS group, highlighting the importance of economic freedom, anti-corruption, adherence to global sustainability principles, and financial health of companies as key factors.

Keywords: financial performance, european countries, ESG, PIIGS, United Nations Global Compact

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Resumo

Fatores que afetam o desempenho ESG de empresas localizadas em economias integrantes dos PIIGS

Propósito: identificar os fatores que influenciam o desempenho ESG (ambiental, social e de governança) de empresas localizadas nos países europeus do grupo PIIGS (Portugal, Itália, Irlanda, Grécia e Espanha).
Metodologia: quanto aos objetivos, a pesquisa é delineada como descritiva, com abordagem quantitativa, por meio de pesquisa documental. O estudo utilizou uma amostra composta por 254 empresas e 1.270 observações entre os anos de 2018 e 2022. Os dados foram analisados utilizando testes de correlação e regressões lineares por dados em painel.
Originalidade: reside na abordagem específica aos países europeus do grupo PIIGS e na análise dos fatores que afetam o desempenho ESG, levando em consideração variáveis como liberdade econômica, corrupção, competitividade sustentável global e adesão ao Pacto Global das Nações Unidas.
Resultados: países com maior liberdade econômica tendem a ter empresas com desempenho ESG mais positivo, exceto na dimensão ambiental. Da mesma forma, nações com menor corrupção e maior atenção à sustentabilidade apresentam melhor desempenho ESG, exceto na dimensão ambiental. A adesão aos princípios do Pacto Global das Nações Unidas teve efeitos positivos em todas as dimensões do desempenho ESG. Além disso, o tamanho das empresas e seu desempenho financeiro positivo estão associados a um melhor desempenho ESG, enquanto o endividamento das empresas influencia negativamente.
Contribuições Teóricas: o estudo poderá contribuir para a literatura ao identificar os fatores determinantes do desempenho ESG em empresas dos países do grupo PIIGS, destacando a importância da liberdade econômica, combate à corrupção, adesão a princípios globais de sustentabilidade e saúde financeira das empresas como fatores-chave.

Palavras-chave: desempenho financeiro, países europeus, ESG, PIIGS, Pacto Global das Nações Unidas

Resumen

Factores que afectan el desempeño ESG de empresas ubicadas en economías integrantes de los PIIGS

Propósito: Identificar los factores que influyen en el desempeño ESG (ambiental, social y de gobernanza) de empresas ubicadas en los países europeos del grupo PIIGS (Portugal, Italia, Irlanda, Grecia y España).
Metodología: La investigación se describe como descriptiva en cuanto a los objetivos, con un enfoque cuantitativo, a través de investigación documental. El estudio utilizó una muestra de 254 empresas y 1.270 observaciones entre los años 2018 y 2022. Los datos fueron analizados utilizando pruebas de correlación y regresiones lineales con datos de panel.
Originalidad: Reside en el enfoque específico a los países europeos del grupo PIIGS y en el análisis de los factores que afectan el desempeño ESG, teniendo en cuenta variables como libertad económica, corrupción, competitividad sostenible global y adhesión al Pacto Global de las Naciones Unidas.
Resultados: Los países con mayor libertad económica tienden a tener empresas con un desempeño ESG más positivo, excepto en la dimensión ambiental. De igual manera, las naciones con menor corrupción y mayor atención a la sostenibilidad presentan un mejor

desempeño ESG, excepto en la dimensión ambiental. La adhesión a los principios del Pacto Global de las Naciones Unidas tuvo efectos positivos en todas las dimensiones del desempeño ESG. Además, el tamaño de las empresas y su desempeño financiero positivo están asociados con un mejor desempeño ESG, mientras que el endeudamiento de las empresas influye negativamente.

Contribuciones Teóricas: El estudio contribuye a la literatura al identificar los factores determinantes del desempeño ESG en empresas de los países del grupo PIIGS, destacando la importancia de la libertad económica, el combate a la corrupción, la adhesión a principios globales de sostenibilidad y la salud financiera de las empresas como factores clave.

Palabras-clave: desempeño financeiro, países europeos, ESG, PIIGS, Pacto Global de las Naciones Unidas

1 Introduction

The economies belonging to the PIIGS (Portugal, Italy, Ireland, Greece, and Spain) were affected by recent financial and economic crises (Razzaq et at. 2022). These countries faced significant challenges in terms of public debt, financial instability, and low economic growth (Albonico & Tirelli, 2020; Balsalobre-Lorente et al. 2022; Balcilar et al., 2021; Cheng et al., 2014; Miralles-Quirós & Del Mar Miralles-Quirós, 2017).

Balsalobre-Lorente et al. (2022) argue that, when the European financial and economic crisis began, these countries were considered to have a substantial risk of not being able to pay their national debts, each of them facing some kind of severe internal economic crisis. The authors add that, in Greece, Ireland and Italy, the economic crises were related to huge government debts, while, in the case of Portugal and Spain, the crises were more linked to slow economic growth, with all of them experiencing severe economic recessions, budgetary and debt crises, and having to be intervened by European institutions. Thus, the five economies faced homogeneous market expectations and had similar economic performance.

These countries faced economic and social challenges, driven by events like pressures to reduce public spending, which often resulted in cuts in certain areas, such as environmental programs, in addition to pressures to reduce public services, poor governance, including deficiencies in transparency, corruption and mismanagement of public finances, factors linked to ESG principles, which emphasize environmental, social, and governance considerations in economic and financial decision-making (Balsalobre-Lorente et al., 2022).

The economic crises faced by the PIIGS can affect companies' ESG performance, just as financial constraints, lack of investment, and competitive pressures can make it difficult to adopt responsible environmental, social, and governance practices (Alexakis & Pappas 2018; Balsalobre-Lorente et al., 2022). Thus, assessing the ESG performance of companies located in economies like the PIIGS is essential to understand how these companies face environmental, social, and governance challenges in specific economic contexts (Balsalobre-Lorente et al., 2023).

Previous investigations addressed studies on ESG performance in different countries, such as Yu et al. (2024), who analyzed companies in the non-financial sector of the BRICS countries from 2010 to 2022 and discovered the complexities of balancing financial objectives with environmental responsibilities, emphasizing the need for a balanced approach that reconciles financial goals with ESG commitments. Lian and Weng (2024), who analyzed Chinese companies from 2010 to 2022, discovered that ESG performance can significantly reduce performance volatility and, consequently, improve corporate investment efficiency. Mazzioni et al. (2023) analyzed Brazilian companies from 2016 to 2022 and discovered that ESG performance proved to be a preponderant factor in improving corporate reputation and market-to-book.

Nonetheless, there is a lack of research addressing in detail the factors influencing ESG performance at institutional and corporate levels. This gap in the literature justifies the need to carry out this study. Multi-country research offers significant opportunities to investigate a wide range of institutional contexts, each providing varying degrees of protection for investors and support for ESG practices (De La Fuente et al., 2022). The authors highlight that this approach can enrich the current understanding on the topic, since the valuation of ESG performance by institutions in each country is likely to influence stakeholders' perception of legitimacy. Therefore, a notable research gap lies in the analysis of the factors that impact ESG performance at institutional and corporate levels. This more in-depth analysis, according to De La Fuente et al. (2022), can provide valuable results on the intersection between institutional systems and companies' commitment to ESG practices.

Within this context, the following research problem emerges: what are the factors affecting the ESG performance of companies located in European economies that are part of the PIIGS? In order to answer this research question, this study aimed to identify the factors affecting the ESG performance of companies located in European economies that are part of the PIIGS.

Thus, the choice of the countries that make up the PIIGS is important because they are developed economies in Western Europe with social and economic diversities (Razzaq et al., 2022). Accordingly, the selection of these five countries is due to the fact that they share common histories and economic structures (Albonico & Tirelli, 2020; Balsalobre-Lorente et al., 2022; Balcilar et al., 2021; Cheng et al., 2014; Miralles-Quirós & Del Mar Miralles-Quirós, 2017; Razzaq et al. 2022).

The study is justified by the fact that, despite the faced challenges, companies and countries located in the PIIGS can find opportunities to improve their ESG performance (Razzaq et al. 2022), which can involve partnerships with non-governmental organizations, sustainable product development, improved corporate governance, and transparency (Daugaard & Ding, 2022). In addition, building ESG performance, aligned with the interests of various stakeholders, can contribute to the Sustainable Development Goals (SDGs), directly supporting the achievement of specific sustainable development goals, which can be a source of motivation for companies and investors who want to have a positive impact at a global level (Larrinaga 2023). The SDGs aligned with the study are: SDG 8 (Decent Growth and Economic Growth) and SDG 9 (Industry, Innovation, and Infrastructure). According to the United Nations (UN, 2023), the overall success of SDGs 8 and 9 depends on the promotion of development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of companies.

2 Theoretical Framework

2.1 Environment, Social, and Governance – ESG

The origin of the term ESG dates back to 2004, with the report “Who Cares Wins”, published by the United Nations Global Compact (Cheng et al., 2023). Although the authors maintain that this report was the main driver of global ESG adoption, Wan et al. (2023) point out that the real influence came from growing stakeholder pressure and evolving public policies. This debate shows how the perception related to ESG has evolved and how different academics interpret its rise and relevance (Cheng et al., 2023).

Environment, Social, and Governance (ESG) are critical parameters that guide corporate practices in the environmental, social, and governance areas (El Khoury et al., 2022; Pollman, 2022). While El Khoury et al. (2022) defend the perspective that ESG is a primary model for assessing corporate practices, Pollman (2022) leans towards a view that the incorporation of

ESG criteria is a response to market pressure. In order to provide a spatial view of the theme, Figure 1 displays the ESG model.

Figure 1
ESG Model

Caption:
Environmental: Gestão de emissões de carbono; uso sustentável de recursos; gestão de resíduos.
Carbon emissions management; Sustainable resource use; waste management.
Social: Condições de trabalho; responsabilidade social corporativa; direitos humanos.
Working conditions; corporate social responsibility; human rights.
Governance: Transparência e prestação de contas; ética corporativa; diversidade e independência do conselho.
Transparency and accountability; corporate ethics; board diversity and independence.
Source: adapted from Leoneti et al. (2016).

Figure 1 displays the ESG model and its constructs. The Environmental Pillar refers to practices related to the preservation of the environment and the mitigation of environmental impacts. Some typical constructs of this pillar are: carbon emissions management: measures to reduce the carbon footprint, such as transitioning to renewable energy sources; sustainable

resource use: practices for the efficient and conscious use of natural resources, such as water and energy; and waste management: methods of recycling and managing toxic or non-recyclable waste (Leoneti et al., 2016; El Khoury et al., 2022; Pollman, 2022).

The Social Pillar encompasses practices that directly affect stakeholders, such as employees, communities, and customers. The most common constructs include: working conditions: Workers' rights, fair pay, workplace safety, diversity, and inclusion; corporate social responsibility: projects and initiatives aimed at community well-being and social development; and human rights: respect for human rights in all operations, including the supply chain (Leoneti et al., 2016; El Khoury et al., 2022; Pollman, 2022).

The Governance Pillar refers to corporate governance and the way the company is managed, considering its transparency and ethics. The main constructs of this pillar are: transparency and accountability: clear and accurate disclosure of financial and operational information, including risks and opportunities; corporate ethics: codes of conduct, anti-corruption, and fair business practices; and board diversity and independence: the composition of the board of directors msut be diverse and independent to ensure more balanced and strategic decisions (Leoneti et al., 2016; El Khoury et al., 2022; Pollman, 2022).

Based on principles structured on the environmental (E), social (S) and governance (G) factors derived from responsible investments, ESG is both a model and a corporate strategy that serves as a mechanism for predicting financial performance (Li et al., 2021). Wang et al. (2023) argue that it is more about assessing corporate sustainability and social impact, and this difference in perspectives highlights the complexity and multifaceted nature of ESG (Wang et al., 2023).

ESG, according to El Khoury et al. (2022), is a response to the need for companies to look beyond profit. In contrast, Liu et al. (2023) see this as a natural evolution of business practices as the world becomes more globalized and interconnected. Both views, however, converge on the idea that ESG performance is now linked to corporate strategy.

The role of ESG in assessing corporate impact is important (Leoneti et al. 2016; Sheehan et al., 2023; Mazzioni et al., 2023). The authors underline their relevance in terms of sustainability, social responsibility, and business ethics, as they contribute to measuring corporate financial performance. Nonetheless, there is an ongoing debate, as illustrated by Khan (2022) and Galletta et al. (2022), about the actual effectiveness of ESG criteria in predicting long-term business outcomes.

ESG refers to the environmental, social, and governance criteria that companies adopt in their operations and business strategies (El Khoury et al., 2022; Pollman, 2022; Yu & Su,

2024). Environmental (E): this criterion assesses how a company addresses environmental issues (El Khoury et al., 2022; Pollman, 2022), which can include the use of renewable energy, waste management, natural resource conservation, and environmental protection policies (El Khoury et al., 2022; Pollman, 2022); Social(S): This criterion examines how a company manages its relationships with employees, customers, suppliers, local communities, and other groups with environmental interests (El Khoury et al., 2022; Pollman, 2022), which covers issues like human rights, diversity and inclusion, workplace safety, fair labor practices, and environmental community impact (El Khoury et al., 2022; Pollman, 2022); Governance (G): this criterion concerns the leadership and decision-making structure within an environmental company (El Khoury et al., 2022; Pollman, 2022) and includes aspects like board composition, executive compensation practices, financial transparency, business ethics, and anti-environmental corruption (El Khoury et al., 2022; Pollman, 2022).

Nevertheless, regarding the debate about the effectiveness of these criteria in predicting long-term business outcomes, as mentioned by Khan (2022) and Galletta et al. (2022), it is important to highlight that ESG practices are influenced by a variety of factors, which can include government regulations, investor pressure, consumer demand, reputational risks, and a growing understanding of the interconnectedness between environmental, social, and governance issues and the financial performance of companies (Wang et al., 2023).

Thus, when assessing the role of ESG in corporate impact assessment, it is essential to consider not only the criteria themselves, but also the broader context in which they are applied and the various forces that shape their implementation and effectiveness (Li et al., 2021). This is a call for further investigation into how these factors influence ESG practices and, consequently, corporate performance (Yu & Su, 2024).

2.2 Factors affecting ESG performance

The increasing emphasis on ESG (Environmental, Social, and Governance) performance reflects the complex interplay of global and local factors influencing modern businesses. This theoretical framework aims to deepen and contrast the various points of view that shape our current understanding (Wang et al., 2023, Yu et al., 2024).

Daugaard and Ding (2022) contextualize the role of local phenomena in ESG performance when they highlight how region-specific conditions can influence how companies address environmental, social, and governance issues. They observe that factors like government regulations, local culture, available natural resources, and community demands can

shape a company's ESG practices in a given geographic area, such as, for example, a company located in a water-scarce region may prioritize water resource conservation and management measures in its operations, while a company in an area with strong environmental legislation may focus more on reducing carbon emissions (Daugaard & Ding, 2022).

Conversely, Huang (2021) suggests that understanding the correlation between ESG and business success is not just a contemporary trend, but something that companies have always recognized. Sound ESG practices can help companies to mitigate operational, legal, and reputational risks (Huang, 2021), such as, for example, a company that adopts workplace safety policies can avoid workplace accidents and potential litigation (Huang, 2021). Investors are increasingly considering ESG criteria when they make investment decisions; therefore, companies with strong ESG practices can attract more investors who are interested in sustainable and responsible aspects of the business (Huang, 2021). Consumers are increasingly aware of environmental and social issues and prefer to support companies that show commitment to these causes; therefore, companies with strong ESG practices can earn customer loyalty (Huang, 2021). Implementing ESG practices often leads to more efficient processes and innovation, such as, for example, the fact of adopting renewable energy technologies can reduce energy costs and improve operational efficiency (Huang, 2021).

Accordingly, the correlation between ESG and business success is driven by companies' capacity to reduce risk, attract investors and customers, and improve operational efficiency through the implementation of responsible and sustainable practices (Daugaard & Ding 2022, Yu et al., 2024).

ESG performance and its dimensions, both at country and company levels, can be affected by several factors, including the Economic Freedom Index (EFI), Corruption Perceptions Index (CPI), and Global Sustainable Competitiveness Index (GSCI), at the country level, and adherence to the United Nations Global Compact (UNGC), Return on Assets (ROA), Return on Equity (ROE), Size (S), and Debt (D), at the company level (Brammer & Millington, 2008; Chams et al., 2021; Daugaard & Ding, 2022; Orlitzky & Swanson, 2008; Orzes et al., 2018; Pollman 2022).

Dialga and Vallée (2021) explore the EFI and emphasize the relationship between political control and economic activity. The authors add that these dimensions are composed of ten components, which include fiscal freedom, public spending, market freedom, investment freedom, financial freedom, entrepreneurial freedom, labor freedom, emotional freedom, property rights, and absence of corruption. However, the breadth of this index in actually capturing the complexity of a country's business environment should be questioned (Licht et

al., 2007). The authors offer a perspective on corruption and governance, where nations characterized by high levels of autonomy and equality have greater democratic accountability and lower indexes of corruption.

Another factor is the corruption perception, which is characterized by the abuse of power for private benefit (Budsaratragoon & Jitmaneeroj, 2020). For Domashova and Politova (2021), corruption is one of the most considerable threats to the stability of any State and its financial situation. The authors add that corruption tends to increase along with poverty levels and that there is a lower probability of allocating adequate resources to the establishment of an efficient legal system in poorer countries. Secondly, the main motivation for paying bribes in these cases would be to gain access to basic public services (such as education, permits, and licenses) in which the State has a monopoly. They conclude that this situation creates a strong motivation to violate the law. It can be seen that Budsaratragoon & Jitmaneeroj (2020) and Domashova & Politova (2021) discuss the causes and effects of the CPI, but while the first source focuses on the methodology of the CPI, the second delimits the socioeconomic context of corruption. An integrated view of these perspectives would help us to better understand the relationship between corruption and ESG practices (Budsaratragoon & Jitmaneeroj, 2020).

Another relevant index is the Global Sustainable Competitiveness Index (GSCI), which is formed by the Global Competitiveness Index (GCI) added to the social and environmental sustainability coefficients (Bilbao-Osorio et al., 2013; Blanke et al., 2011; Herciu & Ogrean, 2014). The GSCI covers the institutional context of a country, including government organizations, infrastructure, macroeconomic environment, health, education, market efficiency, financial market development, and innovation (Bilbao-Osorio et al., 2013; Blanke et al., 2011; Herciu & Ogrean, 2014). With regard to sustainability, Herciu and Ogrean (2014) add that they consider access to basic sanitation and drinking water, security, social mobility, extension of the informal economy, and unemployment among young people; in turn, in relation to the environmental aspect, environmental regulation, biome protection, the number of international environmental treaties, and greenhouse gas emissions are considered. With this composition, the GSCI is used to assess a country's capacity to meet the needs and demands of its population, while preserving or increasing national wealth without causing damage to natural resources and capital stock (Bilbao-Osorio et al., 2013; Blanke et al., 2011; Herciu & Ogrean, 2014).

At the business level, there is the United Nations Global Compact (UNGC), which, through business initiatives, seeks to adhere to and reinforce corporate strategies and actions based on ten principles related to human rights, the environment, labor, and anti-corruption

(Orzes et al., 2018). Nonetheless, it would be beneficial to understand the actual effectiveness of this initiative (Orzes et al., 2018). Also at the corporate level, financial performance is determined by Return on Assets (ROA) and Return on Equity (ROE) (Ali et al. 2022; Munte & Sijabat 2023). As regards the size of companies, there is the variable "size" (S), which seeks to measure the total assets corresponding to each corporation (Najaf et al., 2020).

Brammer and Millington (2008) highlight the direct relationship between availability of financial resources and investment in ESG practices. The authors explain that companies with a good financial situation have more resources available and, consequently, are more likely and able to invest in environmental and social practices. This is due to their accessibility and availability of resources, which allows them to expand their scope of investments in these sectors. Najaf et al. (2020) and Ramaswamy (2001) suggest that the size of the company is a determining factor for the adoption of sustainable models.

Finally, there is the variable "Debt" (D), which represents the company's total debt (Adeneye et al., 2023). These business variables impact ESG, as they affect the capacity and motivation of companies to invest in sustainable, ethical, and socially responsible initiatives.

2.3 Related Studies

The impact of financial performance on ESG was examined by Chams et al. (2021). The sample consists of 2,087 global multinational companies from different industry sectors over six years. The findings infer that companies with better financial performance have higher ESG scores, as economic success allows investments in sustainable practices for the benefit of shareholders and stakeholders.

In a study carried out by Aragón-Correa (1998), the relationship between business strategy and environmental approaches was discussed in a sample of 105 Spanish companies. It was concluded that the size of the company impacts the amount of training related to the environment. Using data from all companies with ESG scores in the top 20 industrialized and emerging countries in the world from 2007 to 2020, Bissoondoyal-Bheenick et al., (2023) analyzed the relationship between the three pillars of ESG scores and company performance. They concluded that the effect resulting from the company size indicates that larger companies are more prone to invest in ESG activities, due to economies of schedules, in order to better meet stakeholders' demands.

Adeneye et al. (2023) conducted a study covering 116 non-financial companies listed on the main stock exchanges of five countries (Malaysia, Indonesia, the Philippines, Singapore,

and Thailand), during the period from 2012 to 2019, and concluded that the ESG score is negatively associated with market leverage and showed that sustainable practices induce higher capital debt.

Mooneeapen et al. (2022) prepared a study with companies from 27 countries for a five-year period, from 2015 to 2019. The objective was to investigate whether the environmental, social, and corporate governance (ESG) performance of companies is influenced by economic freedom. The study concluded that the ESG performance of companies is higher in countries with a lower level of democracy and political stability.

Khalid et al. (2022) conducted a survey to analyze the relationship among company characteristics, governance mechanisms, and ESG aspects in a sample of 564 companies from 15 developed economies, using annual data from 2010 to 2019. The obtained results indicate that companies that are perceived as having a low rate of corruption have a higher level of disclosure of information related to ESG aspects in their operations.

Rajnoha and Lesnikova (2022) prepared a study promoting discussion of whether a country's greater competitiveness brings greater economic performance and sustainable growth in the following countries: Czech Republic, Poland, Hungary, and Slovakia. The study provided results from a survey during the period from 2007 to 2019. Simultaneously, the aim was to link the country's economic performance (GDP) to the urgent challenges of the contemporary world in terms of sustainability and quality of life. A significant impact of the Global Sustainable Competitiveness Index (GSCI) on the ESG level and the subsequent positive effect on sustainability and quality of life indicators was shown.

Ortas et al. (2015) examined the environmental, social, and governance (ESG) and financial consequences related to companies' commitment to the United Nations Global Compact (UNGC). The study focused on companies operating in the three countries with the highest number of UNGC participants: Spain, France, and Japan. The results highlight that adherence to the UNGC often requires organizational change that promotes stakeholder participation, leading to improvements in companies' ESG performance. In addition, the results reveal that ESG performance has a significant impact on the financial performance of companies that have adopted the UNGC principles.

In summary, while most studies agree that sustainable practices are beneficial in terms of both corporate responsibility and financial performance, the variables and contexts that influence this relationship are diverse and multifaceted. These discrepancies point to the need for more specific and contextualized analyses to understand the complex relationship among ESG, financial performance, and socioeconomic contexts.

3 Methodological Procedures

In order to identify the factors affecting ESG performance and its dimensions in companies located in European economies that are part of the PIIGS, this research is outlined as a descriptive objective, with a quantitative approach, through documentary research. The population that composes this study covers all Portuguese publicly-held companies listed on Euronext Lisbon; Italian on the Italian Stock Exchange; Irish on the Irish Stock Exchange; Greek on the Athens Stock Exchange; and Spanish on the Madrid Stock Exchange, active in the year 2022. Table 1 displays the study population and sample.

Table 1

Population, sample, and adherence to the UNGC

Description	Portugal	Italy	Ireland	Greece	Spain	Total
Population	44	420	92	176	251	983
(-) Financial companies	4	57	6	14	14	95
(-) Negative equity	4	11	4	16	8	43
(-) No complete data	20	230	38	121	167	576
(-) *Outliers*	0	7	3	3	2	15
Sample	16	115	41	22	60	254
Number of observations	80	575	205	110	300	1.270
Adherence to the UNGC	70.40,05	28.80,01	15.22%	7.39%	88.84%	40.90%

Caption: UNGC = United Nations Global Compact.

In order to compose the total sample, 95 companies in the financial and insurance sectors, as they have economic and accounting regulations that are significantly different from other branches of economic activities (Chams et al., 2021), 43 companies that showed a negative Shareholders' Equity (E) value were also excluded, as they make it impossible to calculate the dependent variable "return on equity" (ROE), 576 companies that did not show data in all years (balanced data) and 15 outlier companies whose data showed a discrepancy in relation to the population were excluded. Accordingly, the final sample was composed of 254 companies and 1,270 observations throughout the analysis period that comprised the time lapse from 2018 to 2022. According to Assaf Neto (2021), a time analysis involves monitoring the evolution of indicators over time, enabling a dynamic evaluation of the performance and trends revealed by organizations. This period usually spans three to five years. The time frame was motivated by the fact that balanced data were used in the research; a longer period would

considerably reduce the number of companies in the sample, thus limiting the operationalization of the study.

It is perceived that Italy has the largest number of companies (420) and observations (575), while Portugal has the smallest sample representation, 44 companies with 80 observations. In addition, Spain stands out with the highest percentage participation of companies adhering to the United Nations Global Compact (88.84%), while Greece with the lowest participation rate (7.39%).

Table 2 displays the study variables, their respective formulas, and metrics, as well as the source and authors that support them for empirical application.

Table 2

Research constructo

Variables	Metrics/Formulas	Source	Authors
Dependent variables: ESG Performance			
ESG score	Scale from 0 to 100, considering the dimensions: environmental, community, employees, and corporate governance.	Refinitiv	Daugaard & Ding (2022); Pollman, (2022).
Environmental score (ES)	Scores range from 0 (worst score) to 100 (best score).		Pollman (2022); Razzaq et al., (2022).
Social score (SS)	Scores range from 0 (worst score) to 100 (best score).		Daugaard & Ding (2022); Pollman, (2022).
Governance score (GS)	Scores range from 0 (worst score) to 100 (best score).		Daugaard & Ding (2022); Pollman, (2022).
Independent variables: Country level			
Economic Freedom Index (EFI)	Scale from 0 to 100, considering the dimensions: rule of law, size of government, regulatory efficiency, and open markets.	Economic freedom heritage.org	Dialga & Vallée (2021); Mooneeapen et al., (2022).
Corruption Perceptions Index (CPI)	Scale from 0 (highly corrupt) to 100 (very fair).	International transparency transparency.org	Budsaratragoon & Jitmaneeroj, (2020); Domashova & Politova (2021); Khalid et al., (2022).
Global Sustainable Competitiveness Index (GSCI)	Scale from 0 to 100, considering the dimensions: natural capital, capital stock, resource management, sustainable innovation, and governance capacity.	Solability solability.org	Bilbao-Osorio et al., (2013); Blanke et al., (2011); Herciu & Ogrean (2014); Rajnoha & Lesnikova (2022).
Independent variables: Company level			
United Nations Global Compact (UNGC)	Dummy variable, with value 1 for companies adhering to the Global Compact and 0 for others.	United Nations Global Compact unglobalcompact.org	Ortas et al., (2015); Orzes et al., 2018).
Return on assets (ROA)	$\frac{\text{Ebit}}{\text{Total Assets}}$	Refinitiv	Brammer & Millington (2008); Chams et al.; (2021).
Return on equity (ROE)	$\frac{\text{Net profit}}{\text{Net equity}}$		Brammer & Millington (2008); Chams et al.; (2021).
Size (S)	Natural Logarithm of Total Assets.		Najaf et al., (2020); Ramaswamy (2001).
Total debt (D)	$\frac{(\text{Current liab.} + \text{Non} - \text{current liab.})}{\text{Total Assets}}$		Adeneye et al., (2023).

Caption: ESG = ESG Score; ES = Environmental Score; SS = Social Score; GS = Governance Score; UNGC = United Nations Global Compact; EFI = Economic Freedom Index; CPI = Corruption Perceptions Index; GSCI = Global Sustainable Competitiveness Index; ROA = Return on Assets; ROE = Return on Equity; S = Total Assets; D = Corporate Debt.

The research configuration considered the ESG-dependent variables and their dimensions (environmental, social, and governance), and the independent variables, composed of the country-level variables: Economic Freedom Index (EFI), Corruption Perceptions Index (CPI), and Global Sustainable Competitiveness Index (GSCI); and the company-level variables: United Nations Global Compact (UNGC), Return on Assets (ROE), Return on Equity (ROE), Size (S), and Debt (D). As displayed in Table 2, the dependent variables: ESG score (ESG), environmental score (ES), social score (SS), and governance score (GS) represent ESG performance. The independent variables were composed of the institutional variables: Economic Freedom Index (EFI), Corruption Perceptions Index (CPI), and Global Sustainable Competitiveness Index (GSCI), as well as the company variables: United Nations Global Compact (UNGC), Return on Assets (ROE), Return on Equity (ROE), Size (S), and Debt (D). The institutional variables show the indexes corresponding to the country, while the company variables show the relative performance of the assessed companies.

For data analysis, descriptive statistics calculations of the research variables were initially performed, considering the minimum, maximum, mean, and standard deviation of the continuous variables. Sequentially, descriptive statistics of the variables by country are performed, considering average and standard deviation. Still in the sequence, correlation analysis was carried out. In order to identify the factors affecting ESG performance in companies located in economies that are part of the PIIGS, the following linear regression models are operationalized using panel data:

$$ESG_{it} = \beta_0 + \beta_1 EFI_{it} + \beta_2 UNGC + \beta_3 ROA_{it} + \beta_4 ROE_{it} + \beta_5 S_{it} + \beta_6 D_{it} + \varepsilon \quad (1)$$

$$ESG_{it} = \beta_0 + \beta_1 CPI_{it} + \beta_2 UNGC + \beta_3 ROA_{it} + \beta_4 ROE_{it} + \beta_5 S_{it} + \beta_6 D_{it} + \varepsilon \quad (2)$$

$$ESG_{it} = \beta_0 + \beta_1 GSCI_{it} + \beta_2 UNGC + \beta_3 ROA_{it} + \beta_4 ROE_{it} + \beta_5 S_{it} + \beta_6 D_{it} + \varepsilon \quad (3)$$

$$ES_{it} = \beta_0 + \beta_1 EFI_{it} + \beta_2 UNGC + \beta_3 ROA_{it} + \beta_4 ROE_{it} + \beta_5 S_{it} + \beta_6 D_{it} + \varepsilon \quad (4)$$

$$ES_{it} = \beta_0 + \beta_1 CPI_{it} + \beta_2 UNGC + \beta_3 ROA_{it} + \beta_4 ROE_{it} + \beta_5 S_{it} + \beta_6 D_{it} + \varepsilon \quad (5)$$

$$ES_{it} = \beta_0 + \beta_1 GSCI_{it} + \beta_2 UNGC + \beta_3 ROA_{it} + \beta_4 ROE_{it} + \beta_5 S_{it} + \beta_6 D_{it} + \varepsilon \quad (6)$$

$$SS_{it} = \beta_0 + \beta_1 EFI_{it} + \beta_2 UNGC + \beta_3 ROA_{it} + \beta_4 ROE_{it} + \beta_5 S_{it} + \beta_6 D_{it} + \varepsilon \quad (7)$$

$$SS_{it} = \beta_0 + \beta_1 CPI_{it} + \beta_2 UNGC + \beta_3 ROA_{it} + \beta_4 ROE_{it} + \beta_5 S_{it} + \beta_6 D_{it} + \varepsilon \quad (8)$$

$$SS_{it} = \beta_0 + \beta_1 GSCI_{it} + \beta_2 UNGC + \beta_3 ROA_{it} + \beta_4 ROE_{it} + \beta_5 S_{it} + \beta_6 D_{it} + \varepsilon \quad (9)$$

$$GS_{it} = \beta_0 + \beta_1 EFI_{it} + \beta_2 UNGC + \beta_3 ROA_{it} + \beta_4 ROE_{it} + \beta_5 S_{it} + \beta_6 D_{it} + \varepsilon \quad (10)$$

$$GS_{it} = \beta_0 + \beta_1 CPI_{it} + \beta_2 UNGC + \beta_3 ROA_{it} + \beta_4 ROE_{it} + \beta_5 S_{it} + \beta_6 D_{it} + \varepsilon \quad (11)$$

$$GS_{it} = \beta_0 + \beta_1 GSCI_{it} + \beta_2 UNGC + \beta_3 ROA_{it} + \beta_4 ROE_{it} + \beta_5 s_{it} + \beta_6 D_{it} + \varepsilon \quad (12)$$

The data was analyzed using an electronic spreadsheet for tabulation and SPSS® software for descriptive statistics (minimum, maximum, average and standard deviation There was analysis by country (mean and standard deviation), correlation and panel regression analysis with fixed effects by year using IBM STATA® (Data Analysis and Statistical Software) software, version 12. The significance level adopted in this article is 0.10. Thus, according to the literature by Fávero et al. (2009), any value (*p.value* / Sig) below this confirms the association.

4 Data Description and Analysis

This section brings to light the results obtained from what was established in the research objectives and outlined in the methodological procedures. The first analysis displayed in Table 3 refers to the descriptive statistics of the continuous variables used in the study, which will later be the focus of a more comprehensive analysis.

Table 3

Descriptive statistics of variables

Variable	Minimum	Maximum	Average	Standard deviation (SD)
ESG	0.0000	94.8861	42.4271	31.7018
ES	0.0000	98.4131	39.5039	33.2305
SS	0.0000	98.3108	47.0852	35.3195
GS	0.0000	96.1702	37.9077	30.7279
EFI	57.3000	82.0000	67.1710	6.6053
CPI	45.0000	77.0000	58.8540	7.7909
GSCI	46.9000	57.6000	51.5820	2.5820
ROA	-3.9618	0.4741	0.0499	0.1399
ROE	0.0004	4.6856	0.1594	0.2279
S	16.7952	27.9014	22.8758	1.9330
D	0.0401	2.5418	0.6199	0.1927

Caption: ESG = ESG Score; ES = Environmental Score; SS = Social Score; GS = Governance Score; EFI = Economic Freedom Index; CPI = Corruption Perceptions Index; GSCI = Global Sustainable Competitiveness Index; ROA = Return on Assets; ROE = Return on Equity; S = Total Assets; D = Corporate Debt.

Table 3 displays high average and standard deviation values of the variables “ESG”, “ES”, “SS”, and “GS”, because as the scale is from 0 to 100 and considering that several companies do not have indexes, being assigned a value of zero, a standard deviation above 30 points is justifiable in all of them. Likewise, it is noted that the variable “SS” registered a higher average (47.0852), indicating that companies tend to direct more investments to the social dimension.

Country-level variables like “EFI”, “CPI”, and “GSCI”, measured on a scale from 0 to 100, showed a high standard deviation, due to the disclosure of only one index per year for each country. It is observed that, among the PIIGS countries, the EFI had the highest average (67.1710) and the CPI had an intermediate average (58.8540), while the GSCI had the lowest average (51.5820). These figures suggest that the PIIGS countries are placing greater importance on economic freedom at the expense of transparency and global sustainable competitiveness.

In addition, the similarity in the averages and standard deviations of the variables “ROA” and “ROE” suggests a certain uniformity in the financial performance of the assessed companies. The variable “S”, with its limited variation between the minimum and maximum values, indicates that the size of the companies under analysis remains relatively constant over

the considered period, reflecting a standard deviation close to one (1.9330). Conversely, the standard deviation of 0.1927 of the variable "D" reveals that most companies have debt levels close to the average of the data set. This data suggests a certain stability in the capital structures of these companies or, alternatively, that the variation in debt among the assessed companies is relatively small in relation to the average, which may indicate a lower exposure to financial risks arising from extreme levels of debt.

Table 4 displays the descriptive statistics of the continuous variables by country.

Table 4

Descriptive statistics of variables by country

Variable	Portugal		Italy		Ireland		Greece		Spain	
	Average	SD	Average	SD	Average	SD	Average	SD	Average	SD
ESG	48.130	31.566	35.856	32.324	47.691	24.627	31.841	31.917	53.784	30.490
ES	49.040	32.863	32.054	31.634	40.306	30.119	30.493	32.713	53.995	33.150
SS	53.137	35.270	39.178	35.304	52.728	27.970	33.581	34.241	61.720	34.320
GS	39.349	30.706	33.817	32.121	47.472	27.640	29.608	30.472	41.870	27.948
EFI	66.800	2.478	63.760	1.267	81.040	0.596	59.460	1.692	67.160	1.736
CPI	62.200	0.986	54.000	1.674	74.000	1.677	48.800	2.325	60.600	1.499
GSCI	52.920	2.500	51.000	1.365	55.800	1.365	48.580	1.226	50.560	1.885
UNGC	0.704	0.456	0.288	0.453	0.152	0.359	0.073	0.261	0.888	0.315
ROA	0.063	0.043	0.061	0.059	0.008	0.317	0.062	0.064	0.047	0.064
ROE	0.135	0.119	0.102	0.219	0.070	0.448	0.052	0.200	0.066	0.306
S	23.315	1.543	22.230	1.906	23.513	2.027	22.847	1.351	23.570	1.779
D	0.701	0.144	0.617	0.166	0.544	0.256	0.627	0.136	0.651	0.200

Caption: ESG = ESG Score; ES = Environmental Score; SS = Social Score; GS = Governance Score; EFI = Economic Freedom Index; CPI = Corruption Perceptions Index; GSCI = Global Sustainable Competitiveness Index; UNGC = United Nations Global Compact; ROA = Return on Assets; ROE = Return on Equity; S = Total Assets; D = Corporate Debt.

The results point to a variability in ESG performance and its dimensions among the considered nations. Notably, companies located in Spain stood out by recording the best ESG performance, with an index of 53,784. In addition, the environmental (53,995) and social (61,720) dimensions also scored significantly higher in this country. In contrast, companies established in Ireland excelled in governance, recording an index of 47,472 in this category. As regards the independent country-level variables, Ireland stands out as the nation with the greatest economic freedom (81,040), showing a more business-friendly economic environment.

In addition, Ireland should be highlighted for its transparency (74,000) and performance in sustainable competitiveness (55,800). At the opposite extreme, Greece faces significant challenges, being the nation with the lowest economic freedom (59,460), the lowest sustainable competitiveness (48,580), and the least transparency (48,800).

As regards the adherence to the United Nations Global Compact (UNGC), through the averages of each country, one can get an idea of the adherence levels. Countries with higher averages indicate a higher proportion of companies that adhered to the pact, while lower averages suggest lower adherence. The standard deviation provides us with information on the variation in Global Compact adherence within each country. A higher standard deviation indicates greater variability in adherence levels between companies, while a smaller standard deviation suggests more uniform adherence. Therefore, a high adherence to the Global Compact can indicate a strong commitment by companies to sustainability, corporate responsibility, and human rights, labor, environment, and anti-corruption principles promoted by the Global Compact (Ortas et al., 2015; Orzes et al., 2018). It is observed that Spain has the highest average (0.888), while Ireland has the lowest average (0.152). Italy has a relatively high standard deviation (0.453), indicating a greater dispersion of values relative to the average. Regarding the economic performance variables, Portugal showed a sound return on assets (0.063) and a substantial return on equity (0.135), indicating efficiency in the use of assets and in the generation of profit in relation to shareholders' equity. Conversely, Spain leads in terms of total assets (23.570), while Portugal leads in debt (0.701), suggesting a more leveraged capital structure. This analysis emphasizes the notable distinctions in ESG performance and economic characteristics among the PIIGS nations.

Table 5 displays the results of the correlation, which is nothing more than a measure of the linear relationship between variables, with the lower part being indicated for Pearson's correlation, while the upper part for Spearman's correlation. Pearson's and Spearman's correlation coefficients can range in value from -1 to +1, where ±0.00, it means no association, ±0.01 to ±0.29 weak association, ±0.30 to ±0.59 moderate association, ±0.60 to ±0.99 strong association, and ±1.00 perfect association. For the correlation coefficient to be +1, when one variable increases, the other variables increase by a consistent amount (Field, 2009).

Table 5

Pearson's and Spearman's correlations

	ESG	ES	SS	GS	EFI	CPI	GSCI	UNGC	ROA	ROE	S	D
ESG	**1**	0.9476*	0.9534*	0.8761*	0.2576*	0.2381*	0.1649*	0.1393*	0.1554*	0.1586*	0.7511*	0.1887*
ES	0.9455*	**1**	0.8939*	0.7597*	0.2413*	0.2261*	0.1344*	0.1612*	0.1068*	0.1283*	0.7507*	0.2170*
SS	0.9746*	0.9048*	**1**	0.7742*	0.2820*	0.2657*	0.1628*	0.1126*	0.1356*	0.1447*	0.7325*	0.1853*
GS	0.9029*	0.7755*	0.8238*	**1**	0.2439*	0.2239*	0.2170*	0.1212*	0.1938*	0.1742*	0.6374*	0.1055*
EFI	0.1755*	0.1217*	0.1796*	0.2029*	**1**	0.9242*	0.7736*	0.0403	-0.0474	-0.0263	0.2885*	-0.0554
CPI	0.2031*	0.1580*	0.2128*	0.2076*	0.9606*	**1**	0.6494*	0.0356	-0.0380	-0.0037	0.2901*	-0.0432
GSCI	0.1729*	0.1217*	0.1668*	0.2126*	0.8375*	0.7546*	**1**	0.0880*	-0.0286	-0.0317	0.1766*	-0.0745*
UNGC	0.1385*	0.1608*	0.1214*	0.1203*	0.0979*	0.0596	0.1071*	**1**	-0.0274	-0.0138	0.0488	0.1055*
ROA	0.1328*	0.1132*	0.1247*	0.1382*	-0.1259*	-0.1220*	-0.0890*	0.0136	**1**	0.7399*	0.0872*	-0.1741*
ROE	0.0438	0.0302	0.0376	0.0600	-0.0225	-0.0212	-0.0334	-0.0081	-0.0775*	**1**	0.1336*	0.0869*
S	0.7455*	0.7384*	0.7283*	0.6385*	0.2167*	0.2439*	0.1729*	0.0457	0.1499*	0.0393	**1**	0.2991*
D	0.1433*	0.1894*	0.1373*	0.0726*	-0.1232*	-0.0928*	-0.0687	0.0742*	-0.2563*	0.1610*	0.2534*	**1**

Caption: ESG = ESG Score; ES = Environmental Score; SS = Social Score; GS = Governance Score; EFI = Economic Freedom Index; CPI = Corruption Perceptions Index; GSCI = Global Sustainable Competitiveness Index; UNGC = United Nations Global Compact; ROA = Return on Assets; ROE = Return on Equity; S = Total Assets; D = Corporate Debt.

It is observed that the ESG score is positively correlated with ES (0.9476), SS (0.9534), and GS (0.8761), all significant at 0.01, which is justified by the fact that these three variables are ESG dimensions. It is also observed that the ESG score is positively correlated with the institutional variables "EFI" (0.2576), "CPI" (0.2381), and "GSCI" (0.1649), all with 0.01 of significance, suggesting that economic freedom, transparency, and sustainable competitiveness are not always linked to a good ESG performance of their companies.

Moreover, it is observed that the financial indicators of ROA and ROE are positively correlated with ESG, (0.1554) and (0.1586), respectively, both with a significance of 0.01, in line with the conclusions of Chams et al. (2021), which suggest that companies with good financial performance tend to receive higher ESG scores. The availability and affordability of these resources empowers these companies to expand their reach when it comes to investments in these specific sectors (Chams et al., 2021).

It is noted that the analysis does not reveal statistically significant correlations between the institutional variables "EFI", "CPI", and "GSCI" and the performances variables "ROA" and "ROE". The institutional variables "EFI", "CPI", and "GSCI" showed a high and positive correlation between them, all significant at 0.01, which is in line with the findings of Dialga and Vallée (2021) and the study by Licht et al. (2007), which highlight that nations characterized by high levels of autonomy and equality have greater democratic accountability and lower indexes of corruption.

A positive and significant correlation is perceived at the level of 0.01 of the dummy variable "UNGC" in relation to the ESG performance variables and their dimensions "ES", "SS" and "GS". According to the conclusions of Ortas et al. (2015), who emphasize that the adoption of the United Nations Global Compact (UNGC) principles generally requires an organizational reconfiguration that promotes stakeholder participation, which, in turn, leads to improvements in companies' ESG performance.

Table 6 displays the regression analyses by panel data, highlighting the effect of the Economic Freedom Index on ESG performance.

Table 6

Effect of the Economic Freedom Index on ESG performance

Variables	ESG		ES		SS		GS	
	Equation 1		Equation 4		Equation 7		Equation 10	
	Coef.	*t test*	Coef.	*t test*	Coef.	*t test*	Coef.	*t test*
EFI	0.0106	0.12	-0.2519**	-2.35	0.0537	0.53	0.2520**	2.35
UNGC	15.5949*	6.23	19.6384*	7.72	14.7036*	5.55	13.3400*	4.05
ROA	1.3382	0.31	-2.9093	-0.71	0.3075	0.07	6.3361	1.29
ROE	2.7743	1.09	0.3392	0.13	2.3539	0.85	5.8014**	2.36
S	12.3464*	45.63	12.8955*	43.00	13.4394*	44.15	10.1572*	33.06
D	-9.4931*	-2.62	-3.4701	-0.96	-10.5143**	-2.51	-14.5038*	-3.67
CONS	-235.9403*	-32.73	-237.3056*	-28.25	-258.4164*	-31.67	-203.8895*	-23.75
2019	4.3712**	2.40	3.5691***	1.84	5.6603*	2.69	3.7792***	1.91
2020	4.1698**	2.22	3.8170***	1.91	4.8632**	2.24	4.1230**	2.02
2021	6.6135*	3.40	5.2773*	2.60	6.9868*	3.12	7.6913*	3.60
2022	8.1183*	4.14	7.3319*	3.60	8.6601*	3.82	8.4511*	3.99
Nr. Obs.	1,270		1,270		1,270		1,270	
FE	Yes		Yes		Yes		Yes	
Sig.	0.000***		0.000***		0.000***		0.000***	
R^2	0.5702		0.5636		0.5416		0.4311	
Jarque-Bera	0.000		0.000		0.000		0.000	
CLT	Yes		Yes		Yes		Yes	
VIF	≤ 1.29		≤ 1.29		≤ 1.29		≤ 1.29	
Durbin-Watson	1.9772		1.9469		1.8868		2.0722	
White Matrix (RR)	Yes		Yes		Yes		Yes	

Caption: ESG = ESG Score; ES = Environmental Score; SS = Social Score; GS = Governance Score; EFI = Economic Freedom Index; CPI = Corruption Perceptions Index; GSCI = Global Sustainable Competitiveness Index; UNGC = United Nations Global Compact; ROA = Return on Assets; ROE = Return on Equity; S = Total Assets; D = Corporate Debt. FE = Year Fixed Effects; CLT = Central Limit Theorem; VIF = Variance Inflation Factor; and White Matrix (RR) = Robust Regression.

Note: Significance at the levels of *0.01, **0.05 and ***0.10.

Regression analyses reveal the influence of independent variables, both institutional like EFI, CPI and GSCI, and company ones like UNGC, ROA, ROE, S, and D, on the dependent variables that represent ESG performance: ESG, ES, SS, and GS. As displayed in Table 6, the regression models were significant at the level of 0.01. The independent variables by R^2 explain 57.02% of ESG, 56.36% of ES, 54.16% of SS, and 43.10.01 of GS. The number of observations amounts to 1,270, corresponding to the 254 companies analyzed in the study sample. As regards the assumptions, the procedures are identical to those previously reported in Table 5, that is, for normality, the Central Limit Theorem guidelines, accepted in the statistical literature of Freud and Simon (2000), were adopted, and the problems of heteroscedasticity were corrected by robust regression; and the observed multicollinearity, in this case (≤1.29), and the autocorrelation of the residuals are in accordance with the statistical precepts according to Fávero et al. (2009).

As regards the assumptions, normality was violated in all models noted by means of the Jarque-Bera test; however, due to the number of observations, such violation was relaxed through the Central Limit Theorem (CLT) assumptions, which is widely accepted in the statistical literature of Freud and Simon (2000).

In terms of multicollinearity (VIF), the highest factor evidenced here was 1.29, lower than the factor 5 recommended as problematic in the literature by Fávero et al. (2009). The autocorrelation of the residuals (Durbin-Watson test), in turn, was close to the ideal of 2 (acceptable between 1 and 3) according to Favero et al. (2009). In the models, there were problems of heteroscedasticity (White test), which were corrected with the application of robust regression, which, according to Fávero et al. (2009), inserts the White matrix, adjusting the standard errors based on the heteroscedasticity of the model.

As regards the results, it is observed that the EFI positively affects ESG performance (0.0106), and its SS (0.0537) and GS (0.2520) dimensions, with the latter being at the significance level of 0.05. The ES dimension was negatively affected (-0.2519), with a significance of 0.05. This observation suggests that companies can prioritize profit and investment in social and governance issues in environments of greater economic liberalism, to the detriment of environmental issues, which is in line with the results found by Mooneeapen et al. (2022), who indicated that the ESG performance of companies tends to be higher in countries with a lower degree of democracy and political stability.

Table 7 displays the regression analyses by panel data, highlighting the effect of the CPI on ESG performance.

Table 7

Effect of the CPI on ESG performance

Variables	ESG Equation 2		ES Equation 5		SS Equation 8		GS Equation 11	
	Coef.	*t test*	Coef.	*t test*	Coef.	*t test*	Coef.	*t test*
CPI	0.0527	0.67	-0.1290	-1.41	0.1259	1.42	0.1701***	1.86
UNGC	15.5341*	6.19	19.4564*	7.59	14.5998*	5.51	13.4625*	4.09
ROA	1.9084	0.43	-1.6994	-0.40	1.3420	0.29	5.6651	1.18
ROE	2.7918	1.10	0.3506	0.13	2.3887	0.86	5.8056**	2.38
S	12.2860*	44.63	12.7965*	41.96	13.3261*	43.21	10.2001*	32.72
D	-9.0794**	-2.52	-2.4009	-0.66	-9.7878**	-2.36	-15.1751*	-3.81
CONS	-237.2325*	-38.12	-245.0861*	-34.72	-260.1274*	-36.93	-197.5121*	-27.02
2019	4.3568**	2.39	3.7970***	1.95	5.5374*	2.63	3.6201***	1.82
2020	4.0971**	2.18	3.6082***	1.81	4.7793**	2.20	4.2130**	2.06
2021	6.4463*	3.31	4.8580**	2.39	6.7699*	3.03	7.8583*	3.69
2022	7.9341*	4.04	6.9367*	3.41	8.3947*	3.71	8.5911*	4.06
Nr. Obs.	1,270		1,270		1,270		1,270	
FE	Yes		Yes		Yes		Yes	
Sig.	0.000***		0.000***		0.000***		0.000***	
R^2	0.5704		0.5623		0.5422		0.4301	
Jarque-Bera	0.000		0.000		0.000		0.000	
CLT	Yes		Yes		Yes		Yes	
VIF	≤ 1.28		≤ 1.28		≤ 1.28		≤ 1.28	
Durbin-Watson	1.9597		1.9439		1.8896		2.0679	
White Matrix (RR)	Yes		Yes		Yes		Yes	

Caption: ESG = ESG Score; ES = Environmental Score; SS = Social Score; GS = Governance Score; UNGC = United Nations Global Compact; CPI = Corruption Perceptions Index; ROA = Return on Assets; ROE = Retum on Equity; S = Total Assets; D = Corporate Debt. FE = Year Fixed Effects; CLT = Central Limit Theorem; VIF = Variance Inflation Factor; and White Matrix (RR) = Robust Regression.
Note: Significance at the levels of *0.01, **0.05 and ***0.10.

As displayed in Table 7, the regression models were significant at the level of 0.01. The independent variables by R^2 explain 57.04% of ESG, 56.23% of ES, 54.22% of SS, and 43,00,01% of GS in the respective robustness tests. The number of observations amounts to 1,270, corresponding to the 254 companies analyzed in the study sample. As regards the assumptions, the procedures are identical to those previously reported in Table 5, that is, for normality, the Central Limit Theorem guidelines, accepted in the statistical literature of Freud and Simon (2000), were adopted, and the problems of heteroscedasticity were corrected by robust regression; and the observed multicollinearity, in this case (≤1.28), and the autocorrelation of the residuals are in accordance with the statistical precepts according to Fávero et al. (2009).

As regards the results, it can be observed that the CPI positively influences the ESG (0.0527), SS (0.1259), and GS (0.1701) scores, with the latter being significant at 0.10. On the

contrary, the environmental dimension was negatively affected (-0.1290), although not significant, which is in line with the findings of Khalid et al. (2022), who identified that companies that are perceived as having a low incidence of corruption tend to disclose more information related to ESG aspects in their operations. Table 8 displays the regression analyses by panel data, highlighting the effect of the GSCI on ESG performance.

Table 8

Effect of the GSCI on ESG performance

Variables	ESG Equation 3		ES Equation 6		SS Equation 9		GS Equation 12	
	Coef.	*t test*	Coef.	*t test*	Coef.	*t test*	Coef.	*t test*
GSCI	0.4038***	1.72	-0.2352	-0.89	0 .4052	1.51	1.1150*	4.17
UNGC	15.1741*	6.00	19.5236*	7.58	14.3444*	5.38	12.5043*	3.77
ROA	2.5109	0.56	-0.7586	-0.18	0.9875	0.22	7.0056	1.38
ROE	2.8712	1.12	0.3416	0.13	2.4408	0.87	6.0157**	2.41
S	12.2282*	46.31	12.6959*	43.80	13.3678*	44.77	10.0741*	33.21
D	-8.6350**	-2.47	-1.7059	-0.49	-10.0501**	-2.46	-14.1865*	-3.70
CONS	-253.9314*	-20.65	-238.7278*	-16.77	-274.3844*	-19.68	-242.7793*	-17.18
2019	4.3975**	2.41	3.8582**	1.99	5.6957*	2.71	3.5097**	1.77
2020	4.3565**	2.16	5.8853*	2.72	5.1173**	2.21	2.1886	0.98
2021	6.7423*	3.19	7,1882*	3.21	7.2510*	2.99	5.7360**	2.43
2022	8.2229*	3.87	9.0793*	4.00	8.9107*	3.67	6.6119*	2.84
Nr. Obs.	1,270		1,270		1,270		1,270	
FE	Yes		Yes		Yes		Yes	
Sig.	0.000***		0.000***		0.000***		0.000***	
R^2	0.5712		0.5618		0.5423		0.4366	
Jarque-Bera	0,000		0,000		0,000		0,000	
CLT	Yes		Yes		Yes		Yes	
VIF	≤ 1.12		≤ 1.12		≤ 1.12		≤ 1.12	
Durbin-Watson	1.9640		1.9440		1.8894		2.0922	
White Matrix (RR)	Yes		Yes		Yes		Yes	

Caption: ESG = ESG Score; ES = Environmental Score; SS = Social Score; GS = Governance Score; UNGC = United Nations Global Compact; GSCI = Global Sustainable Competitiveness Index; ROA = Return on Assets; ROE = Return on Equity; S = Total Assets; D = Corporate Debt. FE = Year Fixed Effects; CLT = Central Limit Theorem; VIF = Variance Inflation Factor; and White Matrix (RR) = Robust Regression.
Note: Significance at the levels of *0.01, **0.05 and ***0.10.

As displayed in Table 8, the regression models were significant at the level of 0.01. The independent variables by R^2 explain 57.12% of ESG, 56.18% of ES, 54.23% of SS and 43.66% of GS in the respective robustness tests. The number of observations amounts to 1,270, corresponding to the 254 companies analyzed in the study sample. As regards the assumptions, the procedures are identical to those previously reported in Table 5, that is, for normality, the Central Limit Theorem guidelines, accepted in the statistical literature of Freud and Simon

(2000), were adopted, and the problems of heteroscedasticity were corrected by robust regression; and the observed multicollinearity, in this case (≤1.12), and the autocorrelation of the residuals are in accordance with the statistical precepts according to Fávero et al. (2009).

As regards the results, it is observed that the GSCI positively and significantly influences the ESG (0.4038), SS (0.4052) and GS (1.1150) performances at the level of 0.10, with the latter two being not significant, and negatively influences the environmental dimension (-0.2352). This finding is in line with research conducted by Rajnoha and Lesnikova (2022), which revealed a notable influence of the GSCI on ESG, with a subsequent beneficial effect observed on indicators related to sustainability and quality of life.

In general, the results indicate that voluntary adherence to the United Nations Global Compact is a relevant factor for the best ESG performance of companies and in the respective dimensions in the 12 tested models, with a positive and significant impact at the level of 0.01. It is in line with the findings of Ortas et al. (2015), who emphasize that adherence to the United Nations Global Compact (UNPC) often requires an organizational transformation that encourages stakeholder participation, culminating in improvements in companies' ESG performance. It is also possible to observe that the 2021-2022 biennium has better ESG performance of companies in general and in their respective dimensions compared to the previous years agreed in this study in the 12 tested models, suggesting that companies returned to invest with more emphasis on aspects related to ESG after the Covid-19 pandemic period. In this study, the Covid-19 period (2020 and 2021) resulting from Legislative Decree nº 6, dated March 2020, which deals with the state of public calamity, was established (Brazil, 2020).

Similarly, the economic performance of companies represented by the variables "ROA" and "ROE" positively influences ESG performance and its ES, SS and GS dimensions in the tested models. This suggests that the level of investment in terms of ESG tends to increase proportionally to the economic performance of companies in the social and governance dimensions, to the detriment of investments in environmental issues. These findings are in line with research by Chams et al. (2021), who claim that companies with superior financial performance tend to receive higher scores on ESG metrics, as economic success creates opportunities for investments in sustainable practices, focusing on the benefit of shareholders and stakeholders. In line with this perspective, Brammer and Millington (2008), as well as Orlitzky and Swanson (2008), clarify that companies with good financial health have more resources at their disposal, making them more prone and able to invest in environmental and social initiatives. This scenario is due to the availability and accessibility of resources, which, in turn, expand their investment possibilities in these sectors.

The size of the assessed companies, represented by the variable "S", also positively and significantly influences on ESG performance and its environmental, social, and governance dimensions in the tested models at the level of 0.01, which suggests that larger companies tend to allocate more resources to ESG-related initiatives. This observation aligns with the findings of Najaf et al. (2020) and Ramaswamy (2001), who point out that larger companies generally have a superior capacity to implement sustainable business models. Following this same line of thought, Aragón-Correa (1998) concluded in his research that the size of the company influences the amount of training related to the environment. In addition, Bissoondoyal-Bheenick et al. (2023) concluded in their studies that the effect of company size indicates that larger companies have a greater propensity to invest in ESG activities, due to the advantages of economies of schedules, in order to better meet stakeholders' demands.

Finally, corporate debt, represented by the variable "D", negatively influences ESG performance and its environmental, social, and governance dimensions. This is in line with the findings of Adeneye et al. (2023), who found an inverse association between ESG score and the level of market leverage in their research. In addition, the authors observed that the adoption of sustainable practices was correlated with an increase in company's capital debt.

5 Final Considerations

The current study aimed to identify the factors affecting the ESG performance of companies located in the European countries of the group known as PIIGS (Portugal, Italy, Ireland, Greece, and Spain), considering variables like Economic Freedom Index, corruption perception, global sustainable competitiveness, United Nations Global Compact, financial performance, company size, and debt.

In order to achieve this objective, descriptive research with a quantitative approach was conducted, employing documentary research, collected through secondary data. The population comprised the set of Portuguese publicly-held companies listed on Euronext Lisbon; Italian on the Italian Stock Exchange; Irish on the Irish Stock Exchange; Greek on the Athens Stock Exchange; and Spanish on the Madrid Stock Exchange, active in the year 2022, in the period from 2018 to 2022, totaling 254 companies.

The data used to calculate the variables were obtained from the Refinitiv® database and the following websites: heritage.org, unglobalcompact.org, solability.com, and transparency.org. The data were analyzed using correlation tests and linear regressions by panel data with fixed effects per year.

When analyzing the results obtained from the analyses and regressions performed in this study, one can draw some conclusions. First, the ESG performance of companies located in European economies that are part of the PIIGS is influenced by a number of factors, including economic, institutional, and financial indicators.

The EFI has been shown to have a positive effect on ESG performance in its social and governance dimensions, suggesting that companies tend to perform better in social and governance aspects in countries with greater economic freedom. Nonetheless, the environmental dimension was negatively affected, indicating that companies may give less priority to environmental issues in more liberal environments.

The CPI positively influenced ESG performance in its social and governance dimensions, indicating that companies tend to perform better in these areas in countries with lower corruption. Nonetheless, the environmental dimension was negatively affected, suggesting that environmental performance may be lower in countries with lower indexes of corruption.

The GSCI had a positive effect, especially on the social and governance dimensions of ESG performance, which indicates that companies tend to have better social and governance performance in countries where sustainable competitiveness is greater. Again, the environmental dimension did not show a significant influence.

In addition to institutional variables, it was observed that the United Nations Global Compact (UNGC) had a positive and significant effect on all dimensions of ESG performance, which suggests that the adoption of the UNGC principles is associated with better ESG performance. The economic performance of companies, as measured by ROA and ROE, also played an important role. Companies with better financial performance are more likely to invest in ESG practices, which makes sense, as companies with stronger financial resources can allocate more capital to sustainability-related initiatives.

It was also observed that company size had a significant positive impact on all dimensions of ESG performance, indicating that larger companies tend to have better ESG performance. Conversely, debt had a negative impact on ESG performance, suggesting that more indebted companies may have lower ESG performance.

1 – Theoretical Contributions

From a theoretical point of view, this study expands the literature on ESG by focusing specifically on the countries of the PIIGS group. It highlights the influence of macroeconomic

and institutional variables like economic freedom and corruption perception, on ESG performance, suggesting that a more liberal and less corrupt economic environment favors the development of better social and governance practices. The finding that the environmental dimension is less impacted by these factors opens up space for future investigations into which regulatory or cultural elements can strengthen the environmental commitment of companies in that region.

In addition, the positive impact of adhering to the United Nations Global Compact on all ESG dimensions reinforces the importance of international standards and global commitments to improve companies' performance in terms of sustainability. This study also contributes by establishing a relationship between the financial performance of companies and their capacity to invest in sustainable practices, aligning with the literature that suggests that financially healthy companies have a greater capacity to adopt robust ESG initiatives.

2 – Management Contributions

Managerially, the results offer valuable points for managers and corporate policymakers in Europe. Firstly, companies located in countries with greater economic freedom and lower indexes of corruption should take advantage of these environments to reinforce their ESG practices, especially in the social and governance dimensions. Nonetheless, in order improve the environmental dimension, managers must consider more targeted policies, as macroeconomic and institutional factors seem to have less influence in this area.

In addition, this study suggests that larger companies with better financial performance have more favorable conditions to invest in ESG practices, highlighting the importance of sound financial management for the implementation of these practices. Conversely, the most indebted companies must be aware that debt negatively affects ESG performance, which indicates the need to balance corporate finances with sustainability initiatives.

Finally, adherence to the United Nations Global Compact is indicated as an effective strategy to improve ESG performance in all dimensions, offering managers a concrete tool to strengthen companies' commitment to sustainability.

These conclusions highlight the complexity of the influences on the ESG performance of companies, involving economic, institutional, and financial factors. In addition, they highlight the importance of a favorable regulatory environment and the corruption perception in promoting more responsible ESG practices.

3 – Limitations and Future Research

A significant limitation of this study is the analysis period limited to only five years. In order to broaden the understanding of the topic, future research can extend the analysis period and add other operational variables at the company level, such as ownership structure and incorporation time, and at the country level, such as legal system and cultural dimension. Nonetheless, it is crucial to emphasize that the ESG setting is dynamic and subject to change over time. Therefore, additional research and ongoing monitoring are needed to understand how these factors may evolve and influence the ESG performance of companies in the countries covered by this study.

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